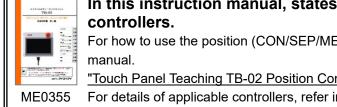
Touch Panel Teaching TB-02

Applicable for Program Controller Instruction Manual Eleventh edition



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In this instruction manual, states the contents for the program (SEL system)

For how to use the position (CON/SEP/MEC system) controllers, refer to the following instruction "Touch Panel Teaching TB-02 Position Controller Instruction Manual"

For details of applicable controllers, refer in the section for the supported models.

IAI Corporation





Please Read Before Use

Thank you for purchasing our product.

This instruction manual explains the handling methods, structure and maintenance of this product, providing the information you need in order to use the product safely.

Before using the product, be sure to read this manual and fully understand the contents explained herein to ensure safe use of the product.

Please downloaded the user's manual from our website.

You can download it free of charge. User registration is required for the first time downloading. URL : www.iai-robot.co.jp/data dl/CAD MANUAL/

When using the product, print out of the necessary portions of the relevant manual, or please display it on your computer, tablet terminal, etc. so that you can check it immediately.

After reading the instruction manual, keep it in a convenient place so that whoever is handling the product can refer to it quickly when necessary.

[Important]

- This instruction manual is an original document dedicated for this product.
- This product cannot be used in ways not shown in this instruction manual. IAI shall not be liable for any result whatsoever arising from the use of the product in any other way than what is noted in the manual.
- The information contained in this instruction manual is subject to change without notice for the purpose of product improvement.
- If any issues arise regarding the information contained in this instruction manual, contact our customer center or the nearest sales office.
- Use or reproduction of this instruction manual in full or in part without permission is prohibited.
- The company names, names of products and trademarks of each company shown in the text are registered trademarks.





Support Models

This instruction manual states the details for those for program controller.

For how to handle the position controllers (ERC3, ERC2, ACON, PCON, SCON, SCON2, DCON, RACON, RPCON, MSCON, MCON, RCON, ASEP, PSEP, DSEP, MSEP, AMEC, PMEC, RCP6S, RCM-P6PC, RCM-P6AC and RCM-P6DC), refer to [Instruction Manual for Touch Panel Teaching to Apply for TB-02 Position Controllers] provided separately.

Program Controller Supported Model List

Controller Model Name	Support Started Version
XSEL-J/JX (Note 1)	V1.00
XSEL-K/KX/KT/KET	V1.00
XSEL-P/Q/PX/QX/PCT/QCT	V1.00
XSEL-R/S/RX/SX/RXD/SXD	V1.00
XSEL-RA/SA/RAX/SAX/RAXD/SAXD	V1.30
TT/TTA	V1.00
ASEL/PSEL/SSEL	V1.00
MSEL-PC/PG/PCX/PGX	V1.00
MSEL-PCF/PGF	V1.60
RSEL	V2.70
XSEL2	V4.80

Note 1 It is necessary that you prepare a dedicated cable for XSEL-J/JX. [Refer to 3.15.2 XSEL-J/JX Dedicated Cable]

ROBO PUMP Supported Model List

ROBO PUMP Model Name	Support Started Version
RP-VPM	V4.70

How to version upgrade, refer to [24.2 Teaching Update].





ELECYLINDER Supported Model List

ELECYLINDER Type	Supported from version (Note 2)
$ \begin{array}{l} {\sf EC-S6}_{-}, {\sf EC-S7}_{-}, {\sf EC-R6}_{-}, {\sf EC-R7}_{-}, {\sf EC-S6}_{-} {\sf CR}, {\sf EC-S7}_{-} {\sf CR}, \\ {\sf EC-S6}_{-} {\sf H}, {\sf EC-S7}_{-} {\sf H}, {\sf EC-RR6}_{-}, {\sf EC-RR7}_{-}, {\sf EC-R6}_{-} {\sf W}, {\sf EC-R7}_{-} {\sf W}, \\ {\sf EC-RP4}_{-}, {\sf EC-GS4}_{-}, {\sf EC-GD4}_{-}, {\sf EC-TC4}_{-}, {\sf EC-TW4}_{-}, \\ {\sf EC-RR6}_{-} {\sf H}, {\sf EC-RR7}_{-} {\sf H}, \\ {\sf EC-S6}_{-} {\sf AH}, {\sf EC-S7}_{-} {\sf AH}, {\sf EC-RR6}_{-} {\sf AH}, {\sf EC-R7}_{-} {\sf AH}, \\ {\sf EC-S3}_{-}, {\sf EC-S4}_{-}, {\sf EC-S6}_{-} {\sf R}, {\sf EC-S7}_{-} {\sf R}, {\sf EC-S6}_{-} {\sf AHR}, \\ {\sf EC-S7}_{-} {\sf AHR}, {\sf EC-RR3}_{-}, {\sf EC-RR4}_{-}, {\sf EC-RR6}_{-} {\sf R}, {\sf EC-RR7}_{-} {\sf R}, \\ {\sf EC-RR6}_{-} {\sf AHR}, {\sf EC-RR7}_{-} {\sf AHR}, {\sf EC-S3}_{-} {\sf CR}, {\sf EC-S4}_{-} {\sf CR}, \\ {\sf EC-RR6}_{-} {\sf W}, {\sf EC-RR7}_{-} {\sf W}, {\sf EC-B6S}, {\sf EC-B7S}, \\ {\sf EC-S3}_{-} {\sf R}, {\sf EC-S4}_{-} {\sf R}, {\sf EC-RR3}_{-} {\sf R}, {\sf EC-RR4}_{-} {\sf R}, \\ {\sf EC-S13}_{-}, {\sf EC-S13X}_{-}, {\sf EC-S15}_{-}, {\sf EC-S15X}_{-} \end{array} $	V3.40
EC-RR6X AH, EC-RR7X AH, EC-WS10 , EC-WS12, EC-S6 AHCR, EC-S7 AHCR, EC-GD5, EC-RP5, EC-TC5, EC-TW5, EC-GRB8M, EC-GRB10M, EC-GRB13M, EC-GRB13L, EC-S10, EC-S10X	V3.50
EC-S3 A, EC-S4 A, EC-S6 A, EC-S7 A, EC-S6X AH, EC-S7X AH, EC-WS10 R, EC-WS12 R, EC-WS10 CR, EC-WS12 CR, EC-ST11 , EC-SRG11 , EC-SRG15 , EC-SL3 , EC-GDS3 , EC-GDB3 , EC-T3	V3.70
EC-S6□D, EC-S7□D, EC-S6□W, EC-S7□W, EC-RTC18M	V3.80
EC-S18□, EC-S18X□	V3.90
EC-S3□AR, EC-S4□AR, EC-S6□AR, EC-S7□AR, EC-S3□ACR, EC-S4□ACR, EC-S6□ACR, EC-S7□ACR, EC-S6X□AHR, EC-S7X□AHR, EC-S6X□AHCR, EC-S7X□AHCR	V4.00
EC-B8S, EC-B8SS	V4.10
EC-RR8□, EC-RR10□, EC-RR8□R, EC-RR10□R, EC-S8□, EC-S8□A, EC-S8X□A, EC-S8□R, EC-S8□AR, EC-S8X□AR, EC-S8□CR, EC-S8□ACR, EC-S8X□ACR	V4.11
EC-GRC6M, EC-GRC7□, EC-GRST3□, EC-GRST6□, EC-GRST7, EC-GRBP8M, EC-GRBP10M, EC-GRBP13□, EC-GRBP8MW, EC-GRBP10MW, EC-GRBP13□W, EC-GRTR14M	V4.20

Make sure to use a version started to support or later.

(There should be some features not available to use in versions before supporting.)

Note 2 The digital speed controller equipped type will be the same version.

How to version upgrade, refer to [24.2 Teaching Update].

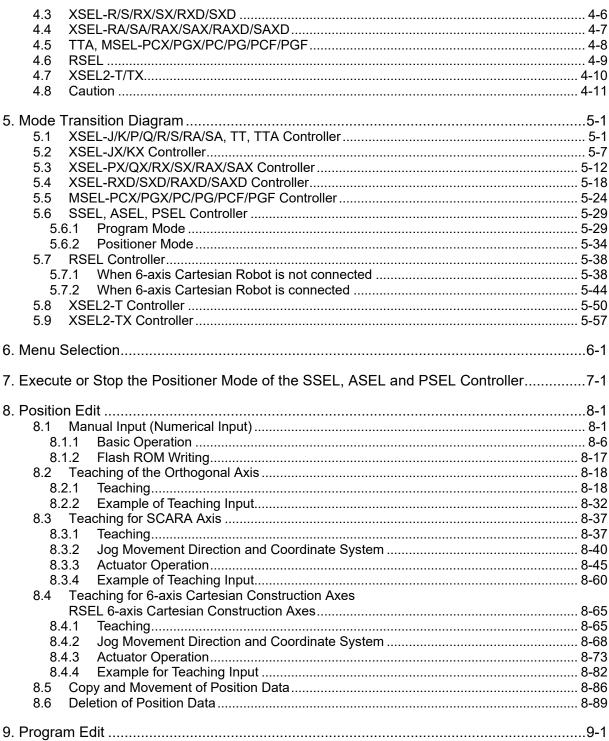




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Safety Guide

"Safety Guide" has been written to use the machine safely and so prevent personal injury or property damage beforehand. Make sure to read it before the operation of this product.

Safety Precautions for Our Products

The common safety precautions for the use of any of our robots in each operation.

No.	Operation Description	Description
1	Model Selection	 This product has not been planned and designed for the application where high level of safety is required, so the guarantee of the protection of human life is impossible. Accordingly, do not use it in any of the following applications. 1) Medical equipment used to maintain, control or otherwise affect human life or physical health. 2) Mechanisms and machinery designed for the purpose of moving or transporting people (For vehicle, railway facility or air navigation facility) 3) Important safety parts of machinery (Safety device, etc.) Do not use the product outside the specifications. Failure to do so may considerably shorten the life of the product. Do not use it in any of the following environments. 1) Location where there is any inflammable gas, inflammable object or explosive 2) Place with potential exposure to radiation 3) Location where there is added from direct sunlight or other large heat source 5) Location where there is any corrosive gas (sulfuric acid or hydrochloric acid) 7) Location subject to direct vibration or impact For an actuator used in vertical orientation, select a model which is equipped with a brake. If selecting a model with no brake, the moving part may drop when the power is turned OFF and may cause an accident such as an injury or damage on the work piece.





No.	Operation Description	Description
2	Transportation	 When carrying a heavy object, do the work with two or more persons or utilize equipment such as crane. When the work is carried out with 2 or more persons, make it clear who is to be the "leader" and who to be the "follower(s)" and communicate well with each other to ensure the safety of the workers. When in transportation, consider well about the positions to hold, weight and weight balance and pay special attention to the carried object so it would not get hit or dropped. Transport it using an appropriate transportation measure. The actuators available for transportation with a crane have eyebolts attached or there are tapped holes to attach bolts. Follow the instructions in the instruction manual for each model. Do not step or sit on the package. Do not put any heavy thing that can deform the package, on it. When using a crane capable of 1t or more of weight, have an operator who has qualifications for crane operation and sling work. When using a crane or equivalent equipments, make sure not to hang a load that weighs more than the equipment's capability limit. Use a hook that is suitable for the load. Consider the safety factor of the hook in such factors as shear strength. Do not leave a load hung up with a crane. Do not stand under the load that is hung up with a crane.
3	Storage and Preservation	 The storage and preservation environment conforms to the installation environment. However, especially give consideration to the prevention of condensation. Store the products with a consideration not to fall them over or drop due to an act of God such as earthquake.
4	Installation and Start	 (1) Installation of Robot Main Body and Controller, etc. Make sure to securely hold and fix the product (including the work part). A fall, drop or abnormal motion of the product may cause a damage or injury. Also, be equipped for a fall-over or drop due to an act of God such as earthquake. Do not get on or put anything on the product. Failure to do so may cause an accidental fall, injury or damage to the product due to a drop of anything, malfunction of the product, performance degradation, or shortening of its life. When using the product in any of the places specified below, provide a sufficient shield. 1) Location where high electrical or magnetic field is present 3) Location with the mains or power lines passing nearby 4) Location where the product may come in contact with water, oil or chemical droplets





No.	Operation Description	Description
4	Installation and Start	 (2) Cable Wiring Use our company's genuine cables for connecting between the actuator and controller, and for the teaching tool. Do not scratch on the cable. Do not bend it forcibly. Do not pull it. Do not coil it around. Do not insert it. Do not put any heavy thing on it. Failure to do so may cause a fire, electric shock or malfunction due to leakage or continuity error. Perform the wiring for the product, after turning OFF the power to the unit, so that there is no wiring error. When the direct current power (+24V) is connected, take the great care of the directions of positive and negative poles. If the connection direction is not correct, it might cause a fire, product breakdown or malfunction. Connect the cable connector securely so that there is no disconnection or looseness. Failure to do so may cause a fire, electric shock or malfunction of the product. Never cut and/or reconnect the cables supplied with the product for the purpose of extending or shortening the cable length. Failure to do so may cause the product to malfunction or cause fire.
		 (3) Grounding The grounding operation should be performed to prevent an electric shock or electrostatic charge, enhance the noise-resistance ability and control the unnecessary electromagnetic radiation. For the ground terminal (PE) on the AC power cable of the controller and the grounding plate in the control panel, make sure for grounding work. For security grounding, it is necessary to select an appropriate wire thickness suitable for the load. Perform wiring that satisfies the specifications (electrical equipment standards and criteria). For detail, follow the description in [an instruction manual of each controller or controller built-in actuator]. Conduct functional grounding on the FG terminal for a controller supplying 24V DC or a controller built-in type actuator. In order to minimize influence to mechanical operation given by electromagnetic interference (noise) to an electrical device or insulation failure, conduct grounding on a terminal or a conductor that is electrically stable. The reference impedance should be Type D (Former Class 3, ground resistance 100Ω or less).





No.	Operation	Description
4	Description Installation and Start	 (4) Safety Measures When the work is carried out with 2 or more persons, make it clear who is to be the "leader" and who to be the "follower(s)" and communicate well with each other to ensure the safety of the workers. When the product is under operation or in the ready mode, take the safety measures (such as the installation of safety and protection fence) so that nobody can enter the area within the robot's movable range. When the robot under operation is touched, it may result in death or serious injury. Make sure to install the emergency stop circuit so that the unit can be stopped immediately in an emergency during the unit operation. Take the safety measure not to start up the unit only with the power turning ON. Failure to do so may start up the machine suddenly and cause an injury or damage to the product. Take the safety measure not to start up the machine only with the emergency stop cancellation or recovery after the power failure. Failure to do so may result in an electric shock or injury due to unexpected power input. When the installation or adjustment operation, is to be performed, give clear warnings such as "Under Operation; Do not turn ON the power!" etc. Sudden power input may cause an electric shock or injury. Take the measure so that the work part is not dropped in power failure or emergency stop. Wear protection gloves, goggle or safety shoes, as necessary, to secure safety. Do not insert a finger or object in the openings in the product. Failure to do so may cause an injury, electric shock, damage to the product or fire. When releasing the brake on a vertically oriented actuator, exercise precaution not to pinch your hand or damage the work parts with the actuator dropped by gravity.
5	Teaching	 When the work is carried out with 2 or more persons, make it clear who is to be the "leader" and who to be the "follower(s)" and communicate well with each other to ensure the safety of the workers. Perform the teaching operation from outside the safety protection fence, if possible. In the case that the operation is to be performed unavoidably inside the safety protection fence, prepare the "Stipulations for the Operation" and make sure that all the workers acknowledge and understand them well. When the operation is to be performed inside the safety protection fence, the worker should have an emergency stop switch at hand with him so that the unit can be stopped any time in an emergency. When the operation is to be performed inside the safety protection fence, in addition to the workers, arrange a watchman so that the machine can be stopped any time in an emergency. Also, keep watch on the operation so that any third person can not operate the switches carelessly. Place a sign "Under Operation" at the position easy to see. When releasing the brake on a vertically oriented actuator, exercise precaution not to pinch your hand or damage the work parts with the actuator dropped by gravity. * Safety protection Fence : In the case that there is no safety protection fence, the movable range should be indicated.





No.	Operation Description	Description
6	Trial Operation	 When the work is carried out with 2 or more persons, make it clear who is to be the "leader" and who to be the "follower(s)" and communicate well with each other to ensure the safety of the workers. After the teaching or programming operation, perform the check operation one step by one step and then shift to the automatic operation. When the check operation is to be performed inside the safety protection fence, perform the check operation using the previously specified work procedure like the teaching operation. Make sure to perform the programmed operation check at the safety speed. Failure to do so may result in an accident due to unexpected motion caused by a program error, etc. Do not touch the terminal block or any of the various setting switches in the power ON mode. Failure to do so may result in an electric shock or malfunction.
7	Automatic Operation	 Check before starting the automatic operation or rebooting after operation stop that there is nobody in the safety protection fence. Before starting automatic operation, make sure that all peripheral equipment is in an automatic-operation-ready state and there is no alarm indication. Make sure to operate automatic operation start from outside of the safety protection fence. In the case that there is any abnormal heating, smoke, offensive smell, or abnormal noise in the product, immediately stop the machine and turn OFF the power switch. Failure to do so may result in a fire or damage to the product. When a power failure occurs, turn OFF the power switch. Failure to do so may cause an injury or damage to the product, due to a sudden motion of the product in the recovery operation from the power failure.





No.	Operation Description	Description
8	Maintenance and Inspection	 When the work is carried out with 2 or more persons, make it clear who is to be the "leader" and who to be the "follower(s)" and communicate well with each other to ensure the safety of the workers. Perform the work out of the safety protection fence, if possible. In the case that the operation is to be performed unavoidably inside the safety protection fence, prepare the "Stipulations for the Operation" and make sure that all the workers acknowledge and understand them well. When the work is to be performed inside the safety protection fence, basically turn OFF the power switch. When the operation is to be performed inside the safety protection fence, the worker should have an emergency stop switch at hand with him so that the unit can be stopped any time in an emergency. When the operation is to be performed inside the safety protection fence, in addition to the workers, arrange a watchman so that the machine can be stopped any time in an emergency. Also, keep watch on the operation so that any third person can not operate the switches carelessly. Place a sign "Under Operation" at the position easy to see. For the grease for the guide or ball screw, use appropriate grease according to the instruction manual for each model. Do not perform the dielectric strength test. Failure to do so may result in a damage to the product. When releasing the brake on a vertically oriented actuator, exercise precaution not to pinch your hand or damage the work parts with the actuator dropped by gravity. The slider or rod may get misaligned OFF the stop position if the servo is turned OFF. Be careful not to get injured or damaged due to an unnecessary operation. Pay attention not to lose the removed cover or screws, and make sure to put the product back to the original condition after maintenance and inspection works. Use in incomplete condition may cause damage to the product or an injury. * Safety protection Fen
9	Modification and Dismantle	 Do not modify, disassemble, assemble or use of maintenance parts not specified based at your own discretion.
10	Disposal	 When the product becomes no longer usable or necessary, dispose of it properly as an industrial waste. When removing the actuator for disposal, pay attention to drop of components when detaching screws. Do not put the product in a fire when disposing of it. The product may burst or generate toxic gases.
11	Other	 Do not come close to the product or the harnesses if you are a person who requires a support of medical devices such as a pacemaker. Doing so may affect the performance of your medical device. See Overseas Specifications Compliance Manual to check whether complies if necessary. For the handling of actuators and controllers, follow the dedicated instruction manual of each unit to ensure the safety.





Alert Indication

The safety precautions are divided into "Danger", "Warning", "Caution" and "Notice" according to the warning level, as follows, and described in the instruction manual for each model.

Level	Degree of Danger and Damage Symbol		/mbol
Danger	This indicates an imminently hazardous situation which, if the product is not handled correctly, will result in death or serious injury.		Danger
Warning	This indicates a potentially hazardous situation which, if the product is not handled correctly, could result in death or serious injury.		Warning
Caution	This indicates a potentially hazardous situation which, if the product is not handled correctly, may result in minor injury or property damage.		Caution
Notice	This indicates lower possibility for the injury, but should be kept to use this product properly.	(!)	Notice





Caution in Handling

- For this touch panel teaching pendant, the language to display can be switched among Japanese, English and Chinese.
 Refer to [Section 21 Environment Setting [Language]] for how to change it.
- Do not attempt to give mechanical shock on this touch panel teaching pendant TB-02 as it may cause malfunction.
- When operating this touch-panel teaching pendant TB-02, be sure to hold the teaching pendant to prevent the cables from receiving unnecessary tensile loads.
- The LCD screen drops brightness if it is used for long time. In order to extend the life of LCD, set the time setting to turn off in the environment setting to turn it off automatically, and disconnect from the controller when it is not in use.
- Do not touch two points on the screen at the same time as the touch panel adopts the analog resistive film system. Touching two points at the same time can make the system detect the middle point on a line between the two points that you touched and react.
- Make operation on the touch panel with force of 0.5N or less. Applying higher force can damage the panel.
- The life of the touch panel is 1,000,000 times of pressing on the same spot (in environment of 25°C).
- Turn off the power to the controller before putting it in or out. Putting it in and out while the power is on may cause malfunction.
- When putting it in, check the connector matching position and insert it carefully with no excess force applied to any unexpected direction. Do not attempt to insert it forcefully when it does not go in smoothly.

Caution: This touch-panel teaching pendant TB-02 is exclusively designed for use with IAI controllers. Never connect it to other equipment. Failure may occur.

International Standards Compliances

This product comply with the following international standards: Refer to Overseas Standard Compliance Manual (ME0287) for more detailed information.

RoHS3 Directive	CE Marking	UL
0	0	-





1. Introduction

Thank you very much for purchasing our XSEL, TT/TTA, SSEL, ASEL, PSEL, MSEL, RSEL and XSEL2 Controller Teaching Pendant. Improper usage or mishandling may result in a product not only being unable to deliver full functions but also produce unexpected troubles or shorten the product's life. Please read this Manual carefully, and operate the product properly by paying attention to its handling. When operating the Teaching Pendant, always keep this Manual at hand and read the relevant items as required.

For the actuator and controller to be used, be sure to refer to the Instruction Manuals attached to the products.

• While the teaching pendant is left connected, "Effect" is valid for the safety velocity. Therefore, in the case of the orthogonal axis, the maximum velocity is 250 mm/s or lower when the program is started from the teaching pendant. In the case of the SCARA axis, the maximum velocity is 250 mm/s or lower for CP motion and 3% or less for PTP motion. To operate the controller according to the program velocity command, it is required to change the condition to "No Effect." For selection of the safety velocity between Effect and No Effect, refer to [15.8. Safety Velocity].



IX





2. Specifications Check

2.1 Product Check

This product, if adopting a standard configuration, consists of the parts listed below.

2.1.1 Component (excluding options)

No.	Product name	Model number	Number	Remarks
1	Teaching pendant (with 5m standard cable)	Refer to [How to Read Model Nameplate] and [How to Read Model Number].	1	Standard cable is fixed on main body.
Accesso	ories			
2	Cable for Position Controllers / ELECYLINDER	CB-TB1-C002	1	when model C or SC selected
3	Cable for program Controllers	CB-TB1-X002	1	when model S or SC selected
4	Conversion Cable	CB-SEL-SJS002	1	when model S or SC selected
5	Touch pen	ТСН-ТВ02	1	Provided with the main body ϕ 4.5×102mm
6	Safety guide	<section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header>	1	The picture shows an image.
7	First step guide	ME0358 メート・シーン・シーン・シーン・シーン・シーン・ メート・シーン・シーン・シーン・ メート・シーン・シーン・ メート・シーン・ メート・シーン・ メート・シーン・ メート・シーン・ メート・シーン・ メート・シーン・ メート・シーン・ メート・シーン・ メート・シーン・ メート・シーン・ メート・シーン・ メート・シーン・ メート・シーン・ メート・シーン・ メート・ ・ メート・ ・ メート・ ・ メート・ ・ ・ ・ ・ ・ ・ ・ ・ ・	1	The picture shows an image.





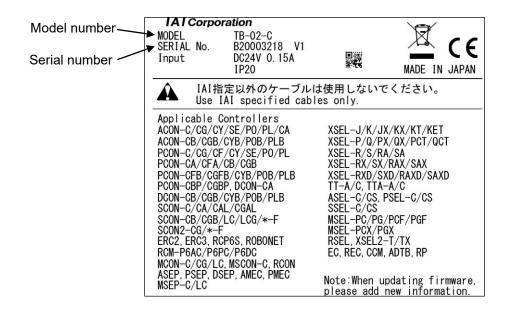
2.1.2 Instruction manual related to this product

No.	Name	Control number
1	Instruction manual for touch-panel teaching pendant TB-02	ME0356
2	Instruction manual for XSEL-J/K/KE controller	ME0116
3	3 Instruction manual for XSEL-JX/KX controller ME0	
4	Instruction manual for XSEL-KT/KET controller	ME0134
5	Instruction manual for XSEL-P/Q/PCT/QCT controller	ME0148
6	Instruction manual for XSEL-PX/QX controller	ME0152
7	Instruction manual for XSEL-R/S/RX/SX/RXD/SXD controller	ME0313
8	Instruction manual for tabletop robot TT	ME0149
9	Instruction manual for tabletop robot TTA	ME0320
10	Instruction manual for SSEL controller	ME0157
11	Instruction manual for ASEL controller	ME0165
12	Instruction manual for PSEL controller	ME0172
13	Instruction manual for MSEL- PC/PG/PCF/PGF/PCX/PGX controller	ME0336
14	Instruction manual for XSEL-RA/SA/RAX/SAX/RAXD/SAXD controller	ME0359
15	Instruction manual for RSEL controller	ME0392
16	Instruction manual for XSEL2 controller	ME0478
17	ELECYLINDER Rod Type / Table Type Instruction Manual	ME3778
18	ELECYLINDER Rod Type Dust and Drip Proof Instruction Manual	ME3779
19	ELECYLINDER Slider Type Instruction Manual	ME3793
20	ELECYLINDER Rod Type / Radial Cylinder Type Instruction Manual	ME3794
21	ELECYLINDER Belt Driven Type Instruction Manual	ME3798
22	ELECYLINDER Stopper Cylinder Instruction Manual	ME3799
23	ELECYLINDER Rotary Instruction Manual	ME3800
24	ELECYLINDER Large Slider Type Instruction Manual	ME3801
25	ELECYLINDER Cleanroom Specification Instruction Manual	ME3804
26	ELECYLINDER Gripper Instruction Manual	ME3806
27	ELECYLINDER Slider Type Dust and Drip Proof Instruction Manual	ME3814
28	Ultra Mini ELECYLINDER Instruction Manual	ME3815
29	ELECYLINDER Electricity Section Instruction Manual	ME3816
30	ELECYLINDER Long Stroke Gripper Type Instruction Manual	ME3824
31	ELECYLINDER Slider Type / Radial Cylinder Type Instruction Manual	ME3825
32	ELECYLINDER Compact Type Instruction Manual	ME3826
33	ELECYLINDER ROBO PUMP Instruction Manual	ME3827
34	ELECYLINDER 3-finger gripper Instruction Manual	ME3829
35	ELECYLINDER Vertical Compact / Dust Proof/Splash Proof Gripper Type Instruction Manual	ME3830
36	ELECYLINDER High Rigidity Slider Type / Clean Specification Instruction Manual	ME3833
37	ELECYLINDER Wide Slider / Clean Specification Instruction Manual	ME3834
38	ELECYLINDER Rod Type Double Guide Specification Instruction Manual	ME3835





2.1.3 How to Read Model Nameplate



INTELLIGENT
ACTUATOR ==
ACIGATOR =



How to Read Model Number 2.1.4



	<u> </u>	<u> - swr</u>	<u>- E</u>	NG	
				ENG : Screens are displ	0,
<model number=""> TB-02 :Standard type TB-02D :With deadman switch type (left side)</model>			ide)		ody only) · / ELECYLINDER Cable r Cable and Conversion Cable r Cable, Conversion Cable and Position
	Set model code for main unit	+ cables		Model code for enclosed cable	Remark
ľ	TP 02 S	C			Standard type (with no dead man's switch) stop switch

Set model code for main unit + cables			Model code for enclosed cable	Remark
	TB-02-SC		For CON : CB-TB1-C002 For SEL : CB-TB1-X002 + CB-SEL-SJS002	Standard type (with no dead man's switch) stop switch portion in gray
CON Cable/ SEL Cable	TB-02-SC-SWR			Standard type (with no dead man's switch) stop switch portion in red
Equipped Type	TB-02D-SC			Dead man's switch type (left) stop switch portion in gray
	TB-02D-SC-SWR			Dead man's switch type (left) stop switch portion in red
CON-Dedicated	TB-02-C		For CON : CB-TB1-C002	Standard type (with no dead man's switch) stop switch portion in gray
Type Cable for SEL	TB-02-C-SWR			Standard type (with no dead man's switch) stop switch portion in red
(CB-TB1-X002) is	TB-02D-C			Dead man's switch type (left) stop switch portion in gray
also available to connect	TB-02D-C-SWR			Dead man's switch type (left) stop switch portion in red
SEL-Dedicated Type	TB-02-S		For SEL :CB-TB1-X002 + CB-SEL-SJS002 (Note 1) XSEL-J/JX Type not available to connect	Standard type (with no dead man's switch) stop switch portion in gray
Cable for CON	TB-02-S-SWR			Standard type (with no dead man's switch) stop switch portion in red
(CB-TB1-C002) is	TB-02D-S			Dead man's switch type (left) stop switch portion in gray
also available to connect	TB-02D-S-SWR			Dead man's switch type (left) stop switch portion in red

(Note) Language option can be indicated in the last digit of the unit model code. (Displayed in Japanese when no indication) 1) Screens are displayed in English: -ENG 2) Screens are displayed in Chinese: -CHI

Model code for main unit itself		Model code for enclosed cable	Remark
	TB-02-SCN	With no enclosed cable	Standard type (with no dead man's switch) stop switch portion in gray
CON/SEL Common	TB-02-SCN-SWR		Standard type (with no dead man's switch) stop switch portion in red
(Single) Type	TB-02D-SCN		Dead man's switch type (left) stop switch portion in gray
	TB-02D-SCN-SWR		Dead man's switch type (left) stop switch portion in red

Model code for cable itself		Remark
	CB-TB1-C002	For Position Controller / ELECYLINDER connection
	CB-TB1-X002	For Program Controller connection (XSEL-J/JX Type excluded)
Separately sold cable	CB-SEL-SJS002	For ASEL, PSEL, SSEL, MSEL, RSEL and XSEL2 Connection (used together with CB-TB1-X002)
Gabio	CB-TB1-XJ005	For XSEL-J/JX connection
	CB-TB1-GC002	For positioner controller TP adapter connection (to comply with Safety Categories)

Option model code			Remark	
Strap	STR-1			
Grip Belt	GRP-1		Do not assemble during preparation	
Spiral Cord	SIC-1		Connect the stylus pen on the main unit in order to avoid loosing or dropping it	
Maintenance ment and			Damanlı	

Maintenan	ce part code	Remark
Touch Pen	TCH-TB02	





2.2 Specifications

2.2.1 Basic Specifications

Item	Specifications
Rated Voltage	DC24V±10% (Supplied from controller)
Operational Voltage Range	21.6 to 26.4V DC
Power Consumption	3.6W or less (150mA or less)
Insulation Resistance	Between GND and FG $500V$ DC $10M\Omega$
Ground	Functional grounding (by shield in connection cable to controller)
Display Colors	65536 colors (16-bit colors)
Backlight Type	White LED backlight
Backlight Life	15,000 hours
Touch Panel Display	7 inch TFT color WVGA(800x480)
Touch Detection Type	4-wire resistive type
Touch Panel Life	1 million times
External Memory	SD/SDHC memory card ^(Note 1) interface installed (1G to 32G) (Toshiba-made recommended)
Cable Length	5m (Standard), 10m (Maximum)
Wall-mounting Hook	Hook available to use with M8 hex socket head cap screw
Touch Pen (Accessory)	φ4.5×102mm
Languages	Japanese/English/Chinese
Touch Sound	ON/OFF Volume Settable in 3 steps, S, M, and L
Data Storage	Applicable to have data saved to and read from external Secure Digital memory card (Position data, program, parameter, symbol, global data)
Display Adjustment	Brightness adjustable for contrast and backlight
Clock Setting	Clock setting available with real time clock (Backup held with CR2032 button battery)
Communication Standard	Based on RS232C
Communication Speed	9,600bps/19,200bps/38,400bps/57,600bps/115,200bps/230,400bps
Protocol	Dedicated format
Connector	D sub 25 pin
Duration from the power being off to turned on	More than 2 seconds
Cooling Method	Natural air-cooling
Size	TB-02 : 155 mm (H) × 190 mm (W) × 25 [45.1] mm (D) TB-02D : 155 mm (H) × 190 mm (W) × 55 [75.1] mm (D) Stop switch included in []





Item		Specifications
Mass		TB-02 : 470g approx. (Main Body) + 330g approx. (Cable 5m) TB-02D : 600g approx. (Main body) + 330g approx. (Cable 5m)
Note 1	Sec	ure Digital memory card is a registered trademark for SD-3C, LLC and SDA.

2.2.2 Environmental Specifications

Item	Specifications
Ambient Operating Temperature	0 to 40°C
Ambient Operating Humidity	85%RH or less (non-condensing)
Ambient Storage Temperature	-20 to 70°C
Ambient Storage Humidity	85%RH or less (non-condensing)
Altitude	1000m or below above sea level
Environment	Environment with no corrosive or flammable gas Avoid use in places with dust or in places where oil mist or cutting fluid splashes.
Shock Resistance	Frequency 10 to 57Hz / Swing width: 0.035mm (Continued), 0.075mm (Continued) Frequency 57 to 150Hz / Acceleration: 4.9m/s ² (Continued), 9.8m/s ² (Continued) XYZ Each direction Sweep time: 10 min. Number of sweep: 10 times
Pollution Degree	II
Protection Class	IP20
Protection Function against Electric Shock	III



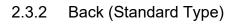
- 2.3 Explanation of Each Part
- 2.3.1 Front (Standard Type, Dead Man's Switch Type) 1) EMERGENCY STOP Switch (Gray or Red) 2) Display and Touch Panel Parts 3) Standard Cable Length (5m)
- EMERGENCY STOP Switch Press it to stop the operation. To cancel, turn it in the direction of arrow.
- 2) Display and Touch Panel Parts

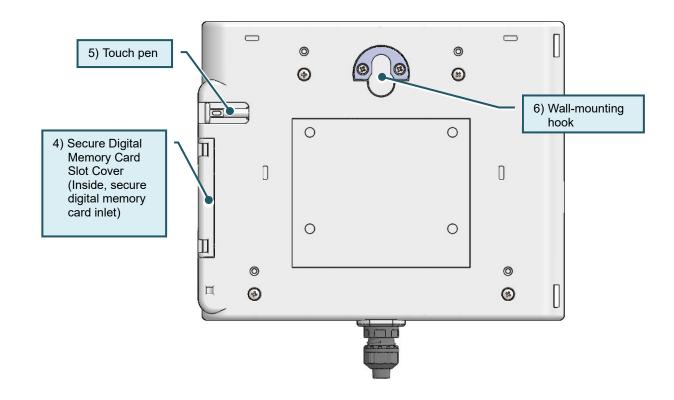
It consists of TFT color LCD and touch panel. It is used to edit setting of each value and to display contents of teaching. Touch the touch panel with a finger or a stylus pen to make operation.

- *1 In a use of the LCD display for a long term, the brightness may drop. To maximize the life of the LCD display, remove it from the controller when it is not in use. Set the turn-off time in the environment setting so it automatically turns OFF.
- *2 This touch panel is of analog resistance membrane type, so do not touch two or more locations on the screen at the same time. If two or more locations are touched at the same time, the centers of all touched locations may respond and trigger multiple operations.
- *3 When operating the touch panel, do not apply a force exceeding 0.5 N. If any greater force is applied, the touch panel may be damaged.
- *4 The life of touch panel is approx. 1 million touches at the same location. (Assuming a use environment of 25°C)
- 3) Standard Cable Length

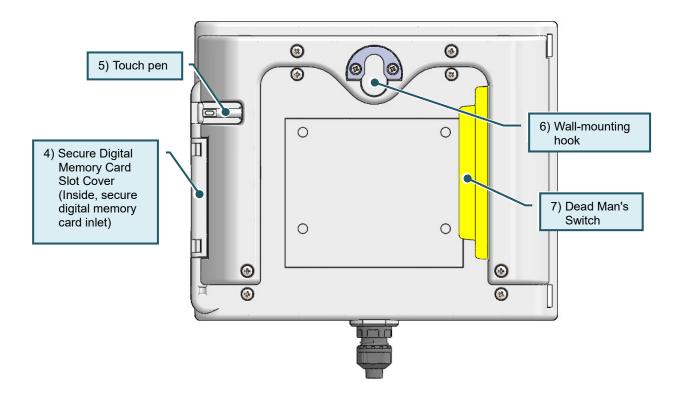
5m cable is connected to the main unit.







2.3.3 Back (Dead Man's Switch Type)







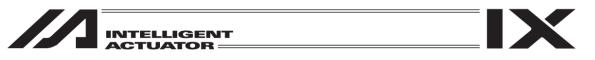
- Secure digital memory card slot cover There is an inlet for Secure Digital memory card inside the cover. Refer to [2.4 How to Set in/out Secure Digital Memory Card] to set in or out a Secure Digital memory card.
- 5) Touch pen This touch pen is used to touch the touch-panel operation display screen.
 - This touch pen is used to touch the touch-panel operation display screen.
- 6) Wall-mounting hook This hook is used to mount the touch panel on a wall. The hook is available to hang with an M8 hex socket head cap screw.
- 7) Dead man's Switch (It is not equipped on the standard type.) The dead man's switch has three conditions corresponding to three levels. The meaning of ON/OFF in each condition is explained below.

Level 1	Switch OFF	The hand is off the switch, or the switch is pressed with a very small force.
Level 2	Switch ON	The switch is pressed with an appropriate force.
Level 3	Switch OFF	The switch is pressed with a strong force.

When the switch is ON, the servo can be turned ON.

When the switch is OFF, the drive source is cut off and the servo remains OFF.

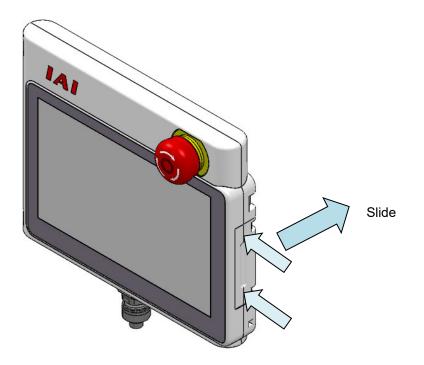
Even when the switch is OFF, operation is still possible in modes where the servo need not be ON (such as in the edit mode).



2.4 How to Set in/out Secure Digital Memory Card

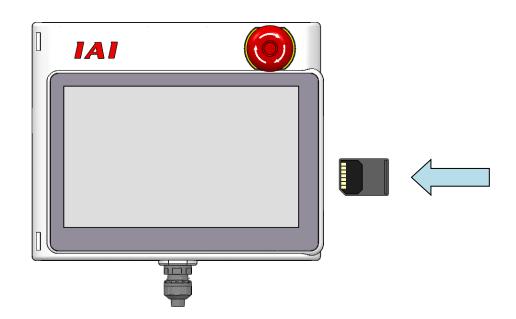
2.4.1 How to Take off Secure Digital Memory Card Cover

Slide it towards the back while pushing it against the unit.



2.4.2 How to Insert Secure Digital Memory Card

Face the electrode side of a Secure Digital Memory Card to the front and push it in until it makes a click sound.

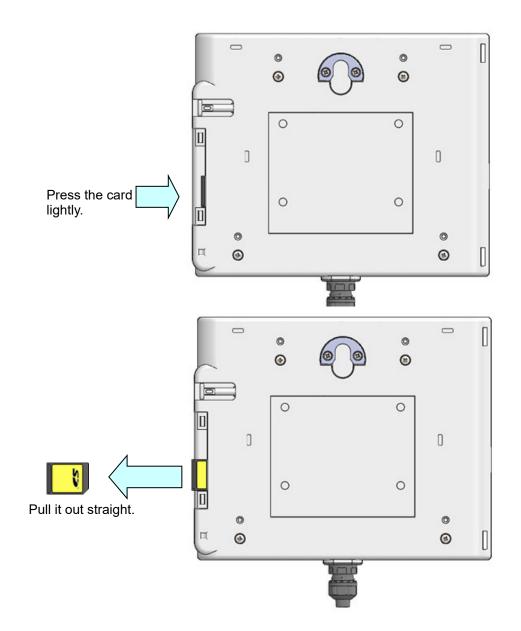






2.4.3 How to Take out Secure Digital Memory Card

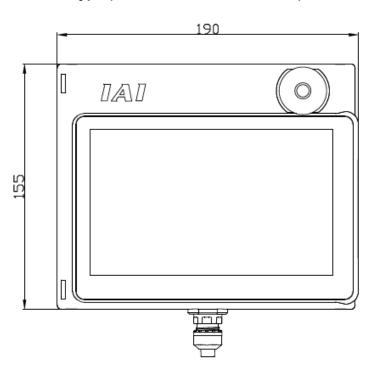
Press the Secure Digital Memory Card lightly and release and the card pops out a little. Pull it out straight.

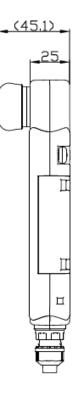




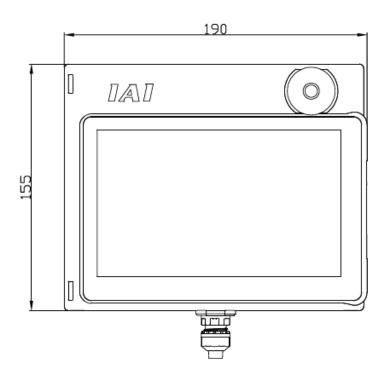
2.5 External Dimensions

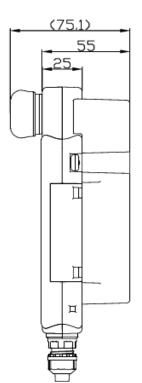
Standard type (with no dead man's switch)





Dead man's switch type









2.6 Life of Touch Panel LCD

The product life of the touch panel is 1,000,000 times of touches and that of the LCD backlight is 15,000 hours. (Ambient temperature at 25°C)

2.7 Built-in Battery (Life of Battery and Replacement of Battery)

With a button battery built-in the main body, the data set in the environment setting window, such as time and language settings and touch sound setting, is retained. The data should get reset to the default setting once the battery gets flat.

The nominal life of the button battery CR2032 that the manufacturer states is approximately five years (Ambient temperature at 25°C).

You will get notified with a message "AD7 RTC Backup Battery Voltage Drop" ("327 Calendar Feature Error" when RSEL or XSEL2 connected) once the voltage of the battery gets low. As the battery cannot be replaced at a customer's site, make a request to IAI.

2.8 Optional Items

IAI Products

- Grip Belt (GRP-1) for support to hold on left hand
- Spiral Cord (SIC-1) for stylus pen connection
- Touch Pen (* enclosed to main unit, for cases of loss and malfunction)
- Strap (STR-1)



Grip Belt

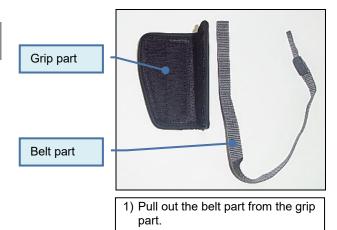


Strap





2.8.1 How to Attach Grip Belt





2) Attach the belt at the slit on the left bottom of the main unit.

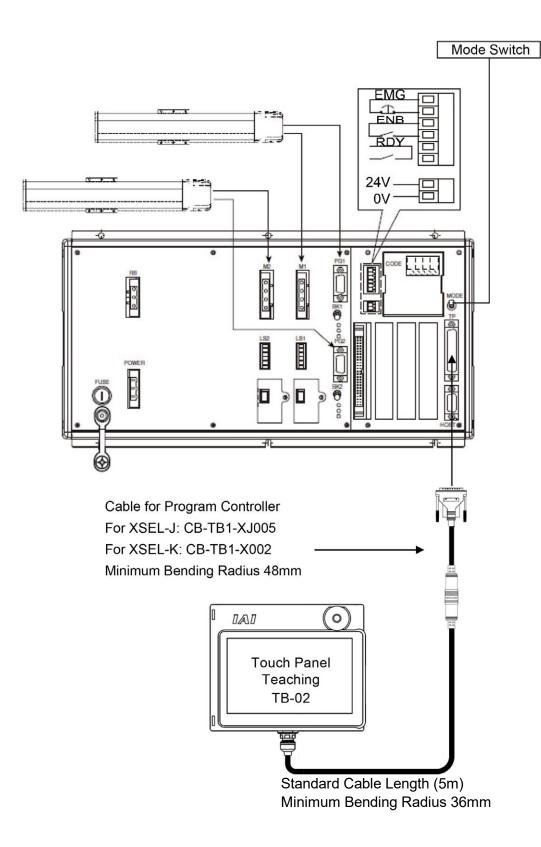




4) Attach the belt at the slit on the left top of the main unit and attach the belt to the grip part with the fabric hook-and-loop fastener.



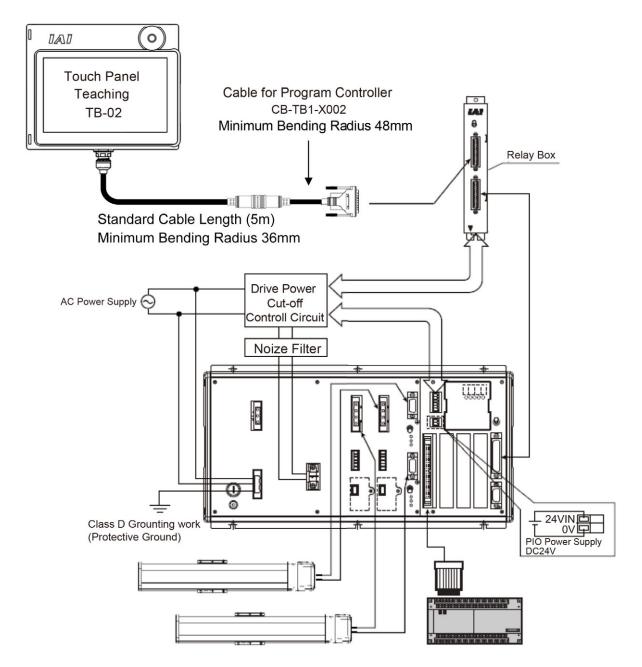
- 3. Connection with the Controller
- 3.1 XSEL-J/K Type Controller





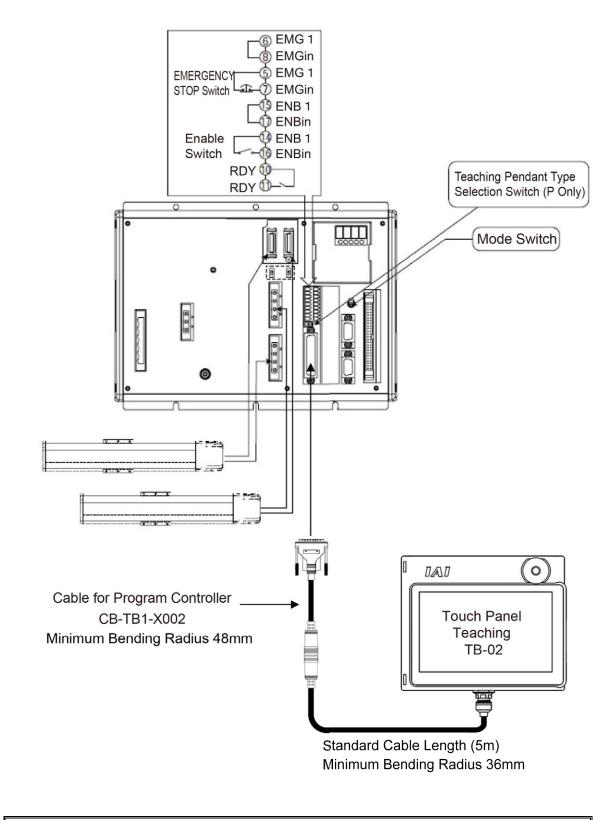


3.2 XSEL-KT/KET Type Controller





3.3 XSEL-P/Q/R/S/RA/SA Type Controller

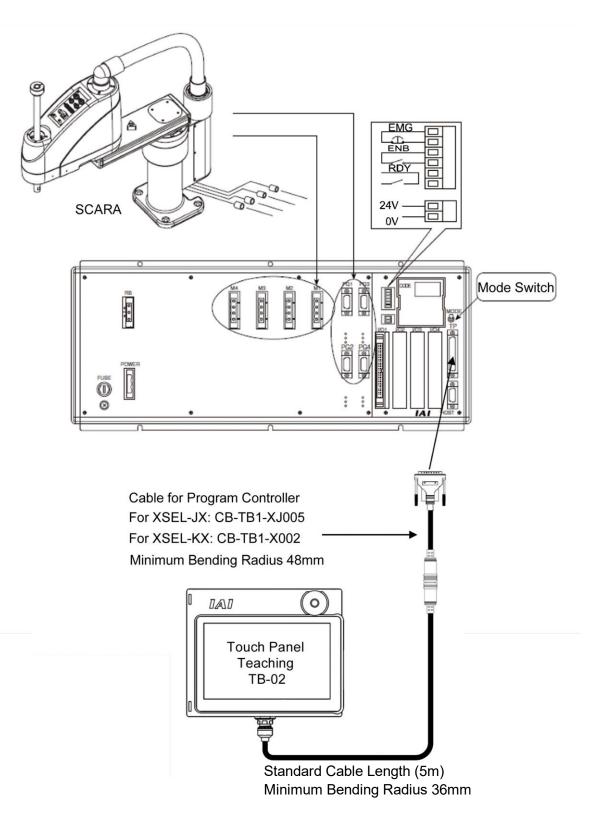


A Caution: Set the teaching pendant type selection switch of the XSEL-P type to the left.



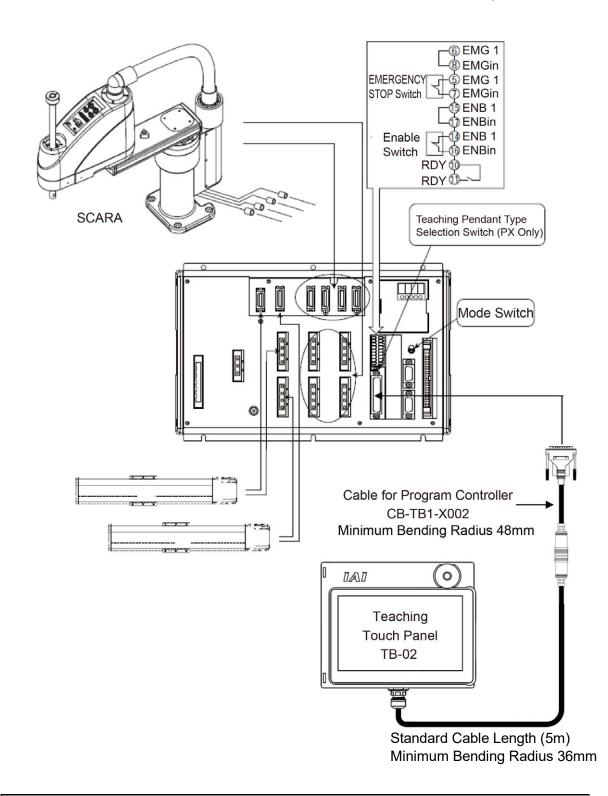
IX

3.4 XSEL-JX/KX Type Controller





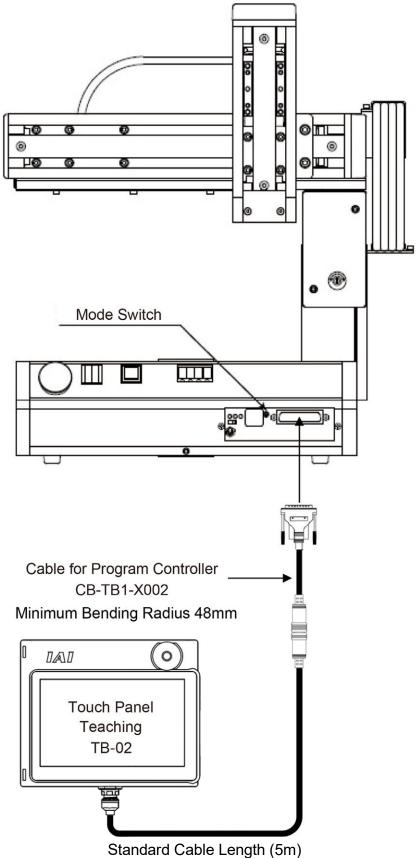
3.5 XSEL-PX/QX/RX/SX/RXD/SXD/RAX/SAX/RAXD/SAXD Type Controller



Caution: Set the teaching pendant type selection switch of the XSEL-PX type to the left.



3.6 TT/TTA Type Controller

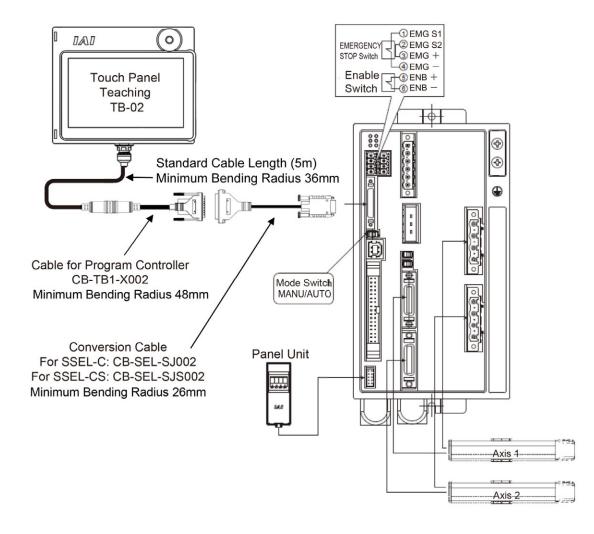


Minimum Bending Radius 36mm



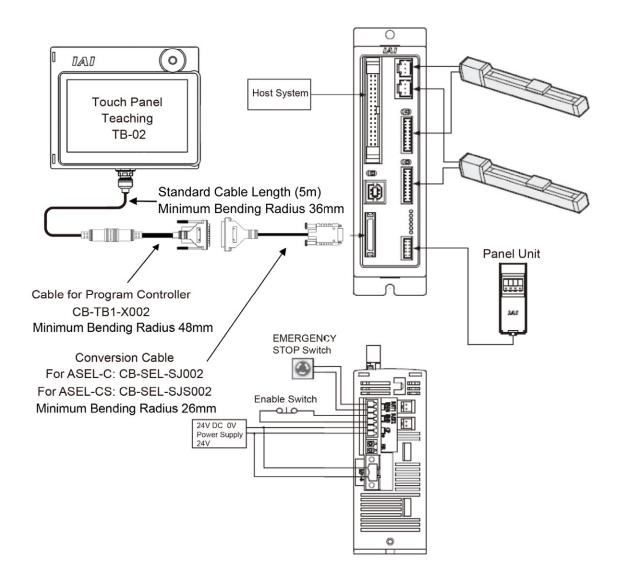


3.7 SSEL Type Controller



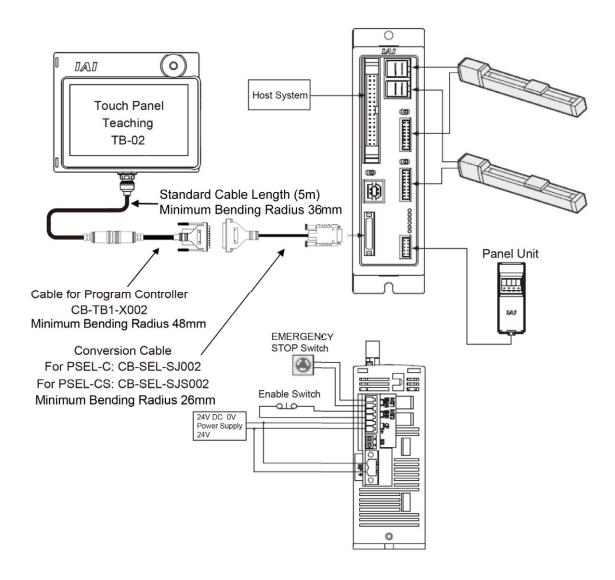


3.8 ASEL Type Controller





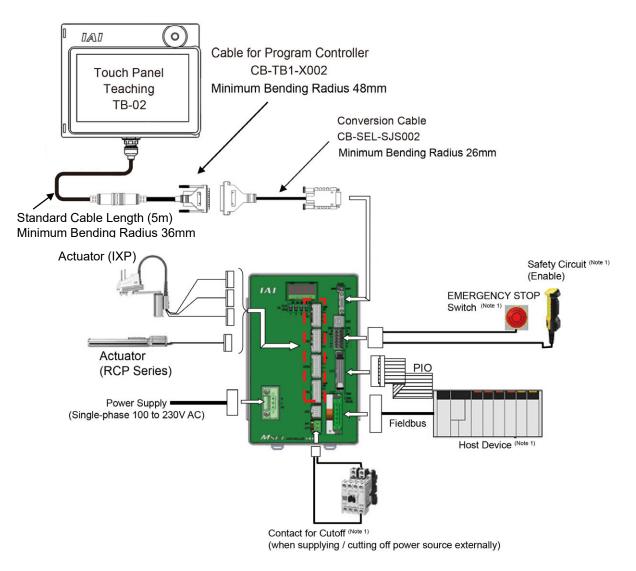
3.9 PSEL Type Controller







3.10 MSEL Type Controller

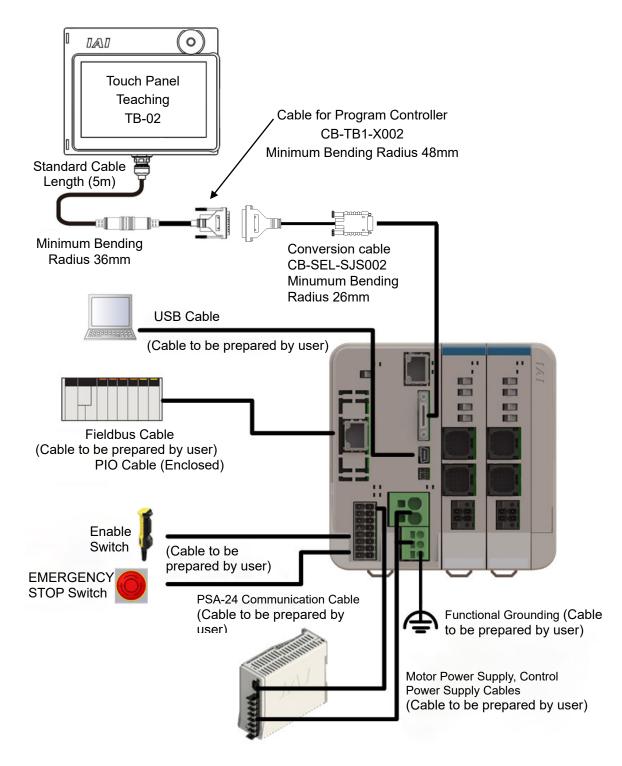


Note 1 Please prepare separately





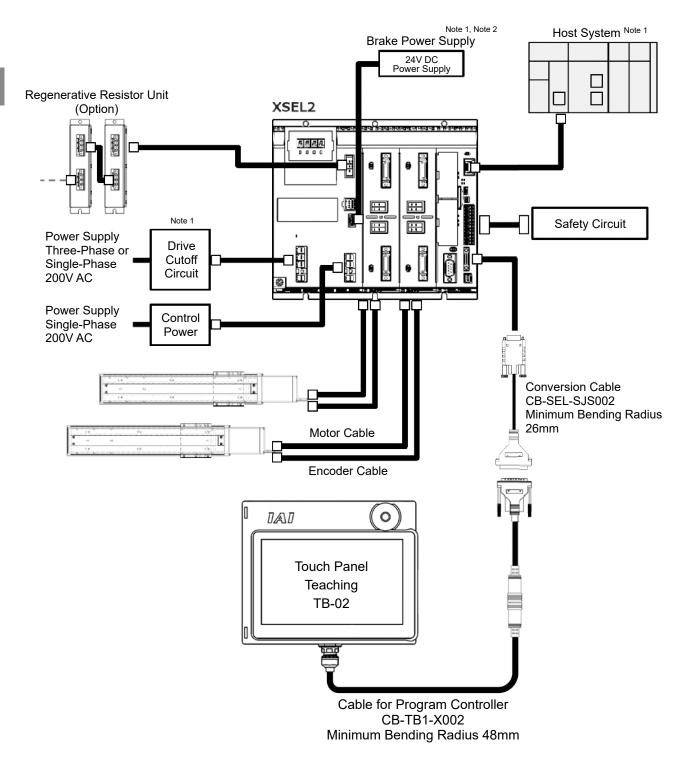
3.11 RSEL Type Controller







3.12 XSEL2-T Type Controller

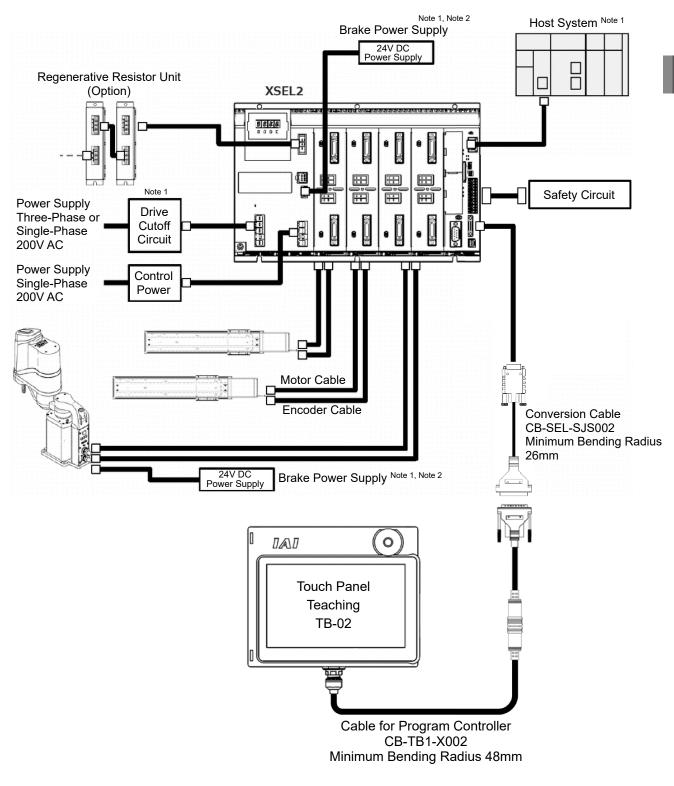


- Note 1 Please prepare separately.
- Note 2 For an actuator equipped with a brake, it is necessary to supply +24V power for brake to the controller.





3.13 XSEL2-TX Type Controller



- Note 1 Please prepare separately.
- Note 2 For an actuator equipped with a brake, it is necessary to supply +24V power for brake to the controller.

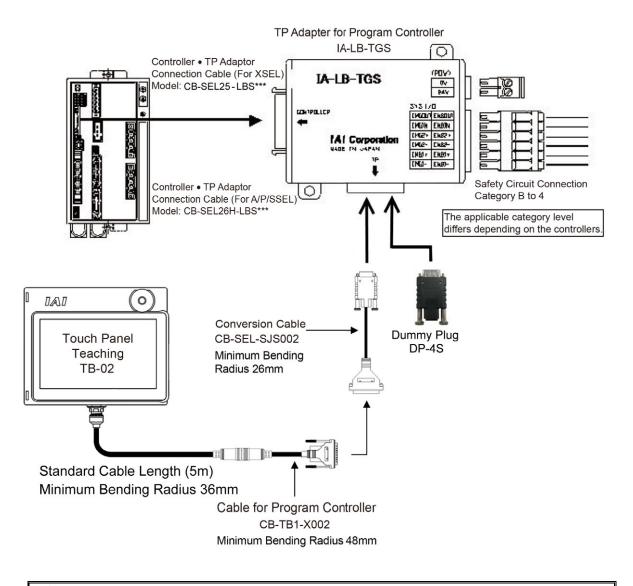




3.14 Safety Category Compliant (Connection to the TP adapter)

It is capable to comply with Safety Categories by connecting TB-02 and TP adapter (IA-LB-TGS) for program controller and establishing wiring for safety circuit.

* Safety category applicable type controllers can comply with Safety Categories also by using the system IO terminals, not using TP adapter. (The applicable safety category performance level differs depending on the controllers.)



Caution: When TB-02 is not to be connected, make sure to put the dummy plug DP-4S on the TP adapter for program controller.



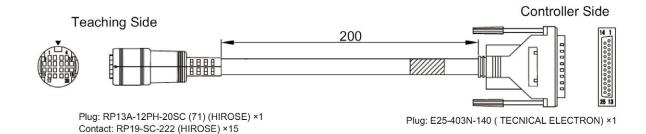


3.15 Connection Cable

The cables stated below are required for connection to the program controllers.

3.15.1 Program Controller Connection Cable (XSEL-J/JX Excluded)

Model Code	CB-TB1-X002	
Name	Program Controller Connection Cable	
	(Other than XSEL-J/JX types)	
Connector Model on Controller Side	E25-403N-140 (Manufactured by TECNICAL ELECTRON)	
Connector Model on TB-02 Unit Side	RP13A-12PH-20SC (71) (Manufactured by HIROSE)	
Minimum Cable Bending Radius	48mm	



For ASEL, PSEL, SSEL, MSEL, RSEL and XSEL2, the following conversion cable is also necessary.

Model Code	CB-SEL-SJS002
Name	Connector Conversion Cable (ASEL, PSEL, SSEL, MSEL, RSEL and XSEL2)
Connector Model on Controller Side	HDR-E26MSG+ (Honda Tsushin Kogyo)
Connector Model on TB-02 Unit Side	XM3D-2521 (Omron)
Minimum Cable Bending Radius	26mm



Male Connector: HDR-E26MSG+ (Honda Tsushin Kogyo) Cable Case : HDR-E26LPH (Honda Tsushin Kogyo)

Socket : XM3D-2521 (Omron) Hood : XM2S-2511 (Omron) Fixing Bracket : XM2Z-001 (Omron)

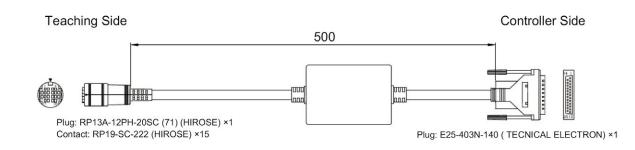




3.15.2 XSEL-J/JX Dedicated Cable

The cables stated below are required for connection to XSEL-J/JX.

Model Code	CB-TB1-XJ005
Name	Program Controller Connection Cable (for XSEL-J/JX types)
Connector Model on Controller Side	E25-403N-140 (Manufactured by TECNICAL ELECTRON)
Connector Model on TB-02 Unit Side	RP13A-12PH-20SC (71) (Manufactured by HIROSE)
Minimum Cable Bending Radius	48mm

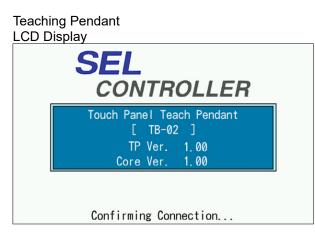






3.16 Teaching Pendant Connection Procedure

- 1) Connect actuators, I/O 24VDC power source, and system I/O to the controller first. Then connect the cable connector of the teaching pendant to the controller's teaching connector when the main power supply of the controller is OFF.
- 2) After you flip the mode switch to MANU side, supply power to the controller.



Displays the version of the teaching pendant and moves to the following main menu screen.

Main Menu Screen

(🔶 Menu	
Edit	File
Play	
Monitor	Environment Set
Controller	Next
Edit Play M	Nonitor Control ->

This will be the basic window for all operations.

The following message may appear on some controllers such as XSEL-K Controller when the power is turned on.

Either touch Return button to show the main menu window, and operations that do not require servo-on in the condition of switched off can be performed.

÷	Message	
	Mess	age No. BE1
	TP Dea	dman SW OFF
	Back	Inquiry





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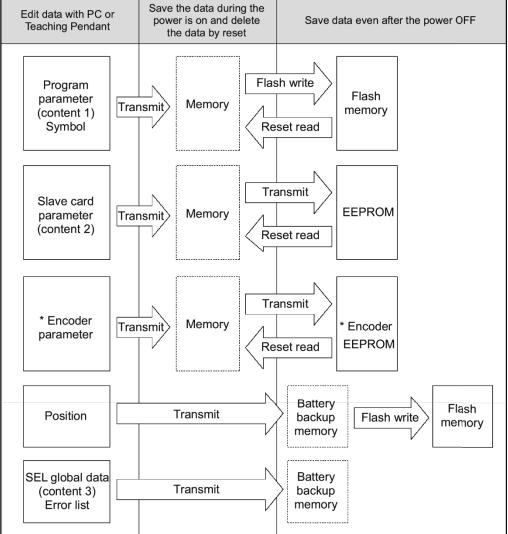
4. How to Save Data

Since the Controller adopts flash memory, there is a storage area by battery backup and a storage area by flash memory according to the data to be stored.

In addition, even if data is transferred from the PC software or Teaching Pendant, the data is only to be written in memory as shown in the chart below and the data is erased by power-off or controller reset.

To ensure data storage, write the data you want to store in flash memory.

4.1 Set-up at Shipment with System Memory Backup Battery



(Other parameter No. 20=2 (System memory backup battery equipped))

* Encoder parameters are not stored within the controller but in the EEPROM of the actuator's encoder itself. They are read into the controller at power-on or software-reset time.





Since the program, parameter, and symbol will be read from flash memory at restart time, the data in memory becomes the original data before editing unless the data is written in flash memory. The controller always operates according to the data in memory (within the dotted box) excluding parameters.

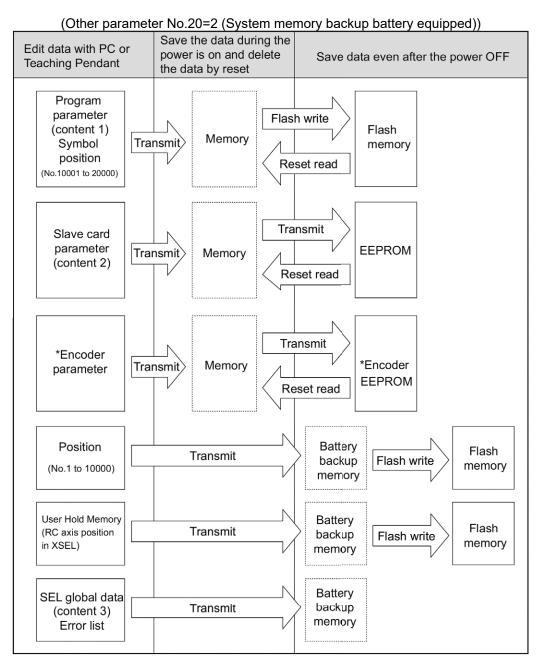
Content 1: Parameters excluding content 2 below and encoder parameter

Content 2: Driver card, IO slot card (electric power type card) parameter (XSEL-J/K, JX/KX, TT/TTA) : IO slot card (electric power type card) parameter (XSEL-P/Q, PX/QX, SSEL, ASEL, PSEL)

Content 3: Flag, Variable, and String



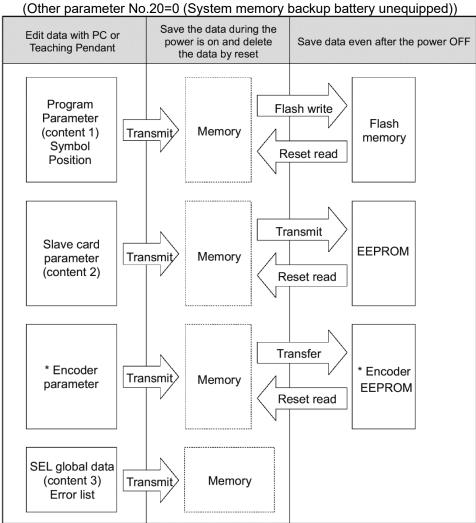
For the XSEL-P/Q and PX/QX controllers with the gateway function, the position Nos. 10001 to 20000 data memory and user hold memory (RC axis position in XSEL) have been added.



* Encoder parameters are not stored within the controller but in the EEPROM of the actuator's encoder itself. They are read into the controller at power-on or software-reset time.



4.2 Set-up at Shipment without System Memory Backup Battery (Table Top Actuator TT, SSEL, ASEL, PSEL)

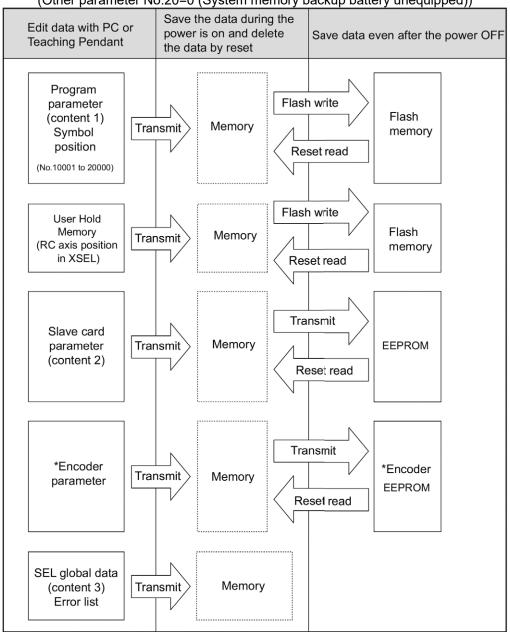


Since the program, parameter, symbol, and position will be read from flash memory at restart time, the data in memory becomes the original data before editing unless the data is written in flash memory. The controller always operates according to the data in memory (within the dotted box) excluding parameters.

ightharpoon Caution: SEL global data can't be saved without the backup battery.



For the XSEL-P/Q and PX/QX controllers with the gateway function, the position Nos. 10001 to 20000 data memory and user hold memory (RC axis position in XSEL) have been added. (Other parameter No.20=0 (System memory backup battery unequipped))



Since the program, parameter, symbol, and position will be read from flash memory at restart time, the data in memory becomes the original data before editing unless the data is written in flash memory. The controller always operates according to the data in memory (within the dotted box) excluding parameters.

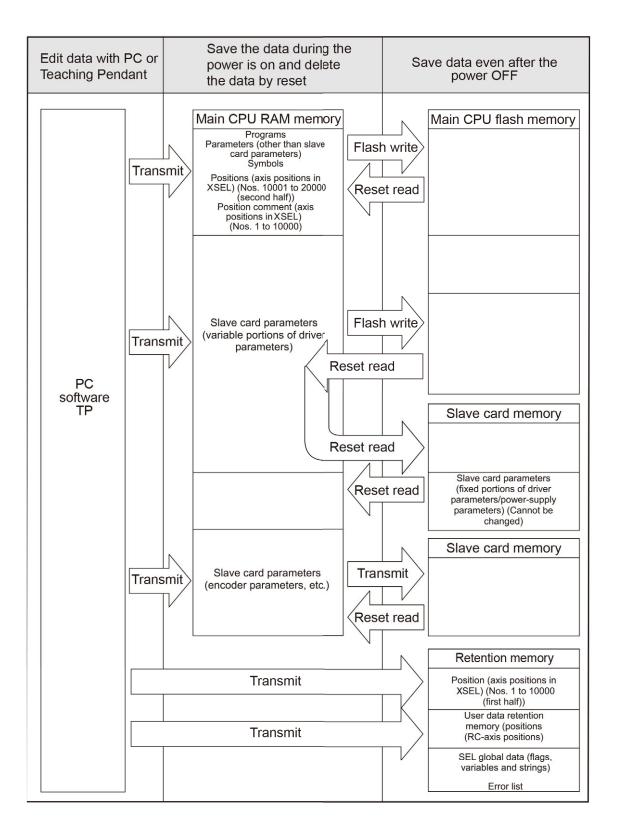
/ Caution: SEL global data can' t be saved without the backup battery.





4.3 XSEL-R/S/RX/SX/RXD/SXD

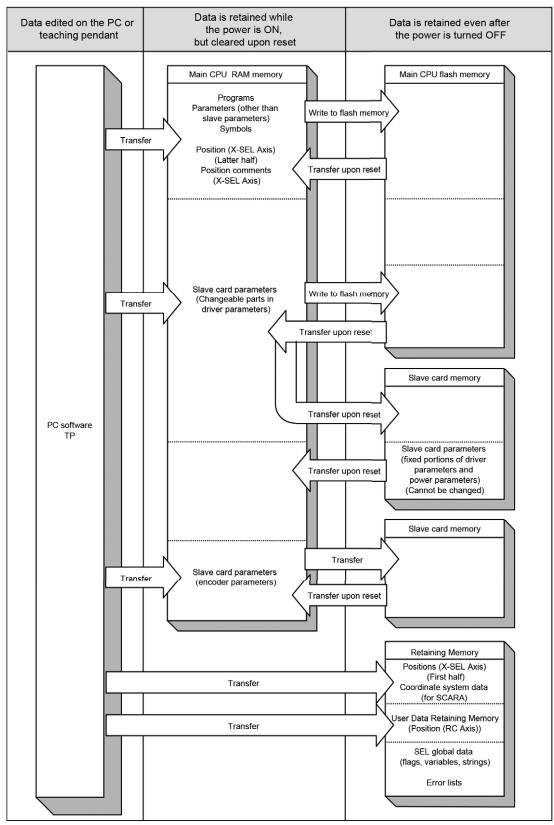
An example of 20,000 positions is given below.







4.4 XSEL-RA/SA/RAX/SAX/RAXD/SAXD

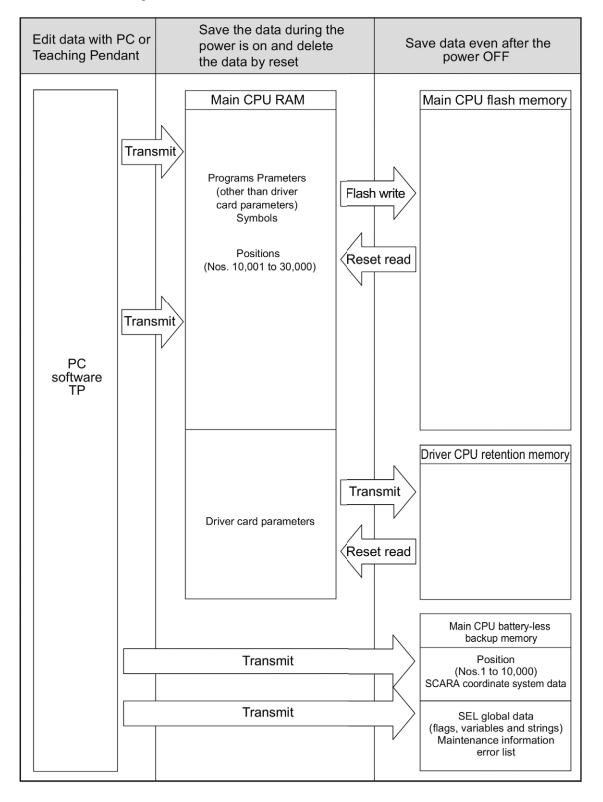






4.5 TTA, MSEL-PCX/PGX/PC/PG/PCF/PGF

Positions (No. 1 to 10000), SEL global data, error list, maintenance information and SCARA coordinate system data are stored in the battery-less backup memory (FRAM). It is not necessary to have a flash ROM writing.

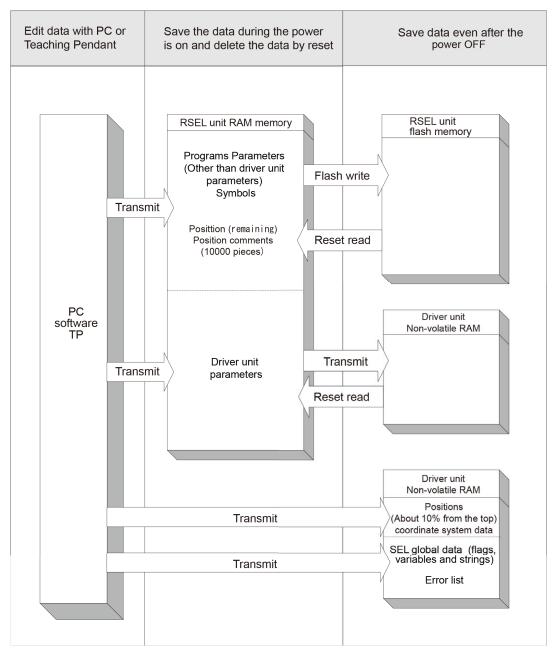






4.6 RSEL

The RSEL has a storage area by holding memory and a storage area by flash memory. In addition, even if data is transferred from the PC teaching software or Teaching Pendant, the data is only to be written in memory as shown in the chart below and the data is erased by power-off or controller reset. For important data, always write to the flash memory so that they will not be lost.



Since the programs, parameters and symbols are read from the flash memory at restart, the data in the temporary memory will remain the same as the original data before edit unless the edited data are written to the flash memory.

The controller always operates in accordance with the data in the main CPU memory (excluding the parameters).

Caution: The first 10% of the position data is stored in non-volatile RAM and the rest in flash memory. Comments for each position data can be used for up to 10,000 positions regardless of the position number, and are saved in flash memory.



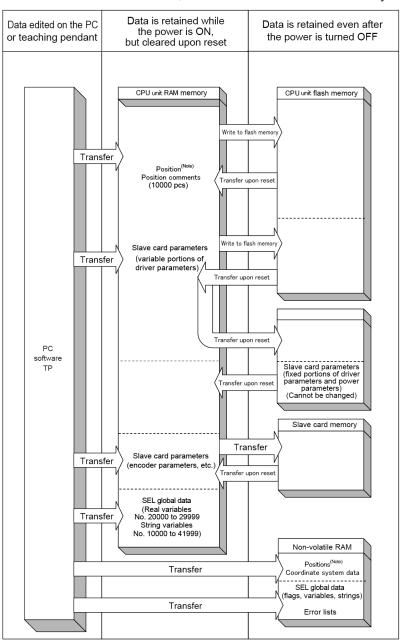


4.7 XSEL2-T/TX

In XSEL controller, there is a storage domain with saving memory and a storage domain with flash memory.

Also note that even if you transfer data to your controller via the PC software or teaching pendant, the data is only written to the temporary memories and will be cleared once the power is turned OFF or controller is reset, as shown below.

So that your important data is saved without fail, write the data to the flash memory.



Since programs, parameters and symbols are loaded from the flash memory upon restart, these data in the temporary memories will return to the conditions before editing unless written to the flash memory. The controller always operates according to the data in each temporary memory (excluding parameters).

Caution: No.1 to 5000 of the position data should be saved in the non-volatile RAM and the remaining in the flash memory. (No. 1 to 2500 in non-volatile RAM and remaining in the flash memory when there are two axis groups) Comment in each position data can be used in 10000 positions at maximum regardless of the position number and should be saved in the flash memory.





4.8 Caution

Cautions in data transfer and flash writing Never shut OFF the main power while the data is transmitting and writing into flash. Data may be lost and controller may be rendered inoperable.
Cautions concerning the increase in the number of positions (XSEL-P/Q, PX/QX controller) The number of position data items has been raised to 20,000 in the XSEL-P/Q and PX/QX controllers for the increased memory capacity (with gateway function). Take care with the following items.
* When the battery backup memory is used (Other Parameter No. 20 is set to "2"), the position data save domain is in the battery backup memory for the Position No. 1 to 10000, and in the main CPU flash ROM for the position No. 10001 to 20000. Accordingly, when the data is not written in the flash ROM and the power is turned OFF or the software reset is performed, the data items for the position No. 10001 to 20000 are deleted. After that, the next time the machine is turned ON, the data written in the flash ROM. Also, when the battery backup memory is not used (Other Parameter No. 20 is set to "2"), the data save domain for all data items for the Position No. 1 to 20000 is in the main CPU flash ROM. In this case, when the data is to be held, write the data also in the flash ROM.
Point to note when saving parameters to a file (RSEL system) The driver unit parameters are stored in the driver unit itself (unlike other parameters, they are not stored in the RSEL unit). The driver unit parameters will be read from the driver unit when the power is turned on or upon software reset. Therefore, if no driver unit is connected, the driver unit parameters will not be saved.
Point to note when transferring a parameter file to the controller (RSEL system) When a parameter file is transferred to the controller, the driver unit parameters will be transferred to the driver unit. Therefore, when transferring the driver unit parameters, use the same driver unit configuration as when the parameter file was saved.
About saving position data (RSEL system and XSEL2-T/TX controller) The storage area for position data is 10% non-volatile RAM from the beginning and flash memory for the rest.
Position data comments are stored in flash memory. Therefore, if the power is turned off or software reset is performed without writing to the flash ROM, 90% of the position data and the position data comment are erased, and the data from the previous flash ROM writing is read. If you want to keep the data, write to flash ROM.
About memory initialization (RSEL system and XSEL2-T/TX controller) As Position Data / Maintenance Information Data and SEL Global Data should not be initialized even if there is an error detected (error data should remain as it is), do not attempt to use the data as it is. In order to cancel the error, it is necessary to initialize the memory in the data that the error was detected.
For position data, write in the flash ROM together after initializing.
Memory initialization method Position data
: Main menu → [Controller] → [Memory initialization] → [Position data] • Coordinate System data
: Main menu → [Controller] → [Memory initialization] → [Coordinate System data] • SEL global data
: Main menu → [Controller] → [Memory initialization] → [Global variables] • Maintenance information data
: Main menu → [Monitor] → (Next) → [Maintenance information] → [Information initialization] * Can be initialized when error No.405 occurs



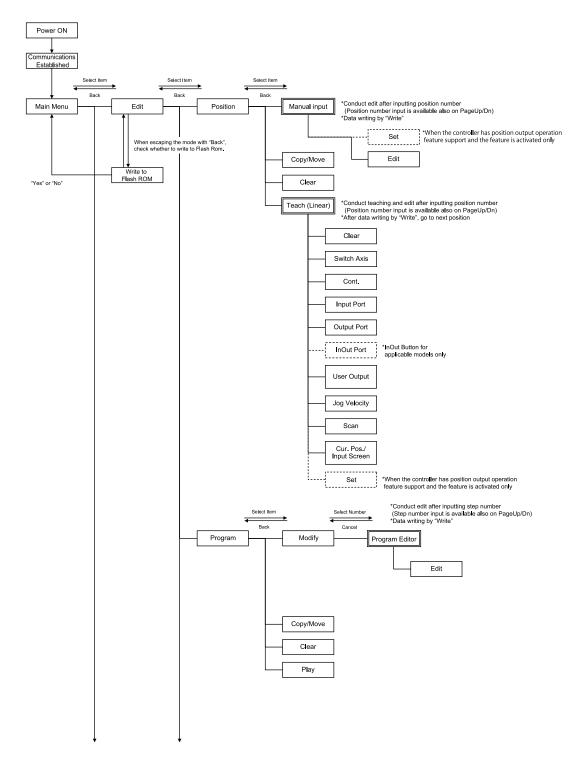


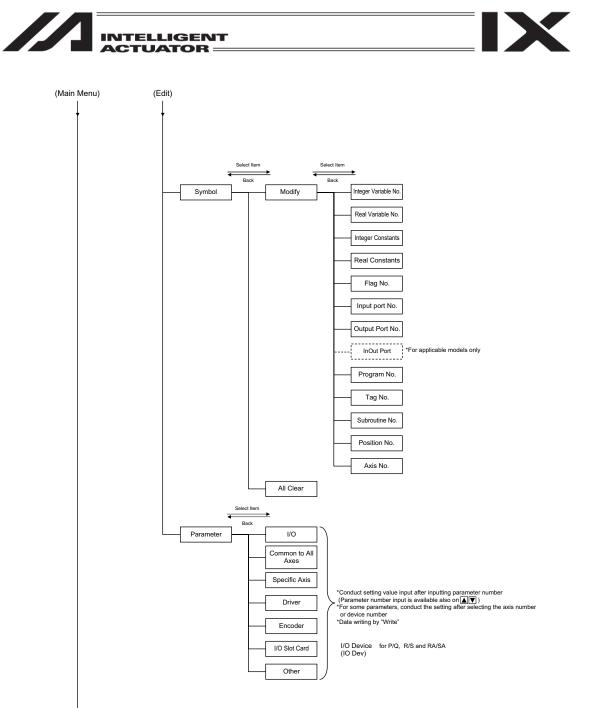




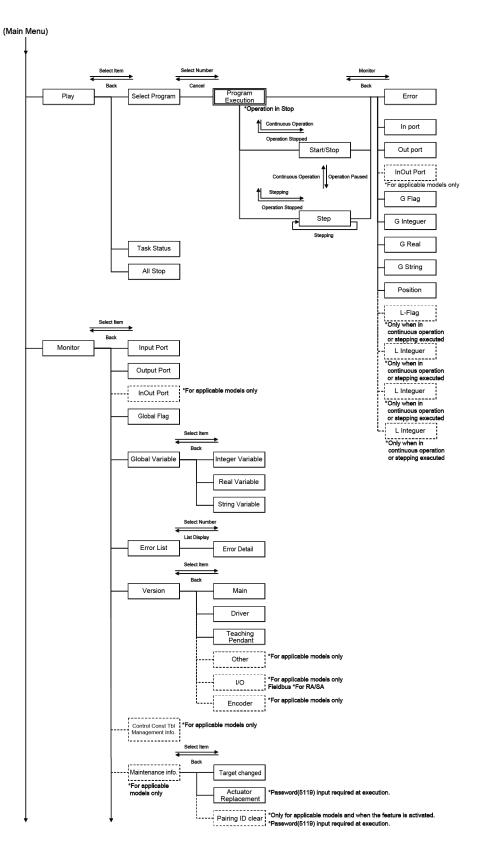
5. Mode Transition Diagram

5.1 XSEL-J/K/P/Q/R/S/RA/SA, TT, TTA Controller



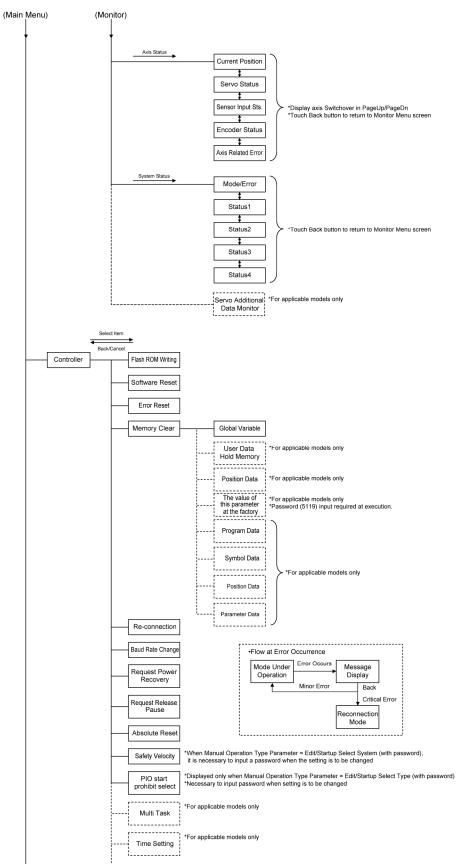












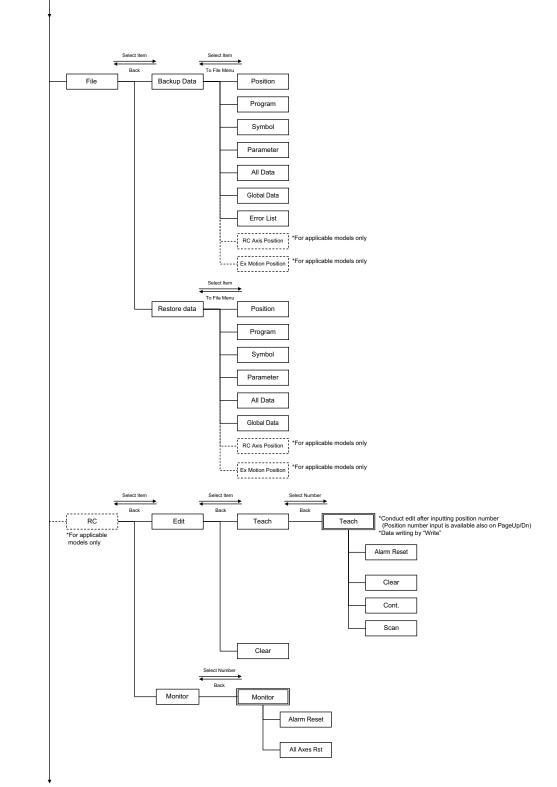
Pairing ID clear
 *Only for applicable models and when the feature is activated.
 *Password(5119) input required at execution.

ME0356-11A



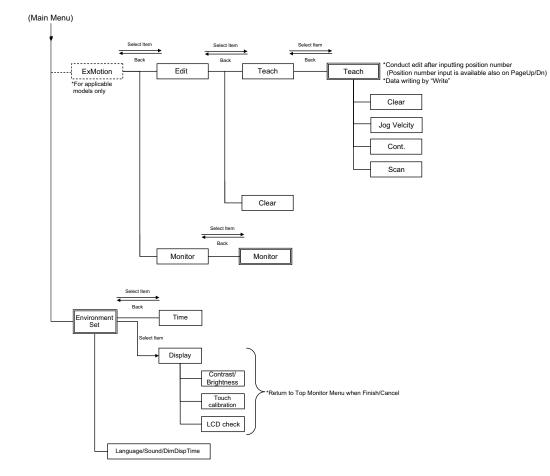


(Main Menu)





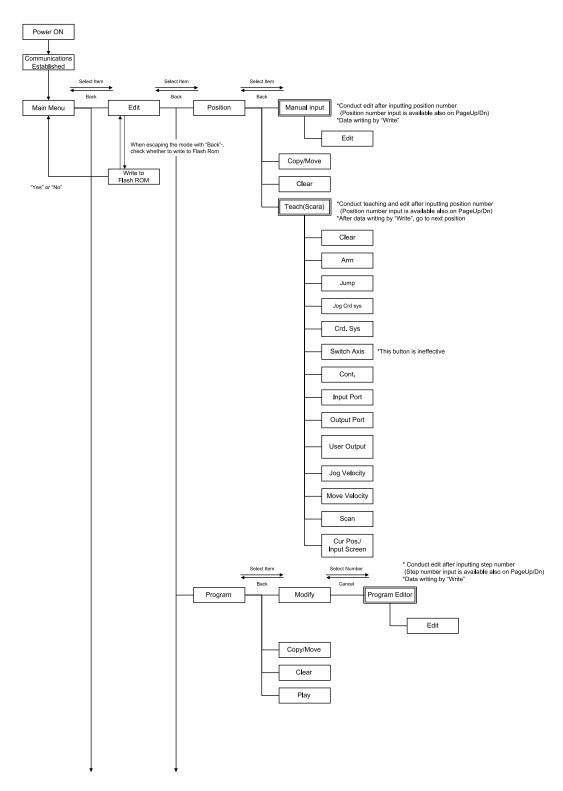


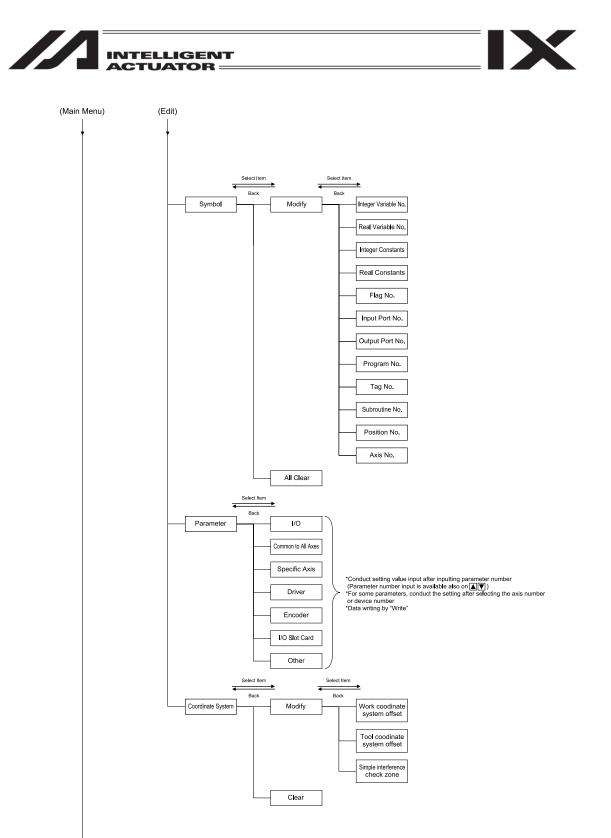




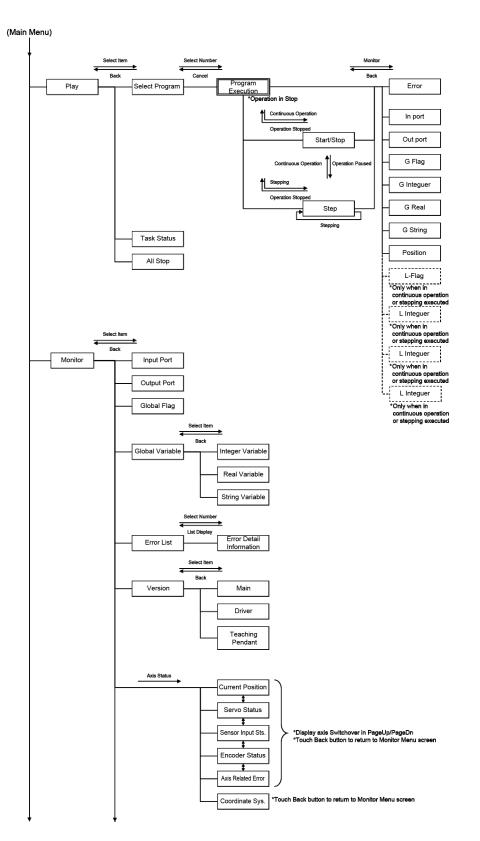


5.2 XSEL-JX/KX Controller



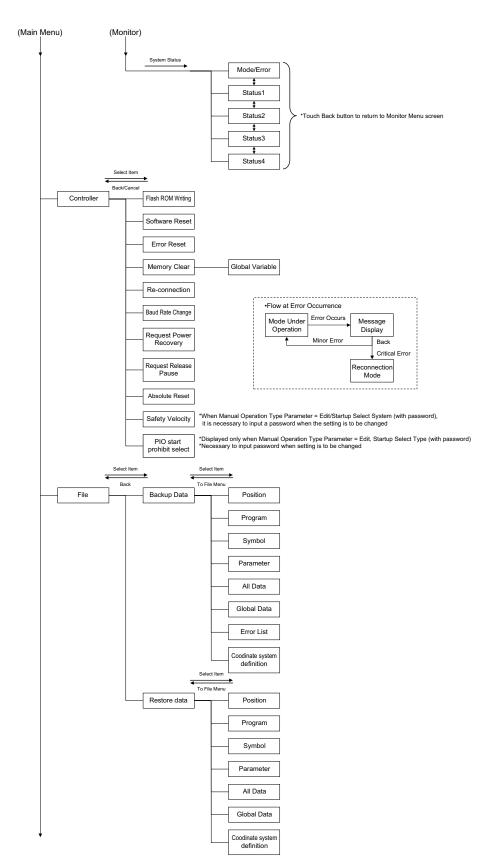




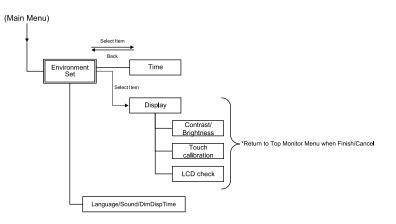










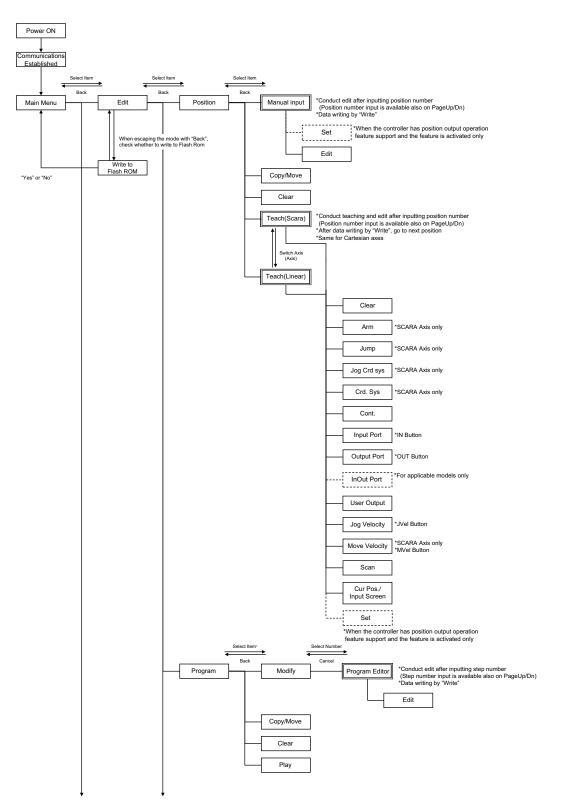


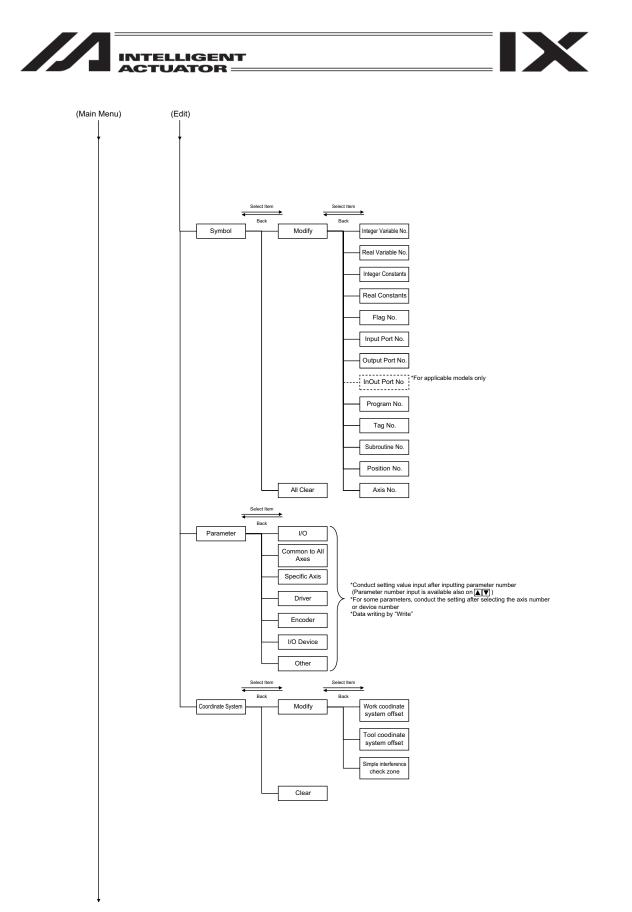
IX





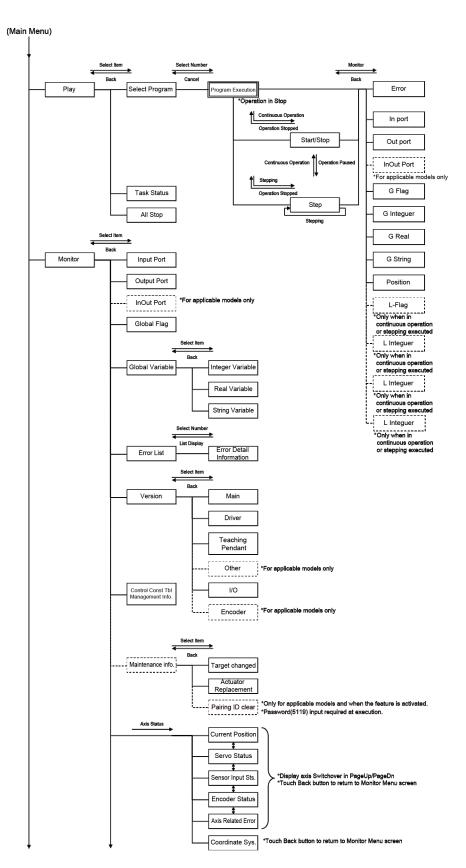
5.3 XSEL-PX/QX/RX/SX/RAX/SAX Controller

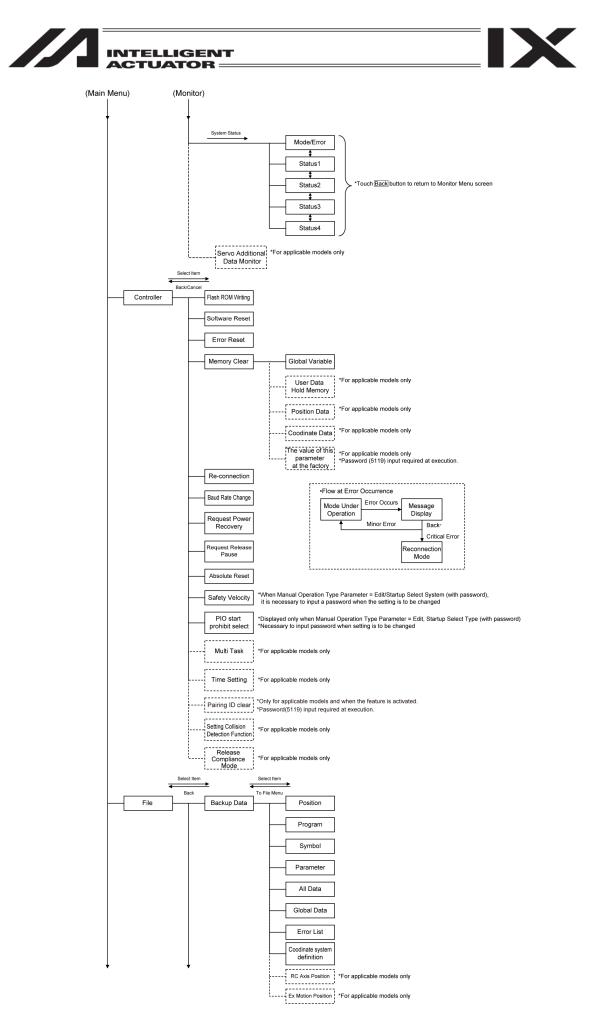


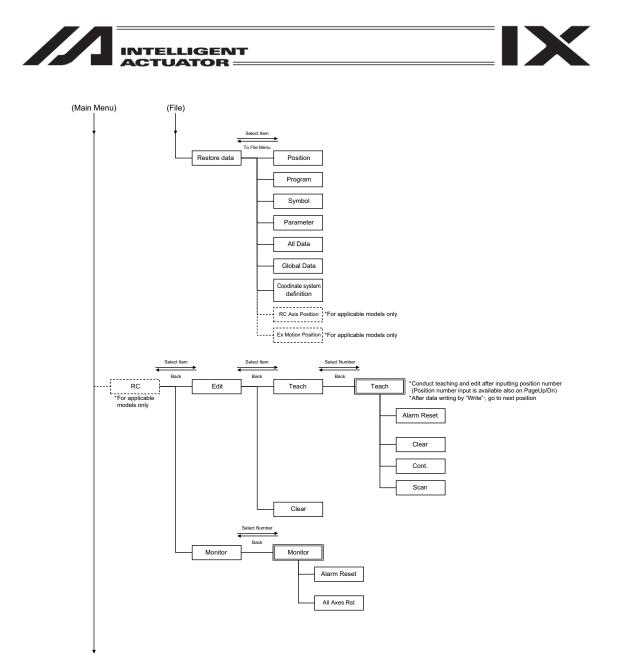








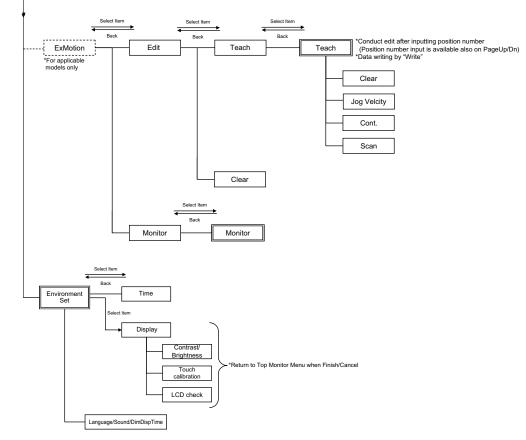








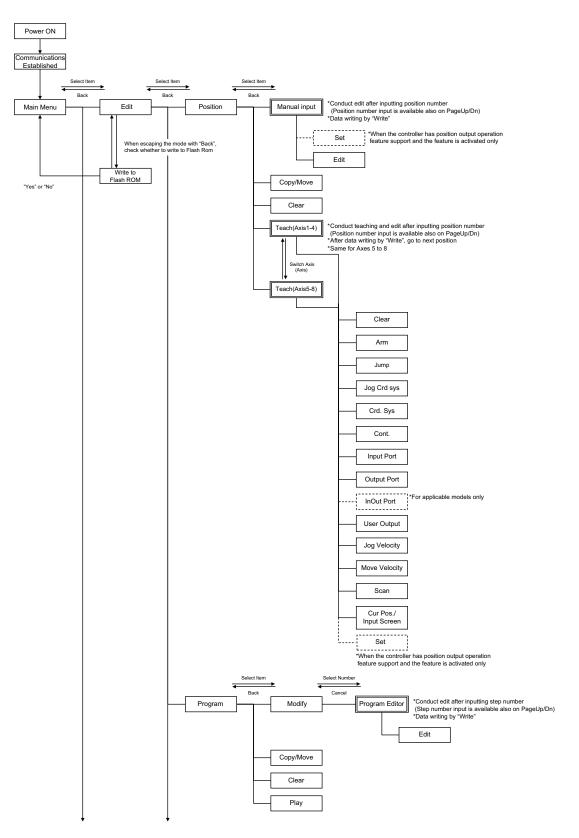
(Main Menu)

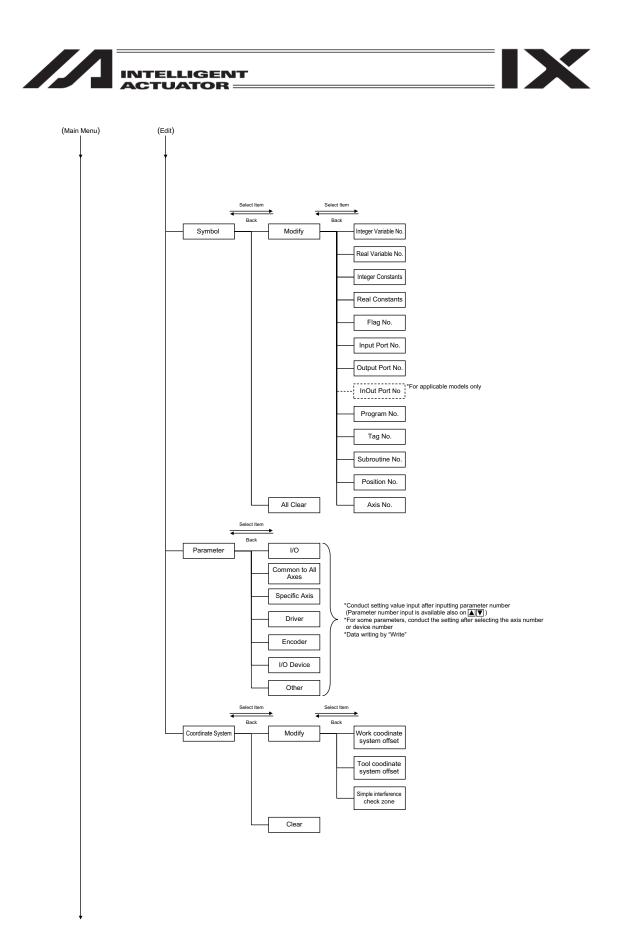






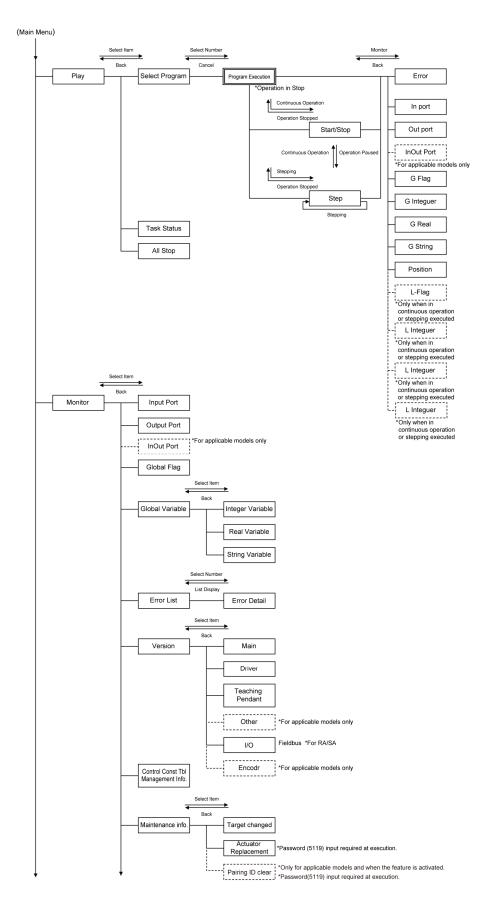
5.4 XSEL-RXD/SXD/RAXD/SAXD Controller

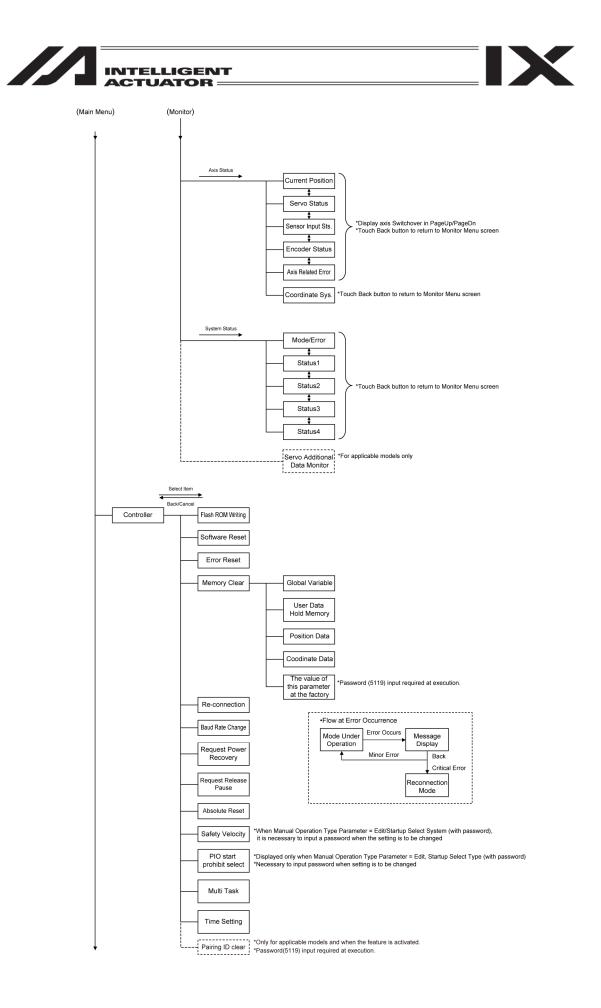






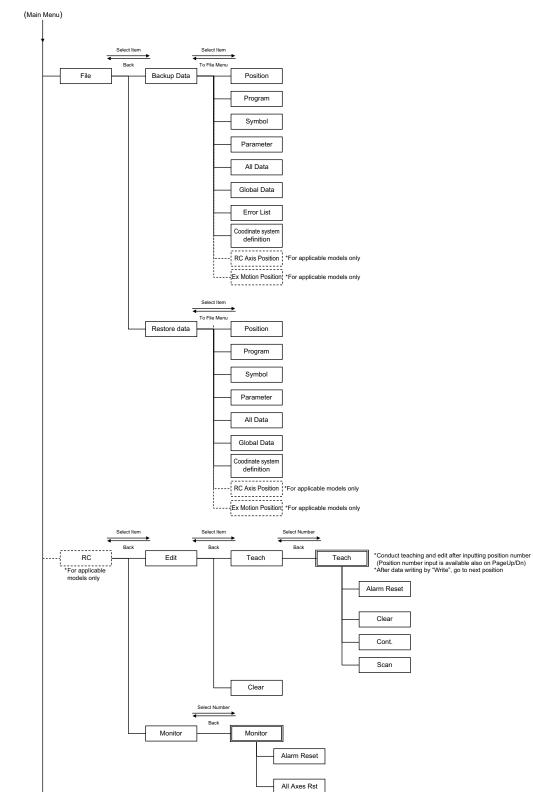




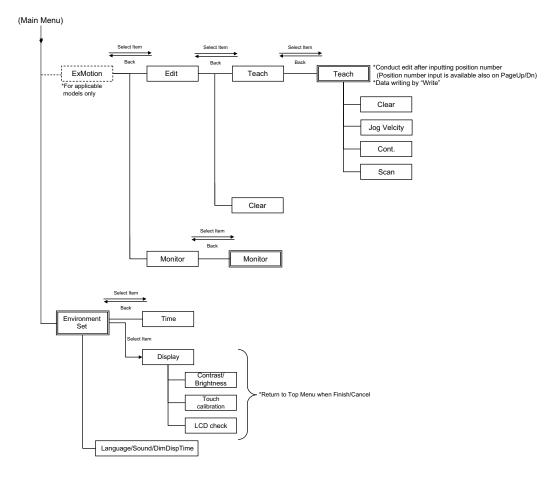








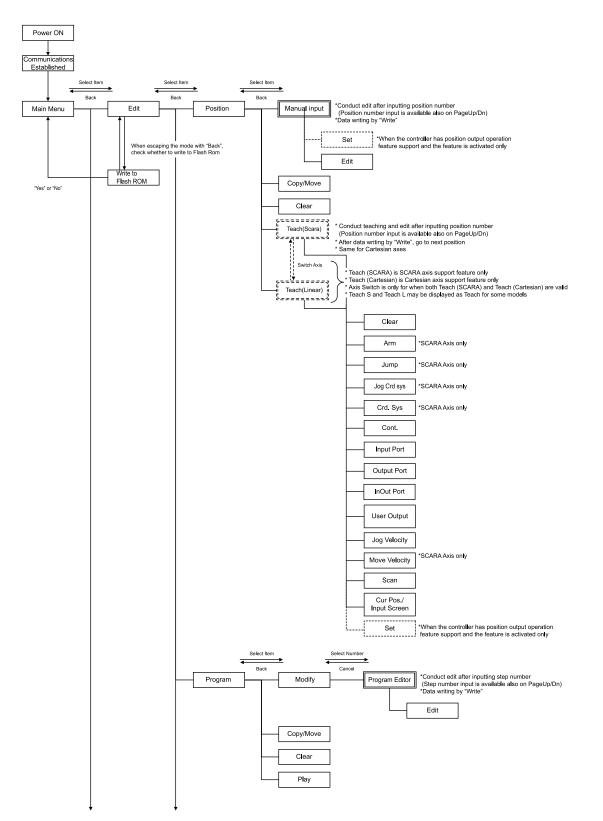


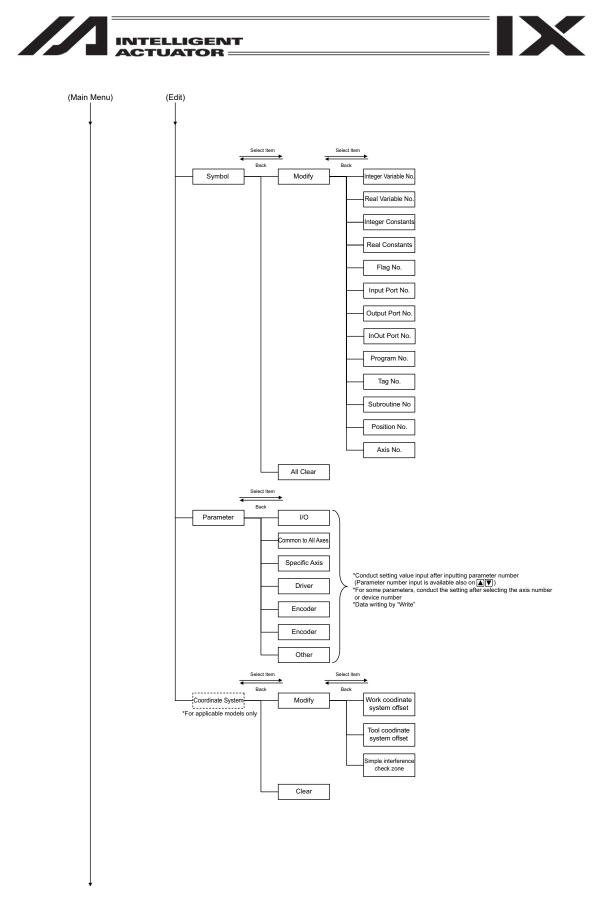






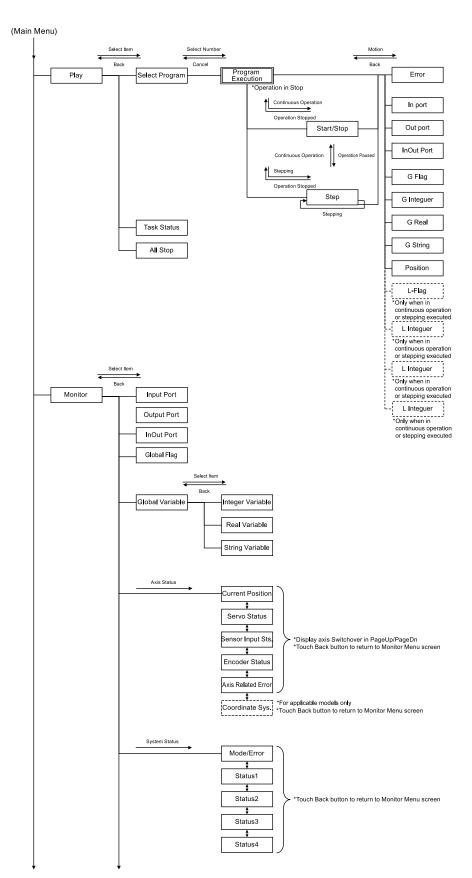
5.5 MSEL-PCX/PGX/PC/PG/PCF/PGF Controller

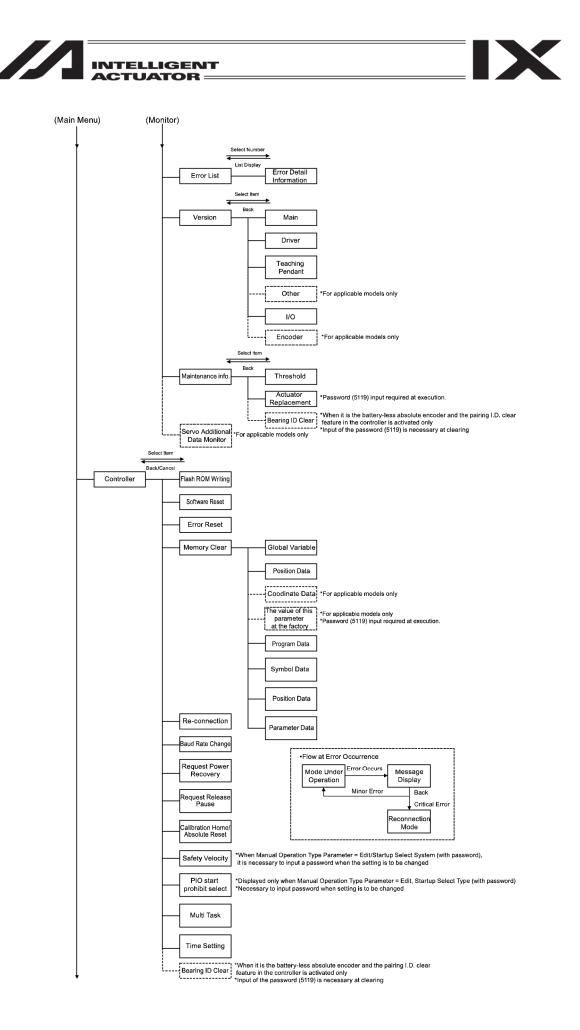




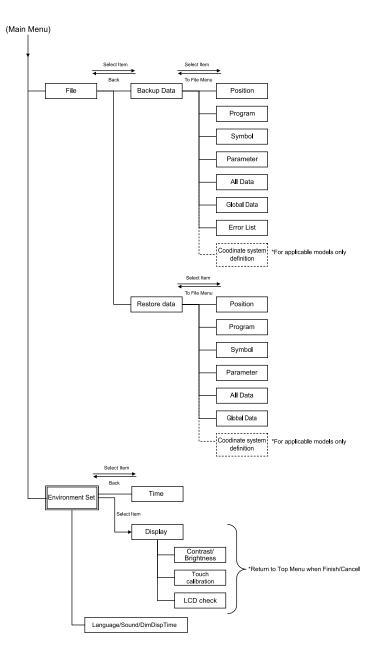












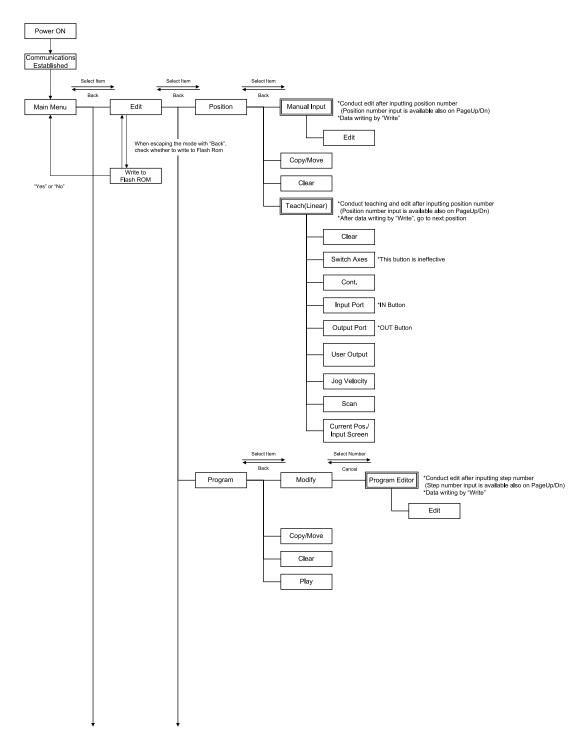


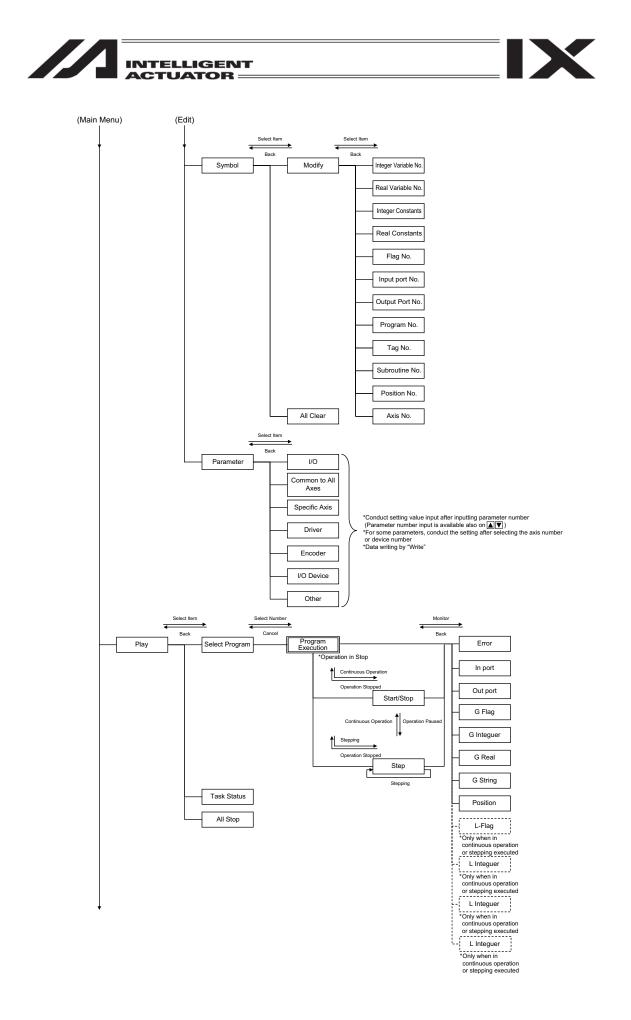


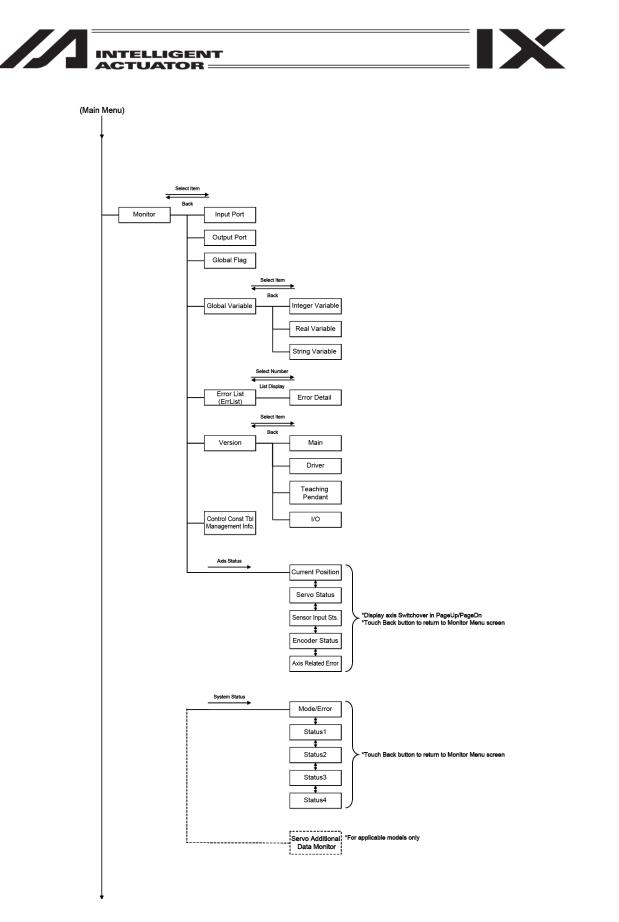
5.6 SSEL, ASEL, PSEL Controller

In the case of the SSEL, ASEL or PSEL controller, 2-type selection is possible between the program mode and positioner mode. Set the selection to the other parameter No. 25 "Operation mode type." For details, refer to the [Operating Manual of the SSEL, ASEL or PSEL Controller].

5.6.1 Program Mode



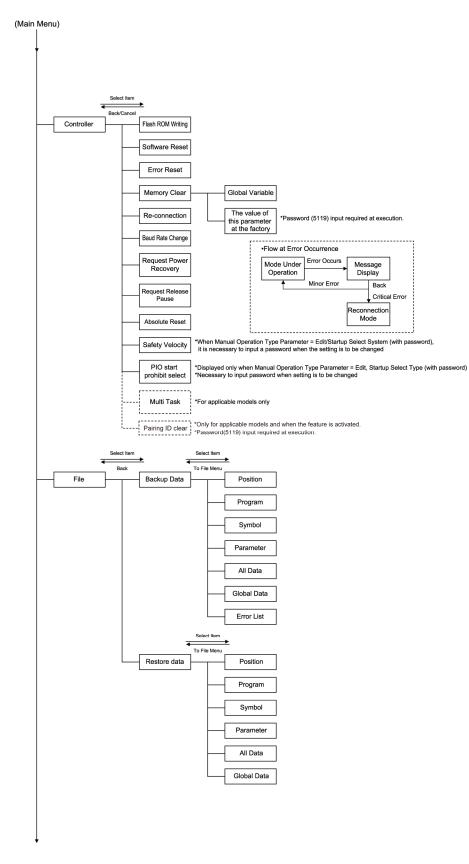




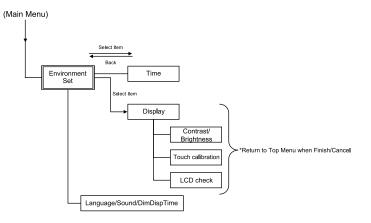










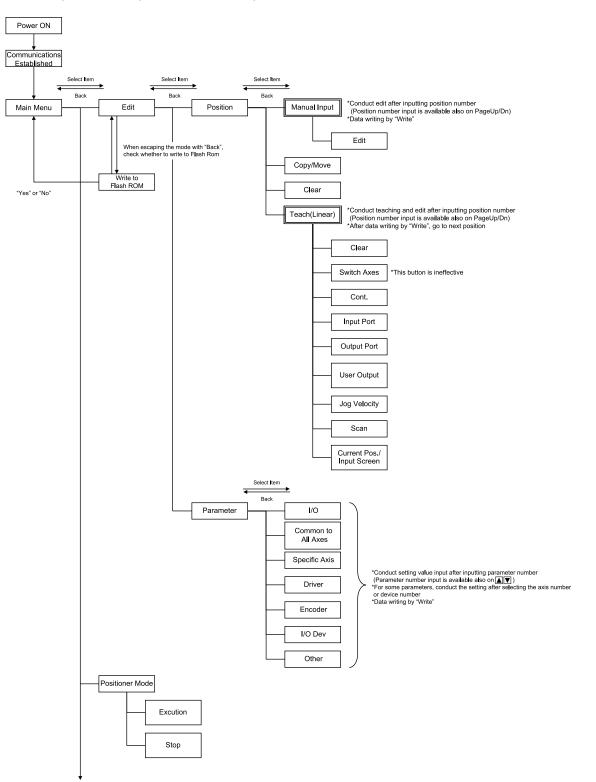


IX



5.6.2 Positioner Mode

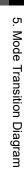
(Note) In the positioner mode, "Program edit" or "Symbol edit" is unavailable. "Two or more programs start prohibition" operation cannot be performed, either.

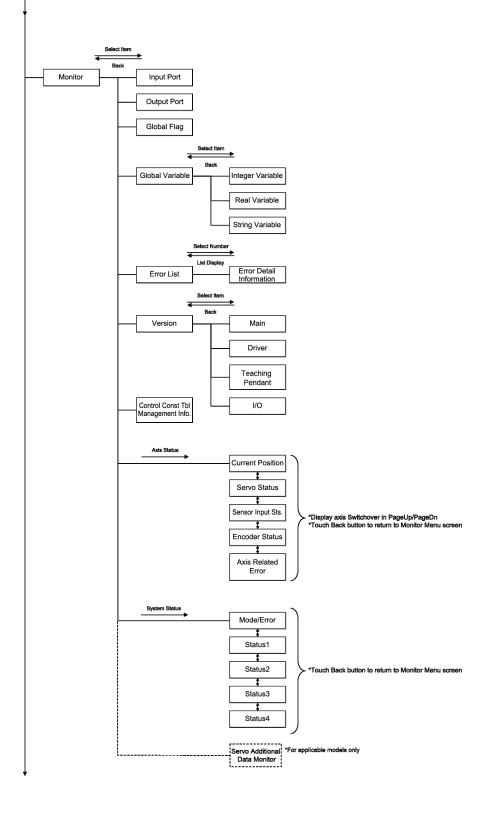


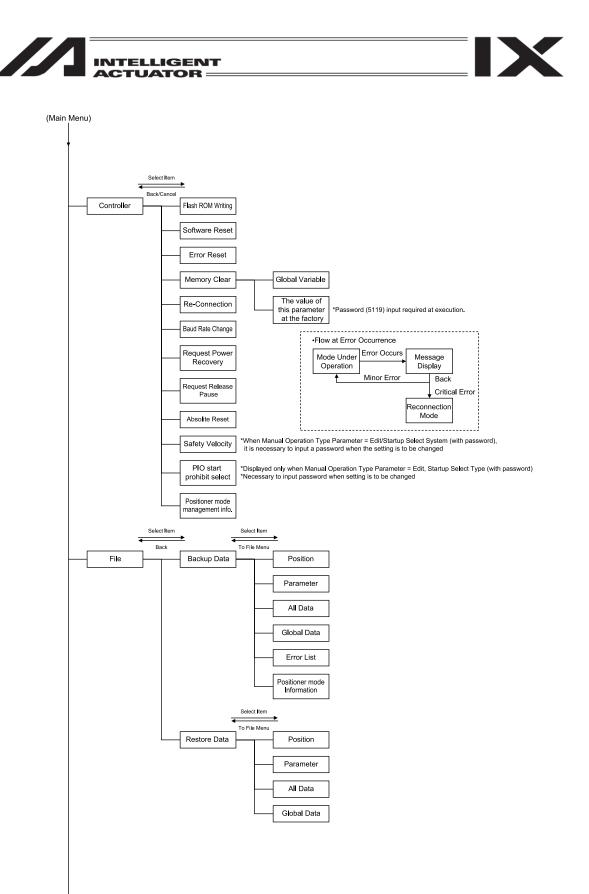


(Main Menu)













(Main Menu) Select liem Back Time Select liem Select liem (Display (Brightness Touch calibration LCD check Language/Sound/DimDispTime

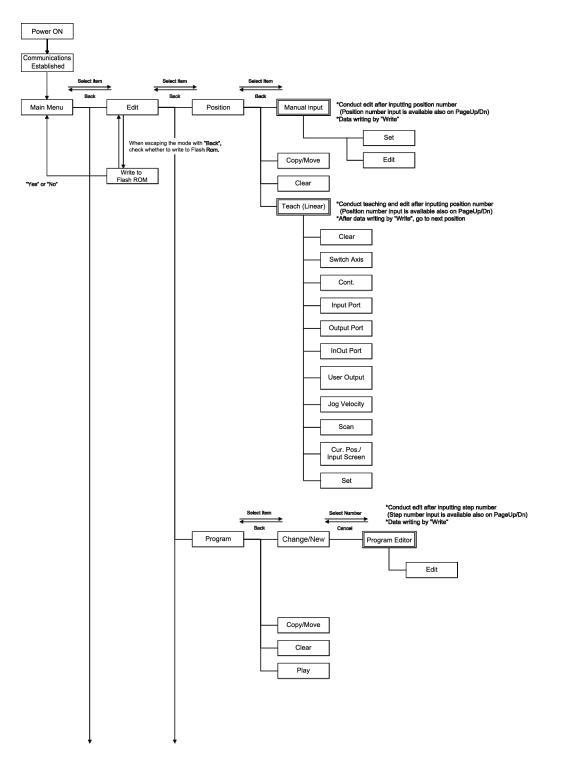




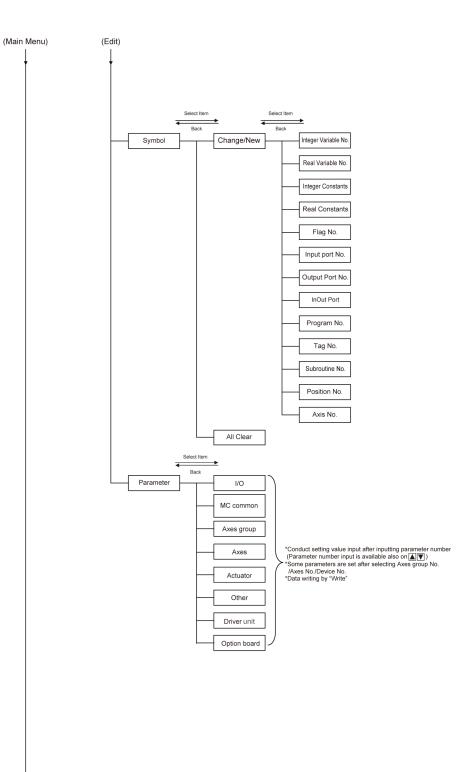
5.7 RSEL Controller

The menu construction should differ in the case of "When 6-axis Cartesian Robot is not connected" and "when 6-axis Cartesian Robot is connected" in RSEL Controller.

5.7.1 When 6-axis Cartesian Robot is not connected

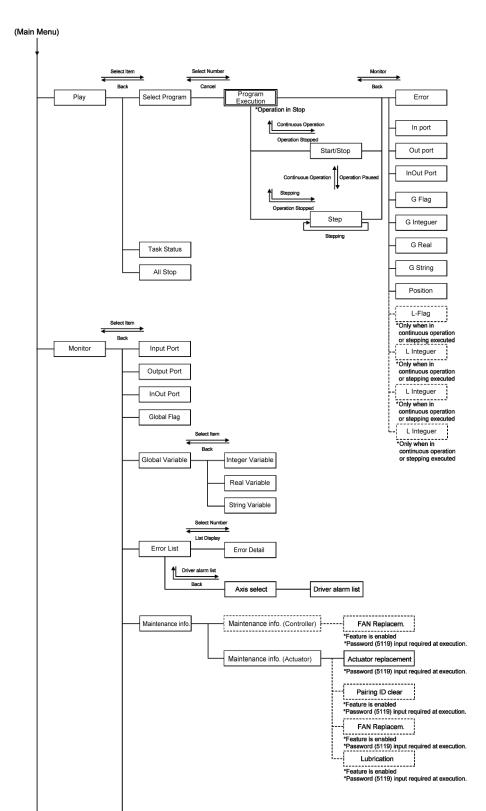




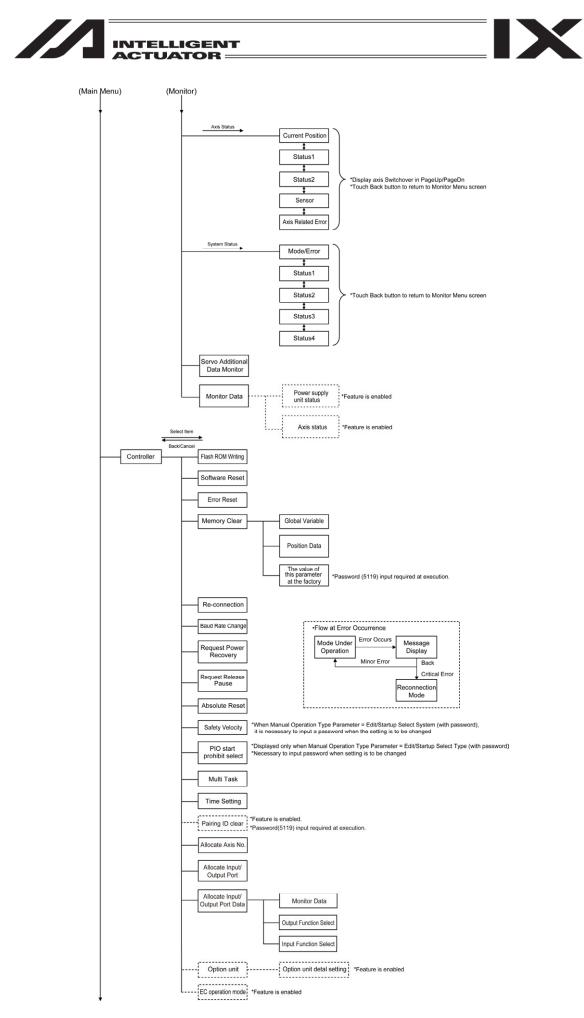






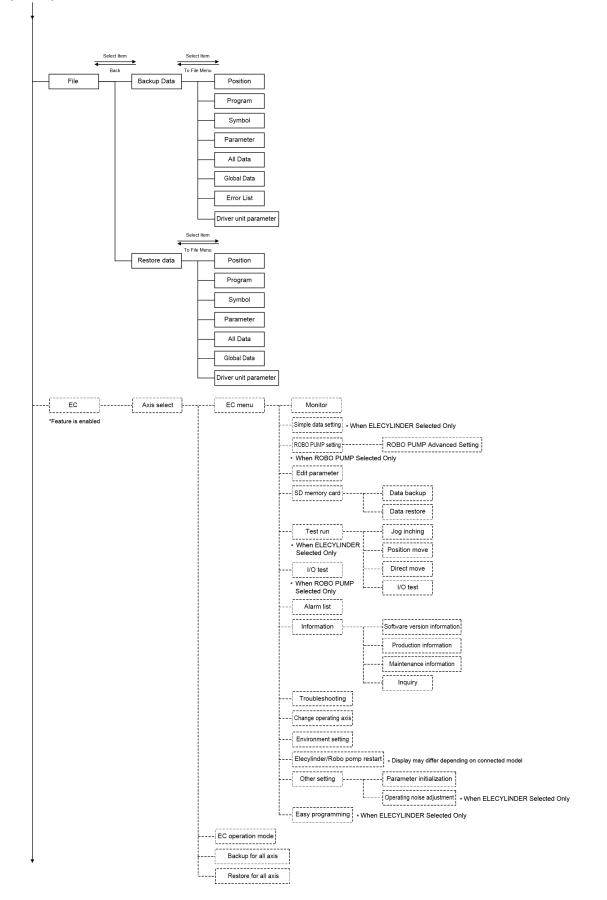


ME0356-11A

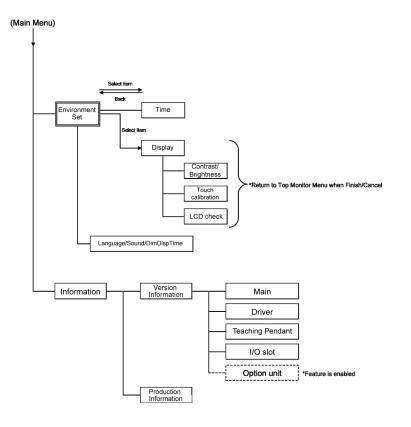




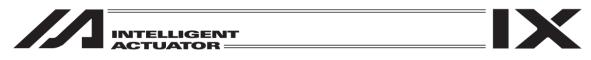
(Main Menu)



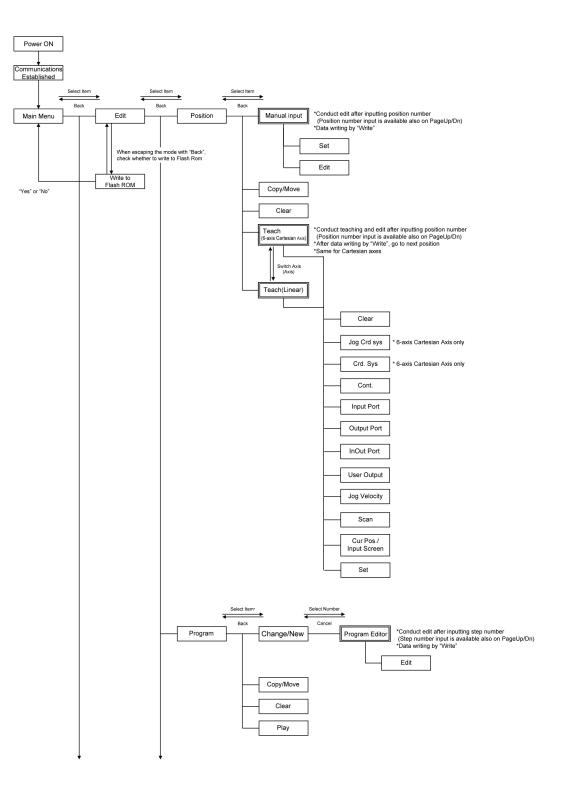


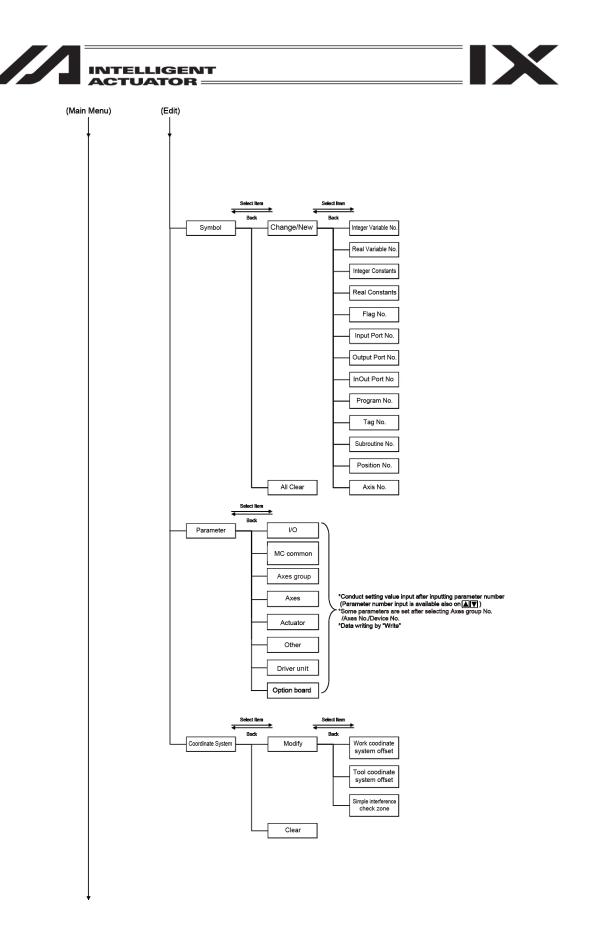


IX



5.7.2 When 6-axis Cartesian Robot is connected

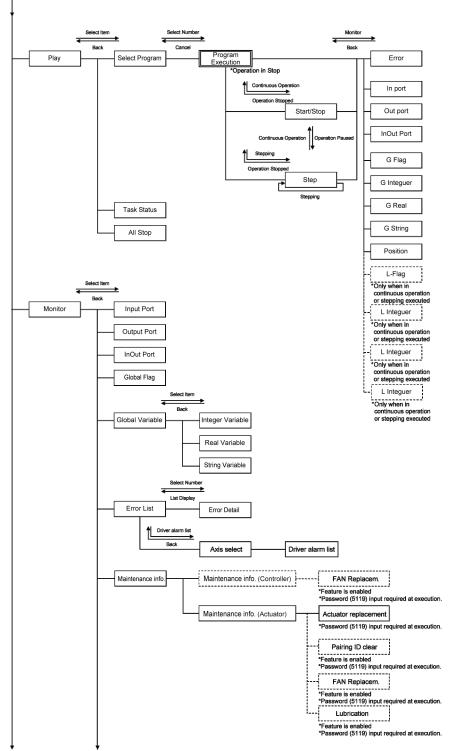


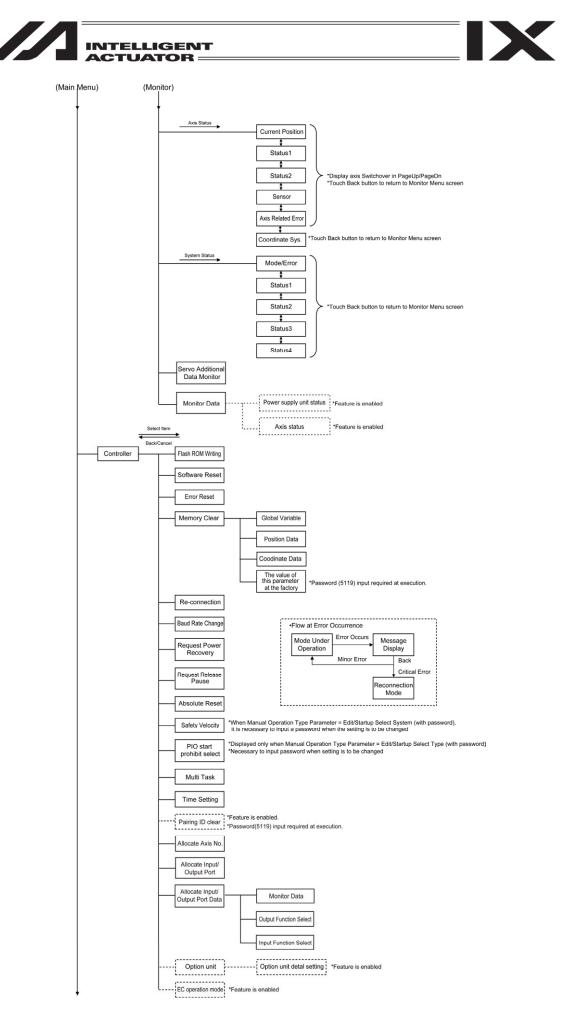


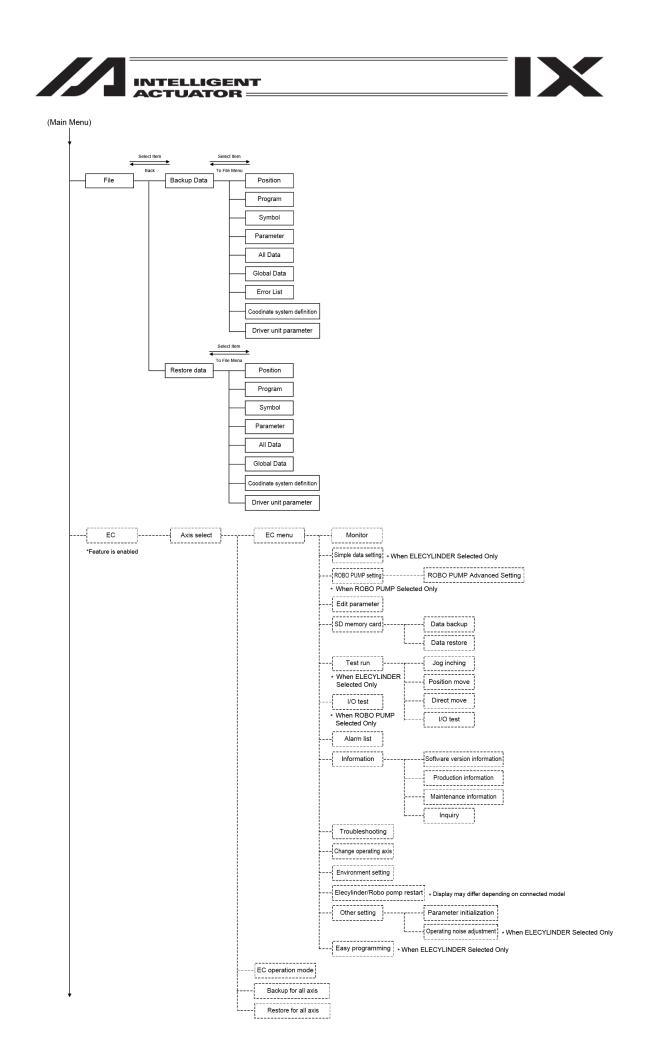




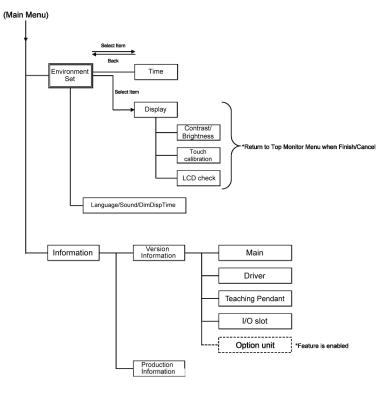
(Main Menu)







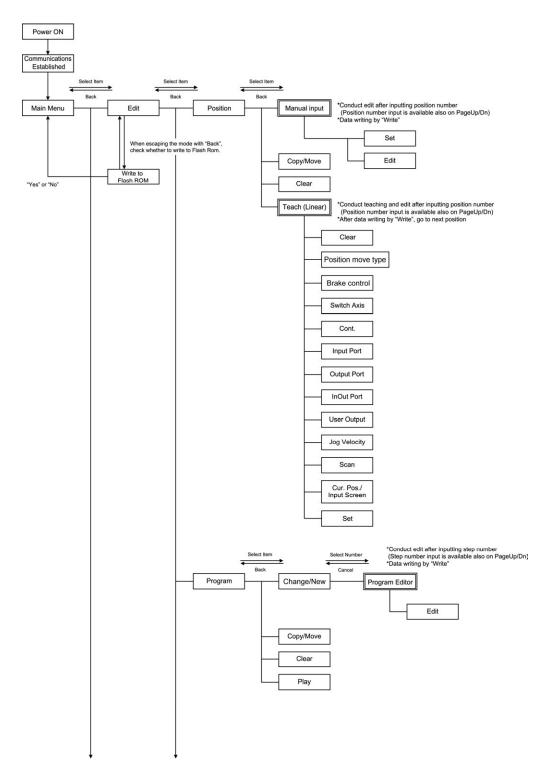




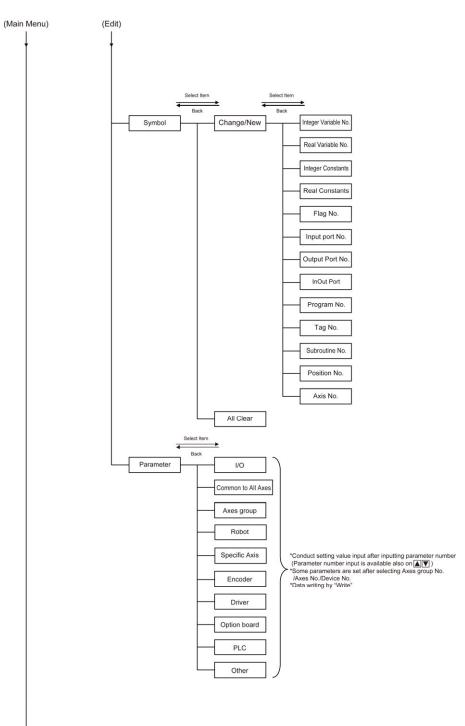




5.8 XSEL2-T Controller



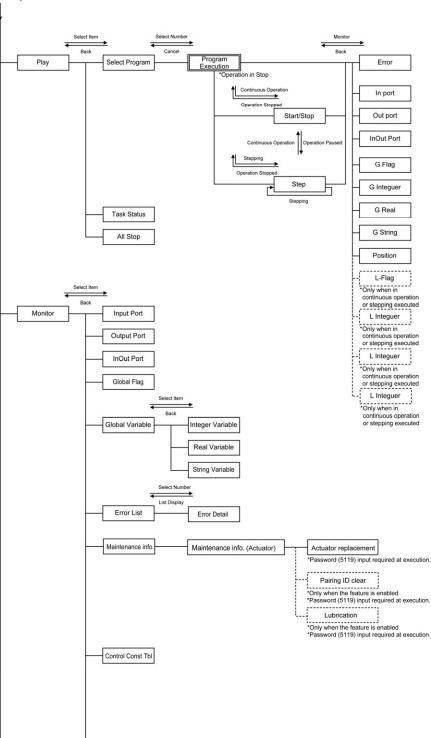


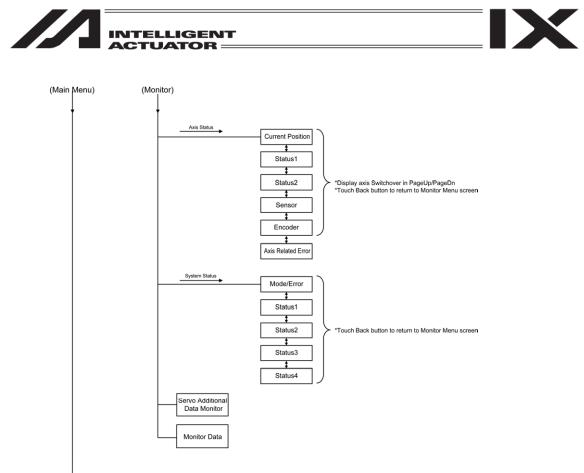




IX

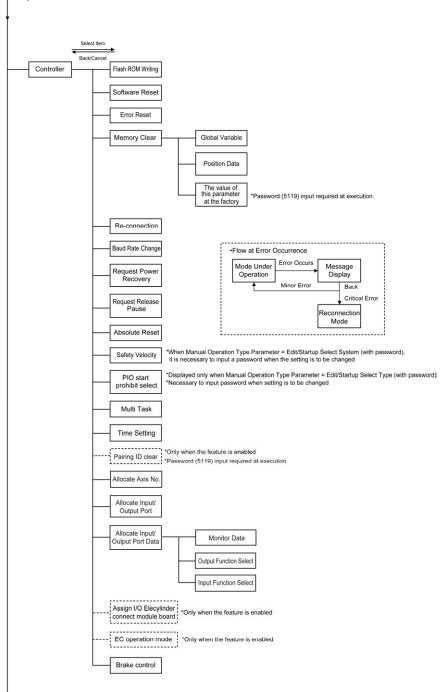
(Main Menu)







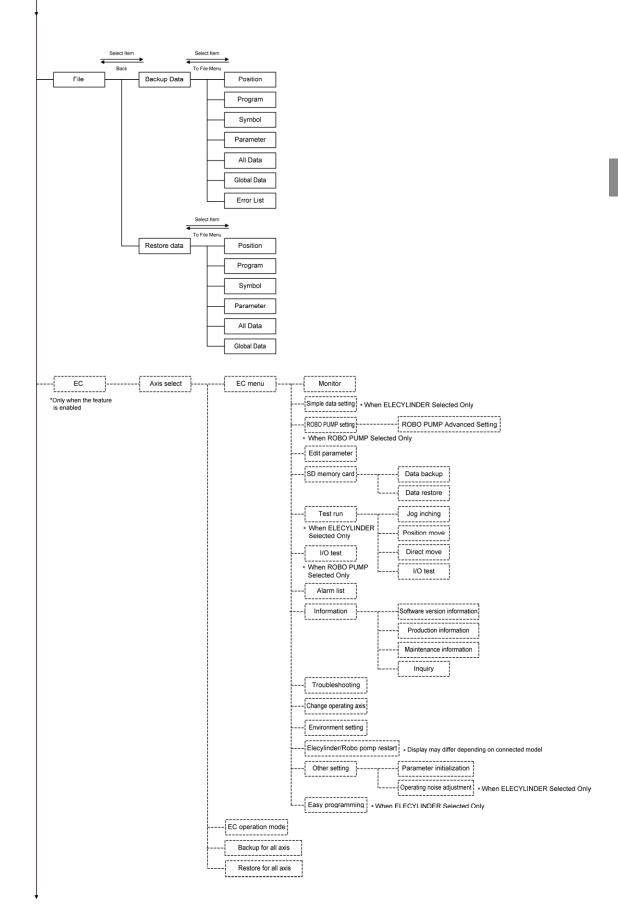




X

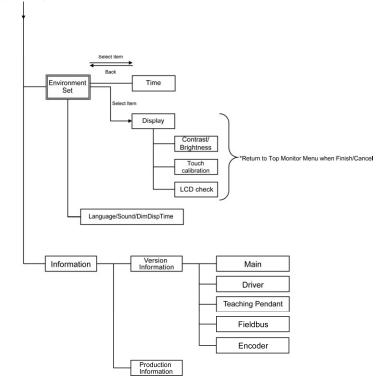


(Main Menu)







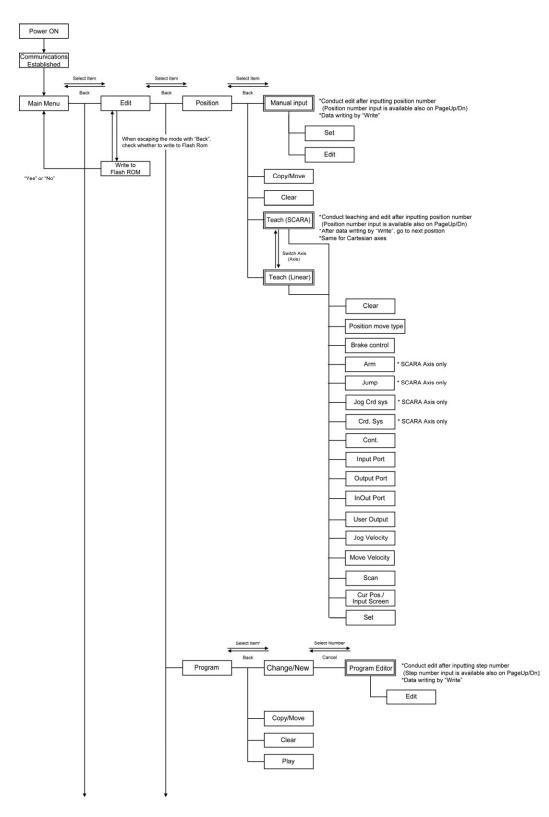


IX



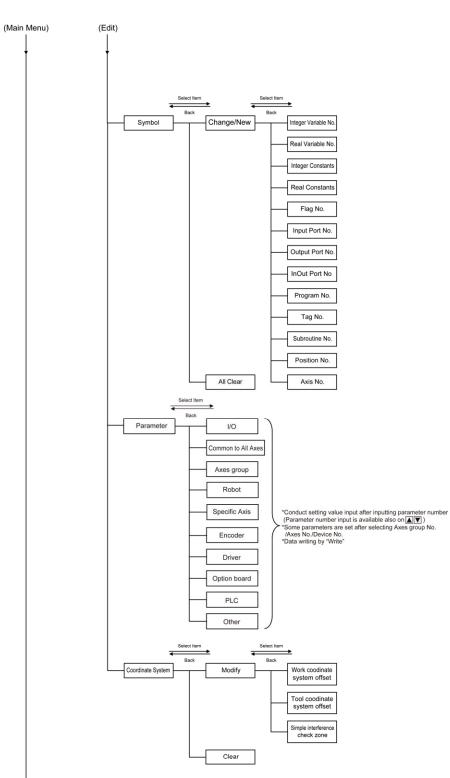


5.9 XSEL2-TX Controller





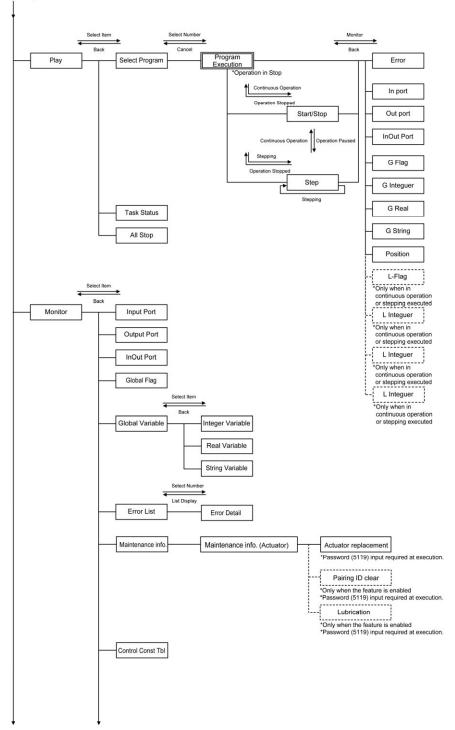


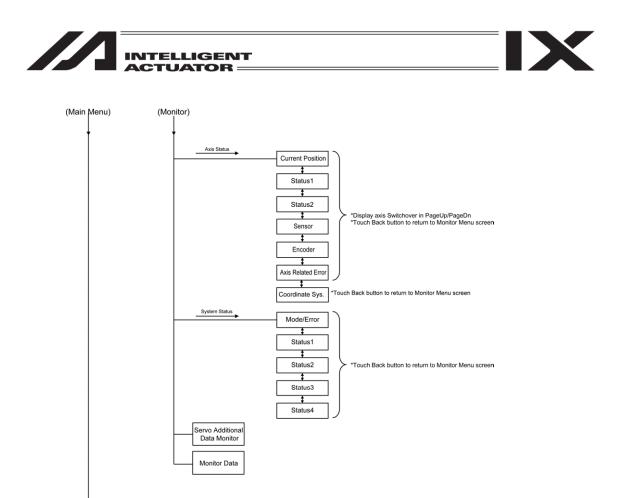






(Main Menu)

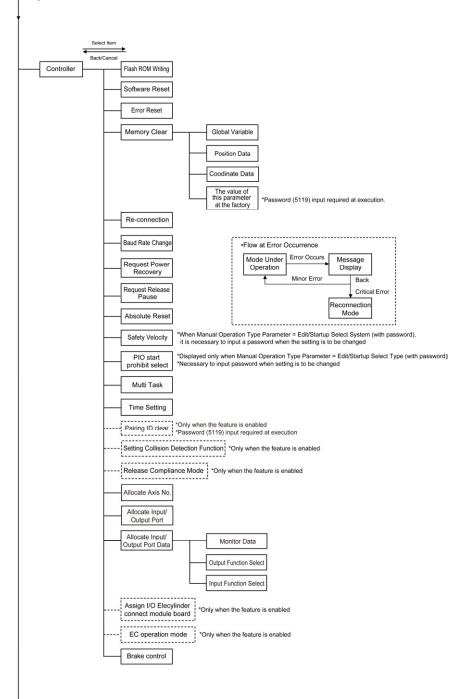






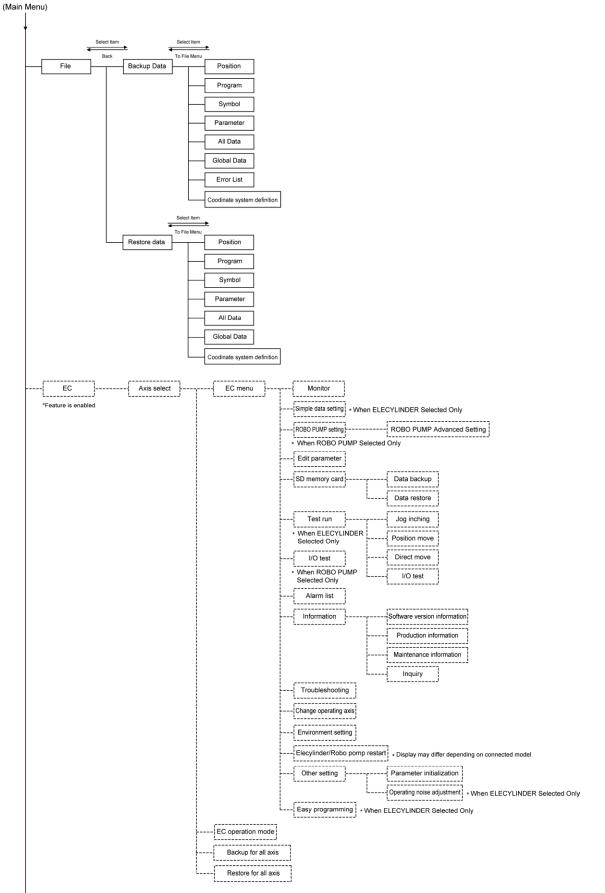


(Main Menu)

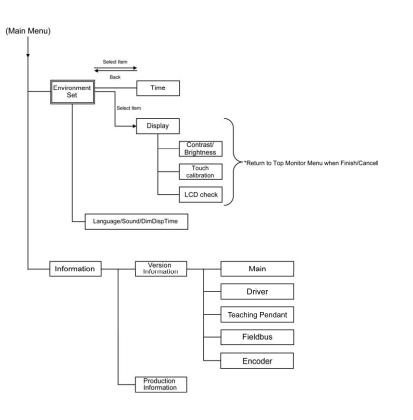




(M







IX









6. Menu Selection

Menu		C
Edit	File	Teaching update
Play		
Monitor	Environment Set	Information
Controller	Next	Prev.
Edit Play	Monitor Control -> 10:00	Update Info ->

There are several items in the menu as shown below. Select one of them and touch it. (For switchover between Menu and Menu 2, touch Next/Prev. buttons.) Screen switches to an item you touched.

Menu list

• Edit	 Editing of the positions, programs, symbols, parameters and coordinate systems, status display of the actuator and manual operation (teaching) can be performed. Refer to [8. Position Edit], [9. Program Edit], [11. Coordinate System Data Editing], [12. Symbol Edit] and [13. Parameter Edit].
• Play	: Operation of the program drive and confirmation of task status can be conducted. Refer to [10. Program Execution].
Monitor	: Input ports, global flags, global variables, error list, version information*, maintenance information, axis status, system status and so on can be displayed. Refer to [14. Monitor].
Controller	: Setting or operation command of FROM writing, software reset, error reset, memory initializing, reconnection, baud rate change, drive source recovery request, pause cancel request, absolute reset, safety velocity, multiple program simultaneous startup are to be conducted. Refer to [15. Controller].
• File	: Reading or saving of each data of positions, programs, parameters, symbols, error list and global can be conducted. Refer to [20. Data Backup].
Environment Set	: Language setting, touch operation sound, power-off time, display setting and clock setting can be performed. Refer to [21. Environment Setting].
Teaching update	: Software in this touch panel teaching pendant is to be updated using a Secure Digital memory card. Refer to [24. Appendix 24.2 Teaching update]
 Information 	: Version* and manufacturing information is displayed. Refer to [23. Information Display] (for applicable models only)
	nation is to be displayed from either the monitor menu or the information menu. ng on the controller.)

* The figures on the lower right section of the panel, show the current time (This time display is shown also on the other screens).







7. Execute or Stop the Positioner Mode of the SSEL, ASEL and PSEL Controller

When the SSEL, ASEL or PSEL controller is in the positioner mode, execute or stop the positioner mode.

(🤶 Menu	
Edit	File
Positioner Mode	
Monitor	Environment Set
Controller	Next
Edit Play	Monitor Control ->

Touch Positioner Mode button in the Menu screen.

🔶 Positioner Mode	
Execution	
Stop	
	Back
Execute	Stop

There are two items in the Positioner Mode screen.

- Execution: Start up the positioner mode that is currently indicated.
- Stop : Finish the positioner mode that is currently indicated.

Caution: When the SSEL, ASEL or PSEL controller is executing in the positioner mode, parameter changes or Flash ROM writing cannot be performed. After stopping the positioner mode by the above operation, perform parameter changes or Flash ROM writing.









8. Position Edit

There are two ways to input the position data.

- (1) Numerical input · It is the way to input numbers directly on the numeric keys in the touch panel in the position edit screen.
- (2) Teaching The way to set on the target position by manual movement (direct teaching) of either JOG operation or inching operation with the servo being off, and to indicate to read that position (current position) in the position table.

8.1 Manual Input (Numerical Input)

Menu	
Edit	File
Play	
Monitor	Environment Set
Controller	Next
Edit Play I	Nonitor Control ->

🔶 Edit	
Position	Coordinate System
Program	
Symbo I	
Parameter	Back
Position Program	Symbol Para ->

← Position	
Manual input	Teach (Scara)
Copy/Move	Teach(Linear)
Clear	
	Back
Modify TeachS Co	ppy/Move Clear ->

Touch Edit button in the Menu screen.

Touch Position button on the Edit screen.

* Example shown on the left is for XSEL-JX/KX, PX/QX, RX/SX, RXD/SXD, RAX/SAX, RAXD/SAXD, MSEL-PCX/PGX and XSEL2-TX.

Touch Manual input button in Position menu screen. Edit Position screen will appear.

* Example shown on the left is for XSEL-PX/QX, RX/SX, RAX/SAX, XSEL2-TX and MSEL-PCX/PGX (for 3-axis SCARA + additional axis type).





When an axis number assignment to activate several axes groups is performed in the axis number assignment feature (Refer to [15.17 Axis Number Assignment]), the select axes group screen should appear after you touch the Manual Input button. Touch an axes group number button to select the axes group number that is to be subject to.

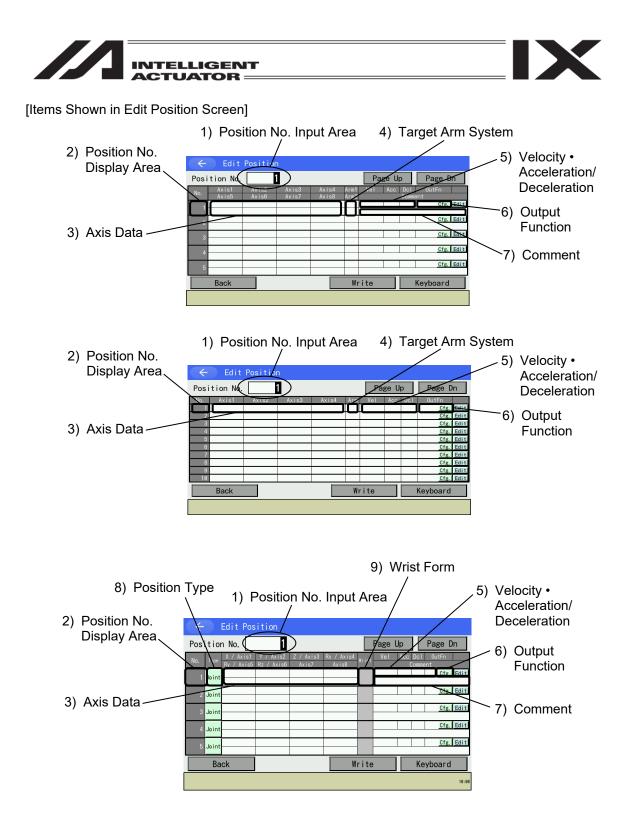
÷	Select axes group	
	Axes group No.1	
	Axes group No.2	
	Cancel	
		10:00

The select axes group screen should appear after you touch the Manual Input button. Touch an Axes group No. button.

\leftarrow	Edit	Positio	n			Ax	es gi	roup No. 1
Posit	ion No.		1		[Page U	p	Page Dn
No.	Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Axis4		Vel Acc	Dc I Commen	OutFn nt Cfg. Edit
1 2 —								Cfg. Edit
3								Cfg. Edit
4								Cfg. Edit
5	Back				Wri	te	K	(eyboard
								10:00

Edit Position screen will appear.

* The axes group number that was selected should be shown on the top right of the screen.



- * Figures on the top are for controllers with five axes or more. Figures on the middle are for controllers with four axes or more. The figure at the bottom shows a controller applicable for the 6-axis cartesian and 6-axis cartesian is set valid.
- * Displayed items differ depending on the controller.





- 1) Position No. Input Area Input position No. Displayed range will differ depending on the input value.
- 2) Position No. Display Area It shows the Position No.
- 3) Axis Data

It is shown for the number of axes actually installed.

Axes 1 to 4

Indicate the positions of Axes 1 to 4.

Indicate the positions of SCARA axes for XSEL-JX/KX/PX/QX/RX/SX/RXD/SXD/RAX/SAX/ RAXD/SAXD, MSEL-PCX/PGX and XSEL2-TX controllers. (Only when Group No. 1 for XSEL2-TX. For 3-axis SCARA type, Axes 1 to 3 are for the position indication of SCARA axis, and Axis 4 for additional axis.)

The range available to indicate is from -99999.999 to 99999.999.

Axes 5 to 8

Indicate the positions of Axes 5 to 8.

Indicate the positions of SCARA axes for XSEL-RXD/SXD/RAXD/SAXD controllers. The range available to indicate is from -99999.999 to 99999.999.

It should be as shown below when the 6-axis cartesian is activated.

X / Axes 1 to Rz / Axis 6

Indicate the position of the 6-axis cartesian.

The range available to indicate is from -99999.999 to 99999.999.

Axes 7 to Axis 8

Indicate the positions of the 6-axis cartesian added axes. Display should be only for the number of valid added axes.

The positions of the added axes should be available for indication only when the position type is the each axis coordinates.

The range available to indicate is from -99999.999 to 99999.999.

4) Target Arm System

Arm1 (Arm), Arm2

Indicate the target arm system of SCARA Axis (Axes 1 to 4 or Axes 1 to 3) and SCARA Axis (Axes 5 to 8) with Left and Right.

Arm1 (Arm) are displayed only when XSEL-RX/SX/RXD/SXD/RAX/SAX/RAXD/SAXD, MSEL-PCX/PGX or XSEL2-TX controller is connected. (Only when Group No. 1 for XSEL2-TX.) Arm2 are displayed only when XSEL- RXD/SXD/RAXD/SAXD controller is connected. The target arm system indication set in this section is effective in the following operations.

- Movement by MOVE button in Teaching screen (When there is no PTP target arm system setting in the position data, operation is made as "current arm system (movement of opposite arm system allowed when impossible)")
- Servo operation SEL Command using position data





5) Velocity • Acceleration/Deceleration

′Vel

Indicate the velocity.

The range available to indicate is from 1 to 9999. However, when the controller is XSEL-J/K/P/Q/R/S/RA/SA, SSEL, PSEL, ASEL, TT, TTA, MSEL-PC/PG/PCF/PGF or XSEL2-T and All Axes Common Parameter No. 20 "Max. Operation Velocity Check Timing" is set to 0, the range is from 1 to All Axis Common Parameter No. 21 "Max. Operation Velocity for Input Check".

<u>Acc</u>

Indicate the Acceleration.

The range available to indicate is from 0.01 to 9.99. However, when the controller is XSEL-PX/QX, the range is from 0.01 to the higher value in either of All Axes Common Parameter No. 22 "SCARA Axis Max. CP Acceleration" or All Axes Common Parameter No. 203 "Linear Axis Max. Acceleration".

"Max. Acceleration" and "Max. CP Acceleration" in All Axes Common Parameter No. 18 are in the maximum values When All Axes Common Parameter No. 18 "Max. Operation Acceleration / Deceleration Check Timing" is set to 0 in XSEL-P/Q/R/S/RA/SA, SSEL and XSEL2-T and for XSEL-J/K/JX/KX, ASEL, PSEL, TT, TTA or MSEL-PC/PG/PCF/PGF.

Dcl

Indicate the Deceleration.

The range available to indicate is from 0.01 to 9.99. However, when the controller is XSEL-PX/QX, the range is from 0.01 to the higher value in either of All Axes Common Parameter No. 23 "SCARA Axis Max. CP Deceleration" or All Axes Common Parameter No. 204 "Linear Axis Max. Deceleration".

"Max. Deceleration" and "Max. CP Deceleration" in All Axes Common Parameter No. 19 are in the maximum values When All Axes Common Parameter No. 18 "Max. Operation Acceleration / Deceleration Check Timing" is set to 0 in XSEL-P/Q/R/S/RA/SA, SSEL and XSEL2-T and for XSEL-J/K/JX/KX, ASEL, PSEL, TT, TTA or MSEL-PC/PG/PCF/PGF.

6) Output Function

When the controller has position output operation feature support and the feature is activated only. OutFn

Output functions of the position output operation feature are displayed. Setting can be conducted on the setting button.

7) Comment

<u>Comment</u>

It is displayed only when XSEL-R/S/RX/SX/RXD/SXD/RA/SA/RAX/SAX/RAXD/SAXD, RSEL and XSEL2-T/TX controller is connected.

Input a comment if necessary. (32 letters with half-size font at max.)

A comments can be input to the positions from No. 1 to 10000 for XSEL-R/S/RX/SX/RXD/SXD/ RA/SA/RAX/SAX/RAXD/SAXD.

A comment can be input to any position number for RSEL and XSEL2-T/TX (up to 10000 comments).

8) Position Type

<u>Type</u>

It should be displayed only when the 6-axis cartesian is activated.

Position data type (orthogonal/each axis coordinates) is to be indicated. Touch the button and the type switches over between the orthogonal coordinates (orthogonal) and each axis coordinates (each axis).

9) Wrist Form

<u>Wrist</u>

It should be displayed only when the 6-axis cartesian is activated.

Indication can be made for the wrist form (Flip/Non Flip/Not Indicated). It can be indicated only when the position type is the orthogonal coordinates.





8.1.1 Basic Operation

[Addition and Change of Position Data]

First, indicate the position number that an addition or a change is required. When the screen is opened for the first time, a cursor is flashing in the position number input box. (When no flashing is confirmed, touch in the position number input box.)

Positi	on No.		1			Page L	lp	Page Dn
	Axis1 Axis5	Axisz Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel Acc	Dcl Comme	OutFn nt
1								Cfg. Edi
2								Cfg. Edi
3								Cfg. Edi
4								Cfg. Edi
5								Cfg. Edi
	Back				Wr	ite		(eyboard

Input the position number by displaying the numeric keys on the touch panel by touching Keyboard button.

Posi	tion No.	Positio	1			Pa	ge	Up	Pag	e Dn
No.	Axis1	Axis2	Axis3	Axis4	Arm1	Vel	Aco		OutFr	
NO.	Axis5	Axis6	Axis7	Axis8	Arm2			Comme		fg. Edi
1										
2							7	8	9	ESC
3						_–	<u> </u>			
4							4	5	6	BS
5							1	2	3	CLR
	Back				Wr	ite	0		+/-	ENT

Touch the numeric part on the touch panel numeric keys to input numbers.

The contents of input will be shown in the box above the touch panel numeric keys. When confirming the input number, touch ENT. After touch panel numeric keys close and displayed range switches, the cursor moves to the input box for Axis1.

When redoing the input, touch ESC.

When it is desired to cancel the input, touch **ESC** again, and the touch panel numeric keys will close.

[Input of Axis Data (Axes 1 to 8 and X / Axis 1 to Rz / Axis 6), Vel (Velocity), Acc (Acceleration) and Dcl (Deceleration)]

Show the cursor to the input area for the item which is desired for inputting. To show the cursor in the input area for the item which is desired for inputting is to touch in that area (white area in the background, or an area framed in red for Axis1).

← Edit	Positio	n					
Position No. 1					Page	e Up	Page Dn
No. Axis1	Axis2 Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel /	Acc Dcl Comme	OutFn ent Cfg. Edit
2							Cfg. Edit
3							<u>Cfg.</u> Edit
5							Cfg. Edit
Back				Wr	ite		Keyboard

Touch the keyboard button with the cursor being displayed to show the touch panel numeric keys in order to input numbers.





← Edit Position								
Position No.	Position No. 1 Page Up						Pag	e Dn
No. Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel	Acc Do	l OutF mment	n
1 100								Cfg. Edit
2								100
3					-	/ 8	9	ESC
						1 5	6	BS
4								
5						2	3	CLR
Back				Wr	ite ()	+/-	ENT

If you want to input 100 to Axis1 (1st axis), touch Keyboard button to show the touch panel numeric keys, and touch 100 ENT on the touch panel numeric keys.

C Edit Position								
Posi	tion No.		1				Jp	Page Dn
No.	Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel Acc	Dcl Comme	OutFn ent
1	100.000							Cfg. Edit
2								Cfg. Edit
3								Cfg. Edit
4					-			Cfg. Edit
5					-			Cfg. Edit
	Back				١W	rite		Keyboard

If it is accepted correctly, the focus moves onto Axis2. (If only one axis is installed, the cursor moves to Vel.)

Also, to show that it is being edited (controller writing not yet done), the background color in the position number display box turns to orange. Axes 2 to 8 (for number of actually installed), Vel (velocity), Acc (acceleration) and Dcl (deceleration) are available to input.

C Edit Position										
Posi	tion No.		1			F	Page	Up	Pag	e Dn
No.	Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel	Ac	c Dcl Comme	OutFr ent	ו
1	100								(Cfg. Edit
2						=[100
3							7	8	9	ESC
4						=[4	5	6	BS
5						-[1	2	3	CLR
Back Write 0 +/- ENT										

When you want to erase the data that is already input, touch CLR ENT on the touch panel numeric keys to delete what you want.





[Input of Target Arm System Data (Arm1 or Arm), (Arm2)]

Årm1 (Arm) is a function dedicated only for XSEL-RX/SX, RXD/SXD, RAX/SAX, RAXD/SAXD, MSEL-PCX/PGX or XSEL2-TX.

Arm2 is a function dedicated only for XSEL-RXD/SXD or RAXD/SAXD.

Show the cursor to the input area for the item which is desired for inputting. To show the cursor in the input area for the item which is desired for inputting is to touch in that area (white area in the background, or an area framed in red for Arm1).

C Edit Position									
Posi	Position No. 1 Page Up Page Dn								
No.	Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel	Acc Dcl Comm	OutFn ent	
1	100.000							Cfg. Edit	
2								Cfg. Edit	
3								Cfg. Edit	
4								Cfg. Edit	
5								Cfg. Edit	
Back Write Keyboard									
	Clear Right Left								

Edit Position Position No. 1 Page Up Page Dn Axis1 Axis5 100.000 Cfg. Edit L eft 7 8 9 L ESC 4 5 6 BS 1 2 3 CLR +/-0 R ENT Back Clear Right Left

With the cursor being displayed, touch Keyboard button to show the touch panel numeric keys to input L/R.

When you want to input Left (left arm), touch Keyboard button to show the touch panel numeric keys, and touch [] ENT on the touch panel numeric keys. When you want to input Right (right arm), touch R

ENT, and when you delete what is input, touch R CLR ENT.

[Input Comment]

* Feature for XSEL-R/S, RX/SX, RXD/SXD, RA/SA, RAX/SAX RAXD/SAXD, RSEL and XSEL2-T/TX Have the cursor displayed in the comment input box. To show the cursor in the box, touch the comment input area (area that the background is white, marked with red highlight).

÷	Edit	Positio	n					
Posi	tion No.		1			Pag	e Up	Page Dn
No.	Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel	Acc Dcl Comme	OutFn ent
1								Cfg Edit
2								Cfg. Edit
3								Cfg. Edit
4								Cfg. Edit
5								Cfg. Edit
	Back		I		Wri	ite		Keyboard

With the cursor being displayed, touch <u>Keyboard</u> button to show the touch panel numeric keys to input letters.

8. Position Edit

INTELLIGENT
ACTUATOR

6 7 8 9

1

TAB q w e r t y u i

SHIFT Z X C V b n m

CAP as dfghjk

3 4 5

Position No.

Ctrl Alt ~ ¥

ESC

BS

1

CAP



Initial Screen

SHIFT key being touched

Use the keyboard shown in the figure above to input a comment. When you want to input a capital letter, either touch SHIFT key or touch CAP key to show the capital letters. (Figure on top right) SHIFT key gets released every time after a letter is input while CAP key is remained on until it is touched again. Touch ENT or TAB key to confirm the letter you have input.

Operation of Special Function Keys out of Letters

ESC Cancels what was input and clears all the input conditions. When nothing is input, the keyboard closes by touching this key.

It deletes a letter in front of the cursor. When nothing is input, all letters are deleted.

DEL It deletes letters on the cursor.

TAB It confirms the input letters and closes the keyboard.

Page Up Page Dn

q o

↓ ↑

BS

ENT

- It moves the cursor one step to the left.
- It moves the cursor one step to the right.
- It moves the cursor one step to the left.
- It moves the cursor one step to the right.
- SHIFT It converts the letters on the keyboard to capital letters. It is released by inputting one letter or touching SHIFT again.
 - It converts the letters on the keyboard to capital letters. Touch CAP again and it is released.
- ENT It confirms the input letters and closes the keyboard.

[Position Output Operation Data Input]

* Feature available only when position output operation feature is valid

Touch the setting button of the position data required to input (area marked with red highlight). The cursor will not be displayed.

\leftarrow	Edit	Positio	n					
Position No. 1 Page Up Page Dn								
No.	Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel A	cc Dcl Comme	OutFn nt
1								Cfg. Edit
2								Cfg. Edit
3								Cfg. Edit
4								Cfg. Edit
5								Cfg. Edit
Back Write Keyboard								

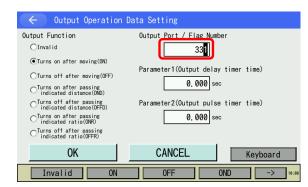
Touch the <u>setting</u> button of the position data required to input. The screen switches to the setting window.





← Output Operation	Data Setting					
Output Function	Output Port / Flag Number					
OInvalid	331					
●Turns on after moving(ON)						
OTurns off after moving(OFF)	Parameter1(Output delay timer time)					
O ^{Turns} on after passing indicated distance(OND)	0.000 sec					
O ^T urns off after passing indicated distance(OFFD)	Parameter2(Output pulse timer time)					
O ^{Turns} on after passing indicated ratio(ONR)	0.000 sec					
O ^T urns off after passing indicated ratio(OFFR)						
ОК	CANCEL Keyboard					
Invalid ON	0FF 0ND -> 10:00					

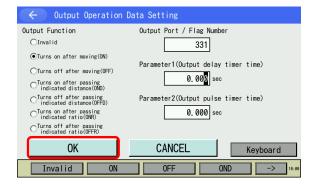
Select the output functions. Touch the radio buttons that you would like to select (figure in left, area marked with red highlight).



Input Output Ports / Flag Numbers, Parameter1 and Parameter2. Touch an input part where you would like to input contents (area marked with red highlight for Output Ports / Flag Numbers) to show the cursor. Touch the Keyboard button with the cursor being displayed to show the touch panel numeric keys in order to input numbers.

← Output Operation	Data Setting									
Output Function Output Port / Flag Number										
OInvalid	331]								
⊙Turns on after moving(ON)		-								
OTurns off after moving(OFF)	Parameter1(Output de	elay '	timer t	ime)						
	0.00				331					
 Turns on after passing indicated distance(OND) 		- 1			-					
OTurns off after passing indicated distance(OFFD)	Parameter2(Output	/	8	9	ESC					
O ^{Turns} on after passing indicated ratio(ONR)	0.00	4	5	6	BS					
		<u> </u>								
O ^{Turns} off after passing indicated ratio(OFFR)		1	2	3	CLR					
ОК	CANCEL	0		+/-	FNT					
		0	•							
Invalid ON	10	ID	1 -	> 10:00						

When you would like to input 331 in Output Ports / Flag Numbers, touch the Keyboard button to show the touch panel numeric keys and touch 331 ENT on the touch panel numeric keys.



If the data is received properly, the screen goes back to the position output operation data setting window, and the cursor moves to the input area for the next item.

Touch the OK button after all the necessary items are input. The screen goes back to the previous window. Touch the CANCEL button when you wish to cancel the inputs.





The selected output functions will be displayed in
the output function column (OutFn).

\leftarrow	Edit	Positio									
Posi	Position No. 1 Page Up										
No.	Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel	Acc	Dcl Comme	0u1 ent	tFn	
1									ON	Cfg.	Edit
2										Cfg.	Edit
3										Cfg.	Edit
4										Cfg.	Edit
5										Cfg.	Edit
	Back		1		Wr	ite			Keybo	oard	

[Position Type Input]

* Feature available when 6-axis cartesian activated only

\leftarrow		Edit Pos	ition						
Pos	itio	n No.	1				Page Up	Pag	e Dn
No.	Туре	X / Axis1 Ry / Axis5	Y / Axis2 Rz / Axis6	Z / Axis3 Axis7	Rx / Axis4 Axis8	Wrist	Vel Acc	Dcl Out Comment	Fn
1	Joint								Cfg. Edit
2	Joint								Cfg. Edit
3	Joint								Cfg. Edit
4	Joint								Cfg. Edit
5	Joint								Cfg. Edit
	Ba	ck			W	rite		Keybo	ard
									10:00

\leftarrow		Edit Pos	ition					
Pos	itio	n No.	1				Page Up	Page Dn
No.	Туре	X / Axis1 Ry / Axis5	Y / Axis2 Rz / Axis6	Z / Axis3 Axis7	Rx / Axis4 Axis8	Wrist	Vel Acc	Dcl OutFn Comment
1	Rect							Cfg. Edit
2	Joint							Cfg. Edit
3	Joint							Cfg. Edit
4	Joint							Cfg. Edit
5	Joint							Cfg. Edit
	Ba	ick			W	rite		Keyboard
								10:00

Touch a button in the position type column.

Button display in the position type column switches over.

Also, the display in the following item boxes switches along the selection of the position type. (Available for input = Background in white / Unavailable for input = Background in grey)

- * Added axis position data (from Axis 7 to 8) is available for input only when the position type is the each axis coordinates
- * Wrist form is available for input only when the position type is the orthogonal coordinates





[Wrist Form Input]

* Feature available when orthogonal 6-axis cartesian activated only

Show the cursor in the wrist form box. In order to show the cursor, touch the input part (background in white, the position where circled in red) of the wrist form. The wrist form is available for input only when the position type is the orthogonal coordinates.

÷		Edit Pos	sition						
Pos	itio	n No.	1				Page L	Jp	Page Dn
No.	Туре	X / Axis1 Ry / Axis5	Y / Axis2 Rz / Axis6	Z / Axis3 Axis7	Rx / Axis4 Axis8	Wrist	Vel	Acc Dcl Comme	
1	Rect								Cfg. Edit
2	Joint								Cfg. Edit
3	Joint								Cfg. Edit
4	Joint								Cfg. Edit
5	Joint								Cfg. Edit
	Ba	ck			W	rite		Ke	yboard
	CI	ear	Flip		Non Flip				10:00

With the cursor kept showing, touch Keyboard button to show the touch panel keyboard and input Flip/Non Flip.

$\left(\leftarrow \right)$		Edit Po	sition						
Pos	ition	n No.	1				Page Up	Pa	ge Dn
No.	Туре	X / Axis1 Ry / Axis5	Y / Axis2 Rz / Axis6	Axis3 is7	Rx / Axis4 Axis8	Wrist	Vel Acc	Dcl Ou Comment	ıtFn
1	Rect					⊉ on Flip			Cfg. Edit
2	Joint								Cfg. Edit
3	Joint								Cfg. Edit
4	Joint						-		NonFlip
5	Joint								ESC
	Ba	ck	1		Flip		Nonl	=lip	CLR
	Clear		Flip						ENT

When it is required to input Flip, touch Flip and then ENT on the keyboard. When required Non Flip, touch [Non Flip] and then ENT.

When it is required to clear the inputs, touch CLR and then ENT.





[Data Transfer]

÷	Edit	Positio	n					
Posi	tion No.		1			Page	Up	Page Dn
No.	Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Arm1 Arm2	Vel A	cc Dcl Comme	OutFn ent	
1	100.000							Cfg. Edit
2								Cfg. Edit
3								Cfg. Edit
4								Cfg. Edit
4								Cfg. Edit
5		_						Jis. Lait
	Back				Wr	ite		Keyboard

\leftarrow	Edit	Positio	n							
Posi	tion No.		1			Page L	Jp	Page Dn		
No.	Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel Acc	Dc I Comme	OutFn ent		
1	100.000							Cfg. Edit		
2								Cfg. Edit		
3								Cfg. Edit		
4								Cfg. Edit		
5								Cfg. Edit		
	Back Write Keyboard									

touch panel to transfer the data to the controller.

After inputting data, touch Write button on the

Once the transfer to the controller is complete, the background color in the position number display column will turn to the normal condition.

Only transferring the data to a controller by touching Write button will lose the edit data when the power gets rebooted or the software reset is conducted^{*1}. Go back from the position edit screen to the flash ROM writing screen by using Back button, and have [8.1.2 Flash ROM Writing] conducted. (*1 Except for controllers which possess feature to retain data)





[Data Clear]

←		Positio	1					 1
Posi	tion No.		1			Pag	ge Up	Page Dn
No.	Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel	Acc Dcl Comm	OutFn
1	100.000	714100	NATO?					Cfg Edit
2								Cfg. Edit
3								Cfg. Edit
4								Cfg. Edit
5								Cfg. Edit
	Back				Wr	ite		Keyboard

When you would like to delete the position data, touch Edit button on the position data that you would like to delete. The edit window opens.

\leftarrow	Edit	Positio						
Posi	tion No.		1			Pa	ge Up	Page Dn
No.	Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel	Acc Dcl Comm	OutFn ent
1	100.000							Cfg. Edit
2								Cfg. Edit
3								Cfg. Edit
4			 					Cfg. Edit
5		Clear	Cut		Сору		Paste	Cfg. Edit
	Back				Wr	ite		Keyboard

 Constraint
 Page Up
 Page Dn

 No.
 Axis1
 Axis2
 Axis3
 Axis4
 Arm1

 No.
 Axis5
 Axis2
 Axis3
 Axis4
 Arm1
 Vel
 Acc
 Dol
 OutFn

 Axis5
 Axis6
 Axis7
 Axis8
 Arm2
 Comment
 Comment

 2
 Cfg. Edit

 3
 Cfg. Edit

 4
 Cfg. Edit

 5
 Cfg. Edit

 6
 Cfg. Edit

 6
 Cfg. Edit

 6
 Cfg. Edit

 7
 Cfg. Edit

 6
 Cfg. Edit

 7

 7

 8
 -

Touch Clear button in the edit window. The edit window closes.

The position data was deleted, and the background color of the position number display column turns to orange, which shows that it is being edited (controller writing not yet done). Touch Write button on the touch panel to transfer the data to the controller.

Posi	tion No.		1			Page	Up	Page Dn
No.	Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel Ad	c Dcl Comme	OutFn nt
1								Cfg. Edi
2								Cfg. Edi
3								Cfg. Edi
4								Cfg. Edi
5								Cfg. Edi
	Back				147	ite		(eyboard

Once the transfer to the controller is complete, the background color in the position number display column will turn to the normal condition.

Only transferring the data to a controller by touching Write button will lose the edit data when the power gets rebooted or the software reset is conducted^{*1}. Go back from the position edit screen to the flash ROM writing screen by using Back button, and have [8.1.2 Flash ROM Writing] conducted. (*1 Except for controllers which possess feature to retain data)





[Copy and move of data]

← Edit Position										
Posi	tion No.		1		Page Up	D	Page Dn			
No.	Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel Acc	Dcl Comme	OutFn		
1	100.000							<u>Cfg</u> Edit		
2								Cfg. Edit		
3								Cfg. Edit		
4								Cfg. Edit		
5								Cfg. Edit		
	Back				Wr	ite	K	leyboard		

When you would like to copy (or move) the position data, touch the Edit button on the position data that you would like to copy (or move) from. The edit window opens.

\leftarrow	Edit	Positior	ı					
Posi	Position No. 1 Page Up					Page Dn		
No.	Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel A	cc Dcl Comme	
1	100.000							Cfg. Edit
2								Cfg. Edit
3 -								Cfg. Edit
4		1						Cfg. Edit
5		Clear	Cut	:	Сору	P	aste	Cfg. Edit
	Back				Wr	ite		Keyboard

Touch the Copy button in the edit window when you would like to copy the data. Touch the Cut button in the edit window when you would like to move the data. The edit window closes.

Posi	tion No.		1			Page	e Up	Page Dn
No.	Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel /	Acc Dcl Comme	OutFn ent
1	100.000							Cfg. Edi
2								Cfg Edi
3								Cfg. Edi
4								Cfg. Edi
5								Cfg. Edi
	Back				Wr	ite		Keyboard

Touch the Edit button on the position data that you would like to copy (or move) the data to. The edit window opens.

← Ed	it Positio	n					
Position N	No.	1			Page U	р	Page Dn
No. Axist Axist		Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel Acc	Dcl Commer	
1 100.	000						Cfg. Edit
2							Cfg. Edit
3							Cfg. Edit
4	_		46			X	Cfg. Edit
5	Clear	Cut		Сору	Pas	te	Cfg. Edit
Back				Wr	ite	К	eyboard

Touch the Paste button in the edit window. The edit window closes.





\leftarrow	Edit	Positio	n					
Posi	tion No.		1			Page	Up	Page Dn
No.	Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel A	.cc Dcl Comme	
1	100.000				_			Cfg. Edit
2	100.000							Cfg. Edit
3								Cfg. Edit
4								Cfg. Edit
5								Cfg. Edit
	Back		1		Wr	ite		Keyboard

The position data was copied (or moved), and the background color of the position number display column turns to orange, which shows that it is being edited (controller writing not yet done). (Shown in the figure one the left is an example of copying.)

Touch the Write button on the touch panel to transfer the data to the controller.

\leftarrow	Edit	Positio	n					
Posi	tion No.		1			Page U	р	Page Dn
No.	Axis1 Axis5	Axis2 Axis6	Axis3 Axis7	Axis4 Axis8	Arm1 Arm2	Vel Acc	Dcl Comme	
1	100.000							Cfg. Edit
2	100.000							Cfg. Edit
3								Cfg. Edit
4								Cfg. Edit
5								Cfg. Edit
	Back				Wr	ite	K	leyboard

Once the transfer to the controller is complete, the background color in the position number display column will turn to the normal condition.

Only transferring the data to a controller by touching Write button will lose the edit data when the power gets rebooted or the software reset is conducted^{*1}. Go back from the position edit screen to the flash ROM writing screen by using Back button, and have [8.1.2 Flash ROM Writing] conducted. (*1 Except for controllers which possess feature to retain data)





8.1.2 Flash ROM Writing

The edit data will be cleared by restoring the power and executing software reset, only if the position edit data was transmitted to the controller.

To save the data after restoring the power and executing software reset, write the data to Flash ROM. From the final editing screen, return to the Flash ROM writing screen with Back button.



To write the data to the flash ROM, touch Yes button.

If writing is not necessary, touch No button.



While in writing process to flash ROM, the screen shown in the left will be displayed.

Never turn off the power to the Controller at this time.



Flash ROM writing is completed. Touch OK button to return to the edit menu screen.



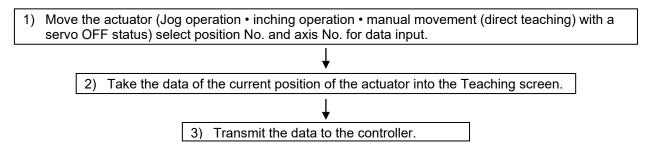


8.2 Teaching of the Orthogonal Axis XSEL-J/K/P/Q/R/S/RA/SA, XSEL2-T, XSEL2-TX (Axis 5 to 8 in Axis Group No. 1 and all axes in Axis Group No. 2) 5th to 6th Axes of XSEL-PX/QX, 5th to 8th Axes of XSEL-RX/SX, 5th to 8th Axes of XSEL-RAX/SAX^{*1}, Additional Axes on 3-axis SCARA Type MSEL-PCX/PGX, MSEL-PC/PG/PCF/PGF, TT, TTA, SSEL, ASEL or PSEL Controller and RSEL Orthogonal Axis (*1 4th to 8th Axes for 3-axis SCARA Type)

8.2.1 Teaching

Teaching is one way to input position data (moving the actuator to an arbitrary position and getting that actuator's current position as data).

Methods for moving the actuators to an arbitrary position are the jog operation, inching operation, and manual movement (direct teaching) with a servo OFF status. The fundamental flow of teaching is as follows:



Input the position data by teaching and repeating 1) to 3). Teaching is transacted mainly at the Teaching screen.

(🦳 Menu	
Edit	File
Play	
Monitor	Environment Set
Controller	Next
Edit Play	Monitor Control ->
Γ	

Touch Edit button in the Menu screen.

INTELLIGENT ACTUATOR	
C Edit	Touch Position button on the Edit screen.
Position	* Example shown on the left is for XSEL-J/K, P/Q,
Program	R/S, RA/SA, TT, TTA, SSEL, ASEL, PSEL, MSEL-PC/PG/PCF/PGF, XSEL2-T and
Symbol	XSEL2-TX (axes group No. 2).
Parameter Back	
Position Program Symbol Para	
← Position	Touch <u>Teach (Linear)</u> button in Position menu screen.
Manual input	
Copy/Move Teach(Linear)	
Clear	
Back	
Modify Teach Copy/Move Clear	
Clear Page Up Page Dn Axis1 Vel HOME SERVO ON/OFF Axis2 Acc Xis1 Image: Clear Image: Clear Axis2 Acc Xis1 Image: Clear Image: Clear Image: Clear Axis2 Acc Xis1 Image: Clear Image: Clear	Clear Page Up Page Dn Axis1 Vel HOME SERVO ON/OFF Axis2 Acc Aris1 Axis3 Dcl Aris2 Aris 1 Axis4 Aris 1 Aris 2 Aris 1

C Teach (Linear)			MOVE	STOP
Position No.	1 C	lear Pag	e Up Page Dn		
Axis1		Vel		HOME	SERV0 0N/0FF
Axis2		Acc		Axis 1	Axis 1
Axis3		Dcl		J0G -	J06 +
Axis4				Axis 2 JOG -	Axis 2 JOG +
				Axis 3	Axis 3
		Switch Axi	s Cont.	JOG -	JOG +
In Out	UserOutput	JogVelocit	sy Scan	AX1S 4 J06 -	AX1S 4 J06 +
Back	Cur Pos.	Write	Keyboard	All Axes JOG -	All Axes JOG +
Disp	Scan	Clear	Axis ->		

< reach(Linear)	MOVE	STOP
Position No. 1 Clear Page Up Page Dn	MOVE	
Axis1 Vel	HOME	SERV0 0N/0FF
Axis2 Acc	Axis 1	Axis 1
Axis3 Dcl	J06 -	J0G +
Axis4	Axis 2 JOG -	Axis 2 J0G +
	Axis 3 JOG -	Axis 3 JOG +
Switch Axis Cont.	Axis 4	Axis 4
In Out InOut User JogVelocity Scan	J06 -	J06 +
Back Cur Pos. Write Keyboard	All Axes JOG -	All Axes JOG +
Disp Scan Clear Axis ->		

For Input and Output Ports

When you can find Teach button in the position menu screen, touch the Teach button to move to the teach screen, and touch the Switch Axis button in the teach window to switch the screen over to the teach screen that includes the axis you would require to operate.

← Position	
Manual input	Teach
Copy/Move	
Clear	
	Back
Modify Teach Co	py/Move Clear 18:00

ME0356-11A

Touch Teach button in Position menu screen.

* Example in the figure on the left shows that of RSEL





Teach(Linear) Axes group	1 MOVE STOP
Position No. 1 Clear Page Up Page Dn	
Axis1 Vel	HOME SERVO
Axis2 Acc	Axis 1 Axis 1
Axis3 Dcl OutEn	J0G - J0G +
Position move type:CP Chg Brake control	Axis 2 Axis 2 JOG - JOG +
	Axis 3 Axis 3
Switch Axis Cont.	J06 - J06 +
In Out InOut User JogVelocity Scan	j 💷 💷
Back Cur Pos. Write Keyboard	All Axes J0G - J0G +
Disp Scan Clear Axis ->	9:09

Teach window appears.

Touch the Switch Axis button to switch the screen over to the teach window that includes the axis you would require to operate.

When an axis number assignment to activate several axes groups is performed in the axis number assignment feature (Refer to [15.17 Axis Number Assignment]), the select axes group window should appear after you touch the Teach button. Touch an axes group number button to select the axes group number that is to be subject to.

÷	Select axes group	
	Axes group No.1	
	Axes group No.2	
	Cance I	
		10:00

Touch the Teach button.

The select axes group screen should appear after you.

Touch an Axes group No. button.

← Teach(Linear)		Axes group 1	MOVE STOP
Position No. 1	Clear Page	Up Page Dn	
Axis1	Vel		HOME SERVO ON/OFF
Axis2	Acc		Axis 1 Axis 1
Axis3	Dcl		J0G - J0G +
	0utFn		Axis 2 Axis 2
Position move type:CP	Chg Bra	ke control	J0G - J0G +
			Axis 3 Axis 3 J06 - J06 +
	Switch Axis	Cont.	
In Out InOut User	JogVelocity	Scan	
Back Cur Pos.	Write	Keyboard	All Axes JOG - JOG +
Disp Scan	Clear A	xis ->	9:09

Teach window appears.

* The axes group number that was selected should be shown on the top right of the screen.





Explanation for each	Display Area
Position No.	: Currently displayed position number
Axis1-4 (Axis5-8	3): Position data for the axes from Axis 1 to 4 or Axis 5 to 8.
((Only the valid cartesian axes should be shown.)
Vel	: Velocity
Acc	: Acceleration
Dcl	: Deceleration
OutFn	: Output fanction
Outin	
Explanation for each	Touch Panel Button
Cur Pos.	: Switch the input data screen to the current position display.
Scan	: Current position is loaded to the screen. From Axis 1 to 4 (from Axis 5 to
Court	8) should be loaded when the cursor is placed on them, and all the valid
	cartesian axes in those from Axis 1 to 8 should be loaded when the
	cursor is placed somewhere else or the cursor is not displayed.
Clear	: It clears all the axes data in the displayed position number.
-	
	ype <u>Chg</u> : Position movement type should be switched.
Brake control	: The screen should shift to the window to operate brake compulsory
	release / lock.
Switch Axis	: Display axis should be switched when axes after the fifth axis is valid, or
	when there is an added axis in the three-axis SCARA type.
Cont.	: Execute continuance operation.
JogVelocity	: Set the jog velocity, etc.
In	: Monitor the input port.
Out	: Monitor the output port.
User	: Turn ON/OFF the output ports (sequential 8 points at the maximum set to
	parameters).
	(It is required to preset the I/O parameters No. 74 and No. 75.)
	cable for input and output ports
InOut	: Input and output ports are monitored.
Lloor	Turn ON/OEE the output ports (sequential 9 points at the maximum set to

- User : Turn ON/OFF the output ports (sequential 8 points at the maximum set to parameters). (It is required to preset the I/O parameters No. 74 and No. 75.)





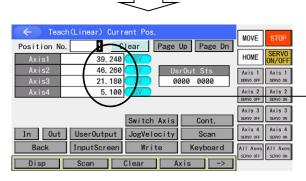
For incremental encoder specification, it is required to execute homing after supplying power or software reset before you start teaching.

← Teach(Linear)			MOVE	STOP
Position No. 1 C	lear Page	Up Page Dn		
Axis1	Vel		HOME	SERVO ON/OFF
Axis2	Acc		Axis 1	Axis 1
Axis3	Dci		SERVO OFF	SERVO ON
Axis4			Axis 2 SERVO OFF	Axis 2
				SERVO ON
	Switch Axis	Cont.	Axis 3 SERVO OFF	Axis 3 SERVO ON
In Out UserOutput	JogVelocity	Scan	Axis 4 SERV0 OFF	Axis 4 SERVO ON
Back Cur Pos.	Write	Keyboard		All Axes
Disp Scan	Clear A:	xis ->	SERVO OFF	SERVO ON

Turn the servo ON condition by touching the SERVO ON/OFF button and then the Servo all axes ON button in the Teach screen condition.

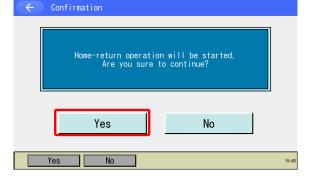
To check if servo is turned ON or OFF, touch Cur Pos. button.

After touching Home button, touch Move All Axes for all the axes, and the screen shifts to the homereturn confirmation window. For each axis, touch Move 1 Axis to Move 4 Axes.



Current Position (Input Screen) Button

The data of the current position screen before homing doesn't have meaning.



Touch the Yes button in the home-return operation confirmation window, and the home-return operation for all the axes or each axis should start and the screen goes back to the teach window. In order to stop the operation on the way, touch the Stop button in the teach window.

← Teach	← Teach(Linear) Current Pos.					
Position No.	1 Clear	Page Up	Page Dn		05010	
Axis1	0. 000 SV			HOME	SERV0 0N/0FF	
Axis2	0. 000 <mark>SV</mark>	Usr0u	t Sts	Axis 1	Axis 1	
Axis3	0. 000 <mark>SV</mark>	0000	0000	MOVE	MOVE	
Axis4	0. 000 SV			Axis 2 MOVE	Axis 2 MOVE	
	Swit	ch Axis	Cont.	Axis 3 MOVE	Axis 3 MOVE	
In Out		elocity	Scan	Axis 4 MOVE	Axis 4 MOVE	
Back	InputScreen W	rite H	Keyboard	Contraction of the local distance of the loc	All Axes	
Disp	Scan Clear	Axis	->	MOVE	MOVE	

After homing is complete, execute teaching.





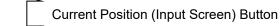
- (1) Movement of an actuator
- 1) Jog Operation

← Teach(Linear)	MOVE
Position No. Clear Axis1 Ve	Page Up Page Dn HOME SERVO N/OFF
Axis2 Acc Axis3 Dc	Axis 1 SERVO OFF SERVO ON
Axis4	Axis 2 SERVO OFF SERVO ON
Switch	Axis Cont. Axis 4 Axis 4 Axis 4
In Out UserOutput JogVe	city Scan SERVO OFF SERVO ON
Disp Scan Clear	Axis ->

Turn the servo ON condition by touching the SERVO ON/OFF button and then the Servo all axes ON button in the Teaching screen condition.

Execute the all-axes servo OFF command when there is any axis in the servo ON status, and execute the all-axes servo ON command when all axes are in the servo OFF status.

To check if servo is turned ON or OFF, touch Cur Pos. button to show the current position screen.



For the second secon	(Linear) Curr	ent Pos. Lear Page	Up Page Dn	MOVE	STOP
Axis1	39, 240	SV	Op Tage Di-	HOME	SERV0 0N/0FF
Axis2 Axis3	46.260 21.180		srOut Sts 0000 0000	Axis 1 JOG -	Axis 1 J0G +
Axis4	5. 100	SV		Axis 2 JOG -	Axis 2 J0G +
		Switch Axis	Cont.	Axis 3 JOG -	Axis 3 JOG +
In Out	UserOutput	JogVelocity	Scan	Axis 4 JOG -	Axis 4 J0G +
Back	InputScreen	Write	Keyboard	All Axes JOG -	All Axes JOG +
Disp	Scan	Clear	Axis ->		

Servo Status

Light Blue: Servo ON, Black: Servo OFF

Touch the Axis 1 JOG-, Axis 1 JOG+, Axis 2 JOG-, Axis 2 JOG+, Axis 3 JOG-, Axis 3 JOG+, Axis 4 JOG- and Axis 4 JOG+ buttons to move the actuator to a designated position. (1 to 4 indicate axis No. and + represents plus direction [forward] while – represents minus direction [backward].) To execute jog operation for the 5th and 8th axes, touch the Switch Axis button to switch the display to the 5th and 8th axes data display screen.

C Teach	← Teach(Linear) Current Pos.					
Position No.	1 C	lear	Page Up	Page Dn	MOVE	STOP
Axis1	39.240	SV	8		HOME	SERV0 0N/0FF
Axis2	46.260	SV	UsrC	lut Sts	Axis 1	Axis 1
Axis3	21.180	SV	000	0 0000	J06 -	J06 +
Axis4	5.100	SV			Axis 2 JOG -	Axis 2 JOG +
					Axis 3	Axis 3
		Switch	Axis	Cont.	J06 -	J06 +
In Out	UserOutput	JogVelo	city	Scan	Axis 4 JOG -	Axis 4
Back	InputScreen	Writ	te	Keyboard	All Axes J06 -	All Axes J06 +
Cont	JVel	In	Out	t ->		

Changing the Jog Velocity Change the actuator's moving velocity at the time of the jog operation. Touch JogVelocity button in Teaching screen.

Jog Velocity(Linear) Vel[mm/sdc] 30 Acc[G] 0.30 Dcl[G] 0.30 Inc[mm] 0.000	
Back	Keyboard

— Jog velocity

Input Vel (velocity), Acc (acceleration), and Dcl (deceleration) at the time of the jog operation with the touch panel numeric keys. Set Inc (inching distance) 0.000. (To open the touch panel numeric keys, touch Keyboard button.)

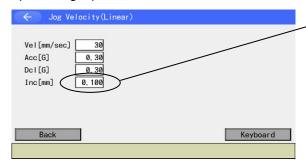
You can also set the inching distance from this screen.

Touch Back button to return to Teaching screen to conduct the jog operation.





2) Inching Operation



Inching distance

Set the inching distance. (the moving distance each time touching jog button.) In the jog velocity change screen, input a number in Inc (Inching Distance). (To open the touch panel numeric keys, touch Keyboard button.) Value input range is 0.001 to 1.000 [unit: mm]. Touch Back button to return to Teaching screen to conduct the inching operation.

Touch the jog button once and the actuator moves for the distance of 1 inching. Touch <u>Axis 1 JOG+</u> to <u>Axis 4 JOG+</u> button and <u>ALL Axes+</u> button to perform inching movement in the positive direction of the coordinate and <u>Axis 1 JOG-</u> to <u>Axis 4JOG-</u> button and <u>ALL Axes-</u> button to perform inching in the negative direction.

Touching and holding the jog button changes to jog operation. In approximately 1.6 seconds after the jog button is touched, inching operation changes to jog operation and further continuing to touch the button changes the jog velocity per second as follows: $1 \rightarrow 10 \rightarrow 50 \rightarrow 100 \text{ [mm/s]}$.

3) Manual Movement (Direct Teaching) with Servo OFF Status

🔶 Te	ach	n(Linear) Cu	urre	ent Po	s.			MOVE	STOP
Position	No.	1	CI	ear	Page	Up	Page Dn		CEDVO
Axis1		39, 2	52	SV				HOME	SERVO ON/OFF
Axis2		46, 2	59	SV	Us	rOut	: Sts	Axis 1	Axis 1
Axis3		21, 1	78	SV	0	000	0000	SERVO OFF	SERVO ON
Axis4		5. 1	03	SV				Axis 2 SERVO OFF	Axis 2 SERVO ON
								Axis 3	Axis 3
				Switc	h Axis		Cont.	SERVO OFF	SERVO ON
In Ou	t	User0utpu	t	JogVe	locity		Scan	Axis 4 SERVO OFF	Axis 4 SERVO ON
Back		InputScree	en	Wr	ite	K	eyboard	All Axes SERVO OFF	All Axes SERVO ON
Disp	10	Scan	C	lear	A	xis	->		

Turn the servo OFF condition by touching the SERVO ON/OFF button and the Touch All Axes Servo-off button to turn the servo off. To check if servo is turned ON or OFF, touch Current Pos. button.

Move the actuators to the designated position via manual mode.

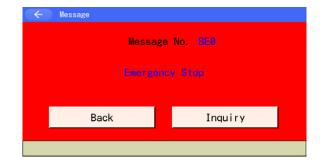
(The background color in the screen turns to red during the emergency stop.)

Pressing the EMERGENCY STOP button switches the display to the emergency stop screen.

Touch Back button to return to Teaching screen.

/ Warning:

Be sure to execute manual movement when the EMERGENCY STOP button is pressed.







(2) Take in the current position as a data

The determined actuator position is uploaded to the teaching screen as the position data.

← Teach(Linear)			MOVE	STOP
Position No. 1	Vel Vel	Up Page Dn	HOME	SERV0 0N/0FF
Axis2 Axis3	Acc Dcl		Axis 1 J06 -	Axis 1 JOG +
Axis4			Axis 2 JOG -	Axis 2 JOG +
	Switch Axis	Cont.	Axis 3 J00 -	Axis 3 J06 +
In Out UserOutput	JogVelocity	Scan	J0G -	Axis 4 JOG +
Back Cur Pos.	Write Clear A	Keyboard	JOG -	J06 +

Touch in the position number input box to show the cursor and input a value on the touch panel numeric keys. (Touch panel numeric keys can be shown by touching Keyboard button.) Or, select the position number to load the data from by touching Page Up and Page Dn buttons.

	ch(Linear)			MOVE	STOP
Position N Axis1	0. 1 Cle 102.120	ar Page Vel	Up Page Dn	HOME	SERV0 ON/OFF
Axis2 Axis3		Acc Dcl		Axis 1 JOG -	Axis 1 J0G +
Axis4		<u> </u>	ı	Axis 2 JOG -	Axis 2 JOG +
	S	witch Axis	Cont.	Axis 3 J06 -	Axis 3
In Out		logVelocity	Scare	Axis 4 	Axis 4 JOG +
Back Disp	Cur Pos.	Write ear A	Keyboard	J00	JOG +

When the cursor is axis boxes, touch Scan button to load the current position data of the axis that the cursor is placed on. Touch Scan button when the cursor is not shown or placed in an area other than the axis boxes, the current position data of all the axes is loaded.

8. Position Edit

(3) Transmit to the Controller Transmit the taken-in data to the controller.

🔶 Tea	ch(Linear)			MOVE	ST0P	
Position N	o. 1 C	lear Page	Up Page Dn	MOVE		
Axis1	102. 120	Vel		HOME	SERV0 0N/0FF	
Axis2	65.880	Acc		Axis 1	Axis 1	
Axis3	32.700	Dcl		J06 -	J0G +	
Axis4	4.500			Axis 2 JOG -	Axis 2 JOG +	
				Axis 3	Axis 3	
		Switch Axis	Cont.	J06 -	J06 +	
In Out	UserOutput	JogVelocity		Axis 4 JOG -	Axis 4 JOG +	
Back	Cur Pos.	Write	Keyboard	All Axes JOG -	All Axes J0G +	
Disp	Disp Scan Clear Axis ->					

In Teaching screen, touch Write button. The loaded data is stored in the memory in the controller. Once the transfer to the controller is complete, the position number is incremented by one.

The data available to transfer to the controller is one position data that is being displayed. It is not possible to transfer the data of more than one position number at a time.

- Teach	h(Linear)			MOVE	STOP
Position No. Axis1	. <u>2</u> c	lear Page Vel	Up Page Dn	HOME	SERV0 0N/0FF
Axis2 Axis3		Acc Dcl		Axis 1 JOG -	Axis 1 J0G +
Axis4			,	Axis 2 JOG -	Axis 2 JOG +
		Switch Axis	Cont.	Axis 3 J00 -	Axis 3
In Out	UserOutput	JogVelocity	Scan	Axis 4 JOG -	Axis 4 JOG +
Back	Cur Pos.	Write	Keyboard	All Axes J06 -	All Axes J00 +
Disp	Scan	Clear A	xis ->		

If the screen is switched with touching Page Up, Page Dn or Back button, before the data is transferred, the input data will become invalid.

Only transferring the data to a controller by touching Write button will lose the edit data when the power gets rebooted or the software reset is conducted^{*1}. Go back from the position edit screen to the flash ROM writing screen by using Back button, and have 8.1.2 Flash ROM Writing conducted. (*1 Except for controllers which possess feature to retain data)

Axis box





(4) I/O Monitor • Position Confirmation

During teaching operation, you can monitor various ports. You can also confirm the location by moving an actuator to a to the location of the position data with teaching.

1) Input/Output Monitor

Either touch In or Out button in Teaching screen.

For models applicable for input and output ports, monitoring of the input and output ports is available by either touching InOut button.

Input Port

•	← Ir	npu:	t F	or	t							
	Port No	o. [0							Page Up Page Dn
	No.	0	1	2	3	4	5	6	7	8	9	Debugging filter —
	0	0	0	0	0	0	0	0	0	0	0	
	10	0	0	0	0	0	0	0	0	0	0	ON OFF CLR ACLR
	20	0	0	0	0	0	0	0	0	0	0	
	30	0	0	0	0	0	0	0	0	0	0	1
	40	0	0	0	0	0	0	0	0	0	0	\leftarrow \downarrow \rightarrow
	Back	(Keyboard
												10:00

Output Port

< 0u	itp	ut	Po	rt							
Port No	o. [30	0							Page Up Page Dn
No.	0	1	2	3	4	5	6	7	8	9	
300	1	1	1	0	0	0	0	0	0	0	
310	0	0	0	0	0	0	0	0	0	0	ON ↑ OFF
320	0	0	0	0	0	0	0	0	0	0	\leftarrow \downarrow \rightarrow
330	0	0	0	0	0	0	0	0	0	0	
340	0	0	0	0	0	0	0	0	0	0	
Back											Keyboard
0/1	1		1								

Either touch ON or OFF button to set ON/OFF (1/0) for the output port on the cursor position.

Refer to [14.2 Input Port] for debug filters.

InOut Port (for applicable models)

← Ir Port No	n0un		Por 00	_							Page Up Page Dn
No. 7000 7010 7020 7030 7040	0 0 0	1 0 0	0 0 0	0 0 0	-	0 0 0	0 0 0	0 0 0	8 0 0 0 0	0 0 0	ON ↑ 0FF ← ↓ →
Back											Keyboard

The way to operate is the same as the output port.





2) Moving

Move the actuator to the location of the position data transmitted to the controller.

	(Linear)			MOVE	STOP
Position No. Axis1	0.000	lear Page Vel	Up Page Dn	HOME	SERV0 0N/0FF
Axis2 Axis3	50.000	Acc Dcl		Axis 1 MOVE	Axis 1 MOVE
Axis4				Axis 2 MOVE	Axis 2 MOVE
		Switch Axis	Cont.	Axis 3 MOVE	Axis 3 MOVE
In Out Back	UserOutput Cur Pos.	JogVelocity Write	Scan Keyboard	MOVE	MOVE All Axes
Disp			xis ->	MOVE	MOVE

- Position No. to move

Select position No. to move in the Teaching screen condition.

Touch SERVO ON/OFF button and then touch Servo all axes ON button to turn the servo ON. To check if servo is turned ON or OFF touch Cur Pos. button.

The actuator starts moving by touching the MOVE button and then the <u>all the axes moves</u> button, in the case of all-axis movement. Touch the <u>1 axis move</u> to <u>4 axis move</u> in the case of each axis movement. To stop movement halfway, touch the <u>STOP</u> button.

To check or change the operation velocity, touch JogVelocity button.

✓ Jog Velocity(Linear) Vel [mm/sec Acc[6] Dcl[6] 0.30 Inc[mm] 0.000	 Operation Velocity 30mm/sec
Back	Keyboard

Touch Keyboard button to show the touch panel numeric keys. (When cursor is not in Vel box, touch Vel box to make the cursor appear.) Input the change data on the numeric keys, and touch ENT.

After changing, touch Back button.

If the velocity, acceleration and deceleration are set in the position data, these settings are prioritized.

Priority: Parameter < JVel < Position Data





3) Continuous movement

Move the actuator continuously to the location of the position data transmitted to the controller.

← Tead	ch(Linear)	lear Pag	e Up Page Dn	MOVE	STOP
Axis1	50,000	Vel	e Up Page Dn	HOME	SERV0 ON/OFF
Axis2 Axis3	100.000	Acc Dc I		Axis 1 SERVO OFF	Axis 1 SERVO ON
Axis4				Axis 2 SERVO OFF	Axis 2 SERVO ON Axis 3
		Switch Axi		SERVO OFF	SERVO ON
In Out Back	UserOutput Cur Pos.	JogVelocit Write	y Scan Keyboard		SERVO ON All Axes
Disp	JVel		Axis	SERVO OFF	SERVO ON

- Position No. you'd like to move first

In Teaching screen, select the position number to operate first.

Touch SERVO ON/OFF button and then touch all ServoON button to turn the servo ON. To check if servo is turned ON or OFF, touch Cur Pos. button.

Touch Cont. button.

To check or change the operation velocity, touch JogVelocity button.

Jog Velocity(Linear) Vel[mm/sec 30 Acc[G] 0.30 Dcl[G] 0.30 Inc[mm] 0.000	- Operation Velocity 30mm/sec
Back	Keyboard

🔶 Tea	ch(Linear) Current Pos.	MOVE STOP
Position N	o. 3 Clear Page Up Page Dn	
Axis1	96. 370 SV	HOME SERVO ON/OFF
Axis2	7.264 SV UsrOut Sts	Axis 1 Axis 1
Axis3	0.000 SV 0000 0000	MOVE (-) MOVE (+)
Axis4	0. 000 SV	Axis 2 Axis 2 MOVE (-) MOVE (+)
		Axis 3 Axis 3
	Switch Axis Cont.	MOVE (-) MOVE (+)
		Axis 4 Axis 4
In Out	UserOutput JogVelocity Scan	MOVE (-) MOVE (+)
Back	InputScreen Write Keyboard	All Axes All Axes MOVE (-) MOVE (+)
Disp	Axis	

Touch Keyboard button to show the touch panel numeric keys. (When cursor is not in Vel box, touch Vel box to make the cursor appear.) Input the change data on the numeric keys, and touch ENT.

After changing, touch Back button.

If the velocity, acceleration and deceleration are set in the position data, these settings are prioritized.

Priority: Parameter < JVel < Position Data

The actuator (in all axes) starts continuous movement by touching the MOVE button and then the all axes moves+ or all axes moves- button, in

the case of all-axis movement. Touch the

1 axis move- 1 axis move+ to 4 axis move-4 axis move+ buttons in the case of each axis movement.

During continuous movement, the display changes to the current position screen. To stop, touch the STOP button.

To restart continuous movement, touch the MOVE button. After touching move button, touch either All Axes Move (+) or All Axes Move (-) to resume the continuous movement.

🗥 Caution:

Please note that it may take a few seconds before movement start after all axes moves+ or all axes moves- button are touched. (The time elapsed until movement start varies according to the number of registered position data.)

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(5) User-specified output port operation

The output ports set for the parameter can be easily turned ON/OFF. Touch UserOutput button in the Teaching screen condition.

Constraint Current Pos. Position No. 1 Clear Page Up Page Dn Axis1 0.000 SV Usr0ut Sts	HOME SERVO ON/OFF
Axis2 0.000 SV 0000 0000 Axis3 0.000 SV 0000 0000 Axis4 0.000 SV 0000 0000 Svitch Axis SV Cont. 0000	$ \begin{array}{c cccc} Axis 1 & Axis 1 & \\ \hline Axis 1 & & \\ Axis 2 & & \\ xoc + & \\ xoc + & \\ xoc + & \\ \hline Axis 3 & & \\ xoc + & \\ \hline Axis 3 & & \\ xoc + & \\ \hline Axis 3 & & \\ xoc + & \\ \hline Axis 3 & & \\ xoc + & \\ \hline Axis 3 & & \\ xoc + & \\ \hline Axis 3 & & \\ xoc + & \\ \hline Axis 3 & & \\ xoc + & \\ \hline Axis 3 & & \\ xoc + & \\ \hline Axis 3 & & \\ xoc + & \\ $
	sr7 Usr8 (B)

When UserOutput button is touched

(A) User-specified output port status

The conditions of user-specified output ports are displayed as '1' (=ON) and '0' (=OFF). (The conditions are displayed from the first specified port for the number of specified ports from the left.)

(B) User-Specified Output Port Operation Panel Window

It is a panel window to perform the operation to turn ON/OFF the user-specified output ports. Assignment is made for the number of specified ports in the order of 'Usr1', 'Usr2', 'Usr3' ... from the top of the user-specified output ports.

By touching a <u>Usr1</u> to <u>Usr8</u> buttons, an operation can be performed to turn each output port ON/OFF.

(Port ON Command is executed when the port status display is '0' (OFF) and Port OFF Command when the status display is '1' (ON)).

To close this panel window, touch $\boxed{\times}$ on the top right.

1) Setting of user-specified output port parameters

For the operation method for parameter setting, refer to [13. Parameter Edit].

The first port No. and the number of ports are set with the following parameters:

- Number of ports
- I/O parameter No. 74 "QntPrtUsrOut" (Number of output ports used by TP user (hand, etc.))First port No.

I/O parameter No. 75 "TopNo.UseOut" (First output port No. by TP user (hand, etc.))

(Setting example) When the first port No. is set to 308 and the number of ports is set to 8:

'Usr1' ······ Output port 308
'Usr2' ······ Output port 309
'Usr3' ······ Output port 310
'Usr4' ······ Output port 311
'Usr5' ······ Output port 312
'Usr6' ······ Output port 313
'Usr7' ······ Output port 314
'Usr8' ······ Output port 315





(6) Changing Position Movement Type (for applicable models only) An operation type (CP/PTP) for position movement can be indicated.

- Teach(Linear)	MOVE
Position No. 1 Clear Page Up Page Dn	
Axis1 Vel	HOME SERVO
Axis2 Acc	Axis 1 Axis 1
Axis3 Dcl Axis4 OutEn	J0G - J0G +
Position move type:CP Chg Brake control	Axis 2 Axis 2 JOG - JOG +
	Axis 3 Axis 3
Switch Axis Cont.	J0G - J0G +
	Axis 4 Axis 4 J0G - J0G +
	All Axes All Axes
Back Cur Pos. Write Keyboard	J0G - J0G +
Disp Scan Clear Axis ->	9:07

Touch the Chg button in the "Position Movement Type" label before the movement starts to select the operation type for the next movement. Change cannot be made during movement or continuous movement.

The default of the cartesian axis should be CP operation.

(7) Brake Control (for applicable models only) When it is connected to the brake control applicable model, the <u>Brake control</u> button should be displayed. Touch it and the screen should shift to the brake control window.

Teach(Linear)	MOVE STOP
Position No. 1 Clear Page Up Page Dn Axis1 Vel	HOME SERVO ON/OFF
Axis2 Acc Axis3 Dcl	Axis 1 J0G - J0G +
Axis4 OutFn Position move type:CP Chg Brake control	Axis 2 J0G - J0G +
Switch Axis Cont.	Axis 3 JOG - JOG + Axis 4 Axis 4
In Out InOut User JogVelocity Scan Back Cur Pos. Write Keyboard	JOG - JOG + All Axes All Axes
Disp Scan Clear Axis ->	J0G - J0G + 9:07

🗧 Brake control						
Brake will be locked/released by touching the "Brake operation" buttons.						
Axis No. Brake operation			Brake Status	Servo	Axes group No.1	
Axis1	Lock	Release	Lock	\circ	Axes group No.2	
Axis2	Lock	Release	Lock	•		
Axis3	Lock	Release	Release	\bigcirc		

Back

When several axis group are set, an axis group of an axis that you would like to have a brake control should be selected with the Axes group No. 1 and Axes group No. 2 buttons.

8. Position Edit





The brake operation button and the status of an effective axis should be displayed.

	ked/released by to			
is No. Bra	ke operation	Brake Status	Servo	Axes group No.1
(is1 Lock		Lock	0	Axes group No.2
cis2 Lock		Lock		
cis3 Lock	Release	Release	\bigcirc	
				Back
				8:5
				0.5
- Confirm	nation			AGrp.1 Ax.1
destruction o ②Lock the brak after work is ③Brake control	movable part could of the actuator bod ke and return the b s finished. I will be automatic yo is turned on or t	rake control to ally changed to	the normal the normal	state
destruction of ②Lock the brak- after work is ③Brake control when the serv	of the actuator bod ke and return the b s finished. I will be automatic	rake control to ally changed to when returning t	the normal the normal o the menu.	state state
destruction of ②Lock the brak after work is ③Brake control when the serv	of the actuator bod ke and return the b s finished. I will be automatic vo is turned on or r	rake control to ally changed to when returning t ease the brak	the normal the normal o the menu.	state state
destruction of ②Lock the brak- after work is ③Brake control when the serv	of the actuator bod ke and return the b s finished. I will be automatic yo is turned on or bu want to rele	rake control to ally changed to when returning t ease the brak	the normal the normal o the menu, re forcit	state state
destruction of ②Lock the brak after work is ③Brake control when the serv	of the actuator bod ke and return the b s finished. I will be automatic yo is turned on or bu want to rele	rake control to ally changed to when returning t ease the brak	the normal the normal o the menu, re forcit	state state yly?
destruction of ②Lock the brak after work is ③Brake control when the serv	of the actuator bod ke and return the b s finished. I will be automatic yo is turned on or bu want to rele	rake control to ally changed to when returning t ease the brak	the normal the normal o the menu, re forcit	state state yly?
destruction of @Lock the brak after work is (3)Brake control when the serv Do yo	of the actuator bod ke and return the b s finished. I will be automatic yo is turned on or yo want to rele OK	rake control to ally changed to when returning t ease the brak	the normal the normal o the menu, re forcit	state state yly?
destruction of @Lock the brak after work is (3)Brake control when the serv Do yo - Brake co	of the actuator bod ke and return the b s finished. I will be automatic you want to rele OK	rake control to ally changed to when returning t case the brake Cc	the normal the normal o the menu. e forcit	state state J y? 8:f
destruction of @Lock the brak after work is (3)Brake control when the serv Do yo - Brake of e will be lock	of the actuator bod ke and return the b s finished. I will be automatic you want to rele OK Control ked/released by to	rake control to ally changed to when returning t case the brake Cc	the normal the normal o the menu. e forcit	state state J y? 8:f
Clock the brak after work is Brake control when the serv Do yo Brake c e will be lock s No. Bra	of the actuator bod ke and return the b s finished. I will be automatic vois turned on or wu want to rele OK OK control ked/released by to ke operation	rake control to ally changed to when returning t pase the brake Cc cuching the "Br	the normal the normal of the menu. e forcib incel	state state Jy? tion" buttons. Axes group No, 1
destruction of (2)Lock the brak after work is (3)Brake control when the serv Do yo Do yo e will be lock is No. Bra cis1 Lock	of the actuator bod ke and return the b s finished. I will be automatic you want to releve OK Control ked/released by to ke operation Release	rake control to ally changed to when returning t pase the brake Cc Cc Duching the "Br Brake Status	the normal the normal of the menu. e forcib incel	state state Jly? art tion" buttons.
destruction of (2)Lock the brak after work is (3)Brake control when the serv Do yo Do yo be lock e will be lock is No. Bra kis1 Lock kis2 Lock	of the actuator bod ke and return the b s finished. I will be automatic you want to releve OK Control control Release Release	rake control to ally changed to when returning t pase the brake Ca Ca Ca Ca Ca Ca Ca Ca Ca Ca Ca Ca Ca	the normal the normal of the menu. e forcib incel	state state Jy? tion" buttons. Axes group No, 1
destruction of @Lock the brak after work is @Brake control when the serv Do yo be serv Do yo e will be lock s No. Bra iis1 Lock iis2 Lock	of the actuator bod ke and return the b s finished. I will be automatic you want to releve OK Control control Release Release	rake control to ally changed to when returning t pase the brake Cc Cc Duching the "Br Brake Status Release Lock	the normal the normal of the menu. e forcib incel	state state Jy? tion" buttons. Axes group No, 1
destruction of (2)Lock the brak after work is (3)Brake control when the serv Do yo Do yo destruction of when the serv Do yo destruction of destruction of	of the actuator bod ke and return the b s finished. I will be automatic you want to releve OK Control control Release Release	rake control to ally changed to when returning t pase the brake Cc Cc Duching the "Br Brake Status Release Lock	the normal the normal of the menu. e forcib incel	state state Jy? tion" buttons. Axes group No, 1
destruction of (2)Lock the brak after work is (3)Brake control when the serv Do yo Do yo be lock e will be lock is No. Bra kis1 Lock kis2 Lock	of the actuator bod ke and return the b s finished. I will be automatic you want to releve OK Control control Release Release	rake control to ally changed to when returning t pase the brake Cc Cc Duching the "Br Brake Status Release Lock	the normal the normal of the menu. e forcib incel	state state Jy? tion" buttons. Axes group No, 1

To release an axis in brake lock status compulsorily, touch the Release button in the brake operation column.

As the screen shifts to the confirmation window, confirm the contents and touch the OK button when having a compulsory release, and touch the Cancel button when cancel.

When the brake is to be locked, confirm the servo in the axis number to lock is off, and touch the Lock button in the brake operation column. When it is locked, the brake status should be shown "Lock". When the servo is on, touch the Back button to return to the teach window, turn the servo off and turn it back on to lock it.

/ Warning: Caution for Brake Compulsory Release

- (1) The moving part may drop, which may cause injury or cause damage on the actuator main unit, workpiece or equipment. Pay special attention.
- (2) Make sure to lock the brake after the work is finished to set the brake control back to the normal condition.
- (3) When the servo is turned on and when it gets back to the menu window, the brake control should get back to the normal condition automatically.





8.2.2 Example of Teaching Input

Entering the data into position No. 10 using the jog and into position No. 11 by manual movement (direct teaching) with Servo OFF status.

No.	Operation		
1	Touch Edit button.	Kenu Edit File Play Nonitor	
		Controller Next Edit Play Monitor Control ->	
2	Touch Position button.	Edit Position Program Symbol Parameter Back Position Program Symbol Para	
3	Touch <u>Teach(Linear)</u> button.	Position Manual input Copy/Move Teach(Linear) Clear Back Modify Teach Copy/Move Clear	
4	Either use Page Up button and Page Dn button in the touch panel or input "10" in the position number on the software numeric key, and then touch ENT for confirmation.	← Teach(Linear) Position No. Clear Page Up Page Dn Axis1 0.000 Vel HOME SERVO ON/OFF Axis2 50.000 Acc Axis1 Axis1 Axis3 Dcl Axis2 Axis2 Axis1 Axis1 MUL Servo Axis3 Axis3 Axis3 Axis3 Multiple Switch Axis Cont. Axis3 Axis3 Multiple Switch Axis Cont. Axis3 Axis3 Multiple JogVelocity Scan Axis3 Axis3 Disp Scan Clear Axis ->	
5	Touch SERVO ON/OFF button and then touch Servo all axes ON button to turn the servo ON.	← Teach(Linear) Position No. 10 Clear Page Up Page Un HOWE STOP Axis1 Vel HOWE Axis1 Axis2 Axis2 Axis2 Axis2 Axis2 Axis2 Axis1 Axis1 Axis2 Axis2	



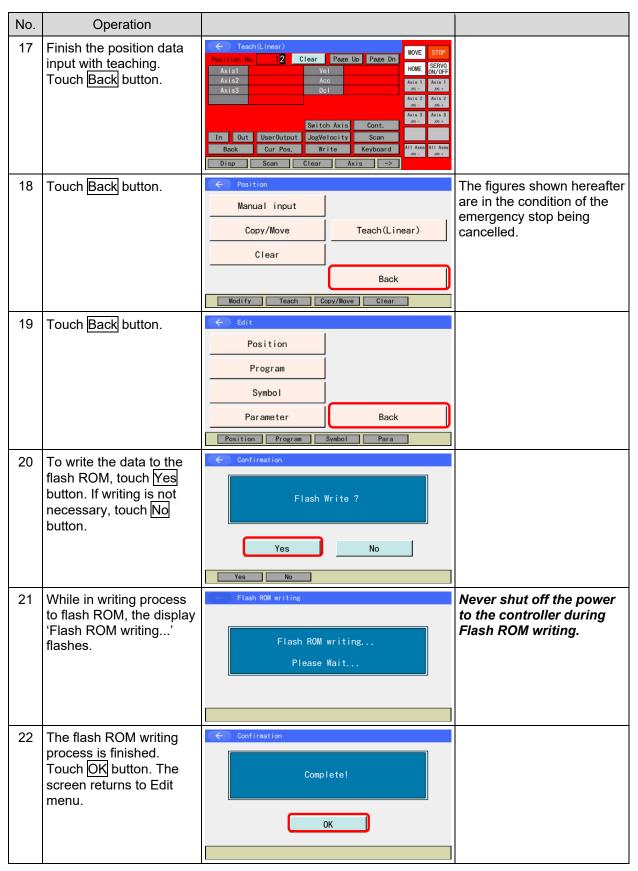
No.	Operation		
6	Touch the jog buttons Axis 1 JOG-, Axis 2 JOG-, Axis 2 JOG-, Axis 2 JOG-, Axis 3 JOG- and Axis 3 JOG+ to move the robot to a desired position.	← Teach(Linear) Current Pos. Position No. 10 Clear Page Up Page Dn Axis1 64.618 0 Axis2 34.199 57 Usr0ut Sts Axis3 47.698 57 Usr0ut Sts 0000 0000 Axis 1 kis1 kis1 Axis 2 kis2 2 Switch Axis Cont. In Out UserOutput JogVelocity Scan Back InputScreen Write Keyboard Disp Scan Clear Axis ->	
7	Touch the <u>Scan</u> button to load the current position of the axis No., where there is the cursor, to the input screen. Touch <u>Cur</u> <u>Pos.</u> button to confirm that the data has been loaded.	Switch Axis Cont. In Out UserOutput Jage Log Joge Log Scan In Out UserOutput Joge Log Write Keyboard Disp Scan Clear	
8	Touch in the input area for Axis2 to move the cursor to the next axis and touch Scan button.	Keyboard Stop Position No. 10 Clear Page Up Page Dn Axis1 93.83 Vel HOME SERVO Axis2 Acc Axis1 Axis2 Acc Axis3 Dcl Axis2 Acc Axis1 Axis2 More Switch Axis Cont. Axis2 Axis2 Axis2 Maxis3 Dcl Axis2 Axis2 Axis2 Axis2 Axis2 More Switch Axis Cont. Axis2 Axis2 Axis2 Axis2 In Out UserOutput JogVelocity Scan Atl Axee Atl Axee Disp Scan Clear Axis >> Axis Axis	
9	Load the data also for the 3rd axis.	Switch Axis Cont Atis 1 Stop More Stop Atis 1 Stop Atis 1 Stop Axis 2 51,661 Acc Atis 1 Atis 2 Atis 3 Atis 2 Atis 3 Atis 3 Atis 2 Atis 3 Atis 3 Atis 2 Atis 3 Atis 4 Ati	
10	Touch Write button to transfer the position data to the controller. The position moves to No. 11.	Construction Move Stop Position No. 10 Clear Page Up Page Dn Axis1 93, 839 Vel Home Sknvp Axis2 51, 661 Acc Axis1 Axis2 Axis3 34, 852 Dol Axis2 Axis2 Switch Axis Cont. Switch Axis Axis2 In Out UserOutput JogVelocity Scan Back Cur Pos. Write Keyboard All Ares Disp Scan Clear Axis ->	If the screen is switched with Page Up button or Page Dn button before the data is transferred, the input data will become invalid.
11	Touch SERVO ON/OFF button and then touch Servo all axes OFF button to turn the servo OFF.	← Teach(Linear) MOVE STOP Position No. 1 Clear Page Up Page Dn Axis1 Vei HOME SERVIO Axis1 Vei Acc Axis1 Axis1 Axis2 Acc Axis1 Axis2 Acc Axis3 Dcl Axis3 Axis2 Axis2 Switch Axis Cont. Swo or Swo or Back Cur Pos. Write Keyboard Disp Scan Clear Axis ->	

IX

INTELLIGENT
ACTUATOR =

No.	Operation		
12	Press the EMERGENCY STOP button. Touch <u>Back</u> button.	Message Message No. EE0 Enerrygency Stop	✓ Warning: Be sure to execute manual movement when the EMERGENCY STOP button is pressed. To have manual operation on Z-axis, it is necessary to release the brake. As a result, the Z-axis may drop by the weight of such as a hand installed on the end when the brake is released. Do not attempt to conduct teaching manually on the Z- axis.
13	Touch <u>Cur Pos.</u> button to confirm that the servo is OFF. Move each axis manually to a desired position.	✓ Teach(Linear) Current Pos. MOVE STOP Position No. 11 Clar Page Up. Page Dn Axis1 102,494 SV Home: SERVO Axis2 65,735 SV Uar Out Sts Axis3 Axis3 28,995 SV 0000 0000 Axis3 28,995 SV 0000 0000 Switch Axis Cont. Axis 3 Axis 3 Switch Axis Cont. Axis 3 Back InputScreen Write Keyboard Disp Scan Clear Axis	Servo OFF It turns to light blue when the servo is turned ON.
14	Touch Scan button to load the axis number current position where the cursor is to the input screen.	✓ Teach (Linear) MOVE STOP Position No. 11 Clear Page Up Page Dn Axis1 102.4.4 Ve1 HOME SERVO Axis2 Acc Acc Axis1 Axis1 Axis3 Dc1 Axis 1 Axis 2 Switch Axis Cont. Axis 2 Acc Switch Axis Cont. Axis 3 Axis 3 In Out UserOutput JogVelocity Scan Back Cur Pos, Write Keyboard All Axes Disp Scan Clear Axis ->	
15	Touch in the input area for Axis2 to move the cursor to the next axis and touch Scan button. Load the data also for the 3rd axis in the same manner.	Move STOP Position No. 11 Clear Page Up Page Dn Axis1 102,494 Vel HOME SCRVOFP Axis2 65,739 Acc Axis1 Ais1 Axis3 26,959 Dcl Axis2 Axis3 Switch Axis Cont. Axis3 Axis3 Switch Axis Cont. Axis3 Axis3 Back Cur Pos, Write Keyboard All Axes Disp Scan Clear Axis ->	
16	Touch Write button to transfer the position data to the controller. The position moves to No. 12.	← Teach(Linear) MOVE STOP Position No. 11 Clear Page Up Page Dn Axis1 182.494 Vel HOME SERVOF Axis2 65.739 Acc Axis1 Axis1 Axis3 26.999 Dcl Axis 2 Axis 3 Switch Axis Cont. Axis 3 Axis 3 Switch Axis Cont. Axis 3 Back Cur Pos. Write Keyboard Disp Scan Clear Axis ->	If the screen is switched with Page Up button or Page Dn button before the data is transferred, the input data will become invalid.





No.	Operation					
23		Edit				
		Position				
		Program				
		Symbol				
		Parameter	Back			
		Position Program	Symbol Para			





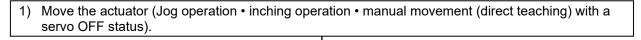
 8.3 Teaching for SCARA Axis XSEL-JX/KX/PX/QX/RX/SX/RAX/SAX, 1st to 4th^{*1} Axes of XSEL2-TX (Axes Group No. 1), 1st to 4th Axes or 5th to 8th Axes of XSEL-RXD/SXD/RAXD/SAXD, 1st to 4th^{*1} Axes on MSEL-PCX/PGX (*1 1st to 3rd Axes for 3-axis SCARA Type)

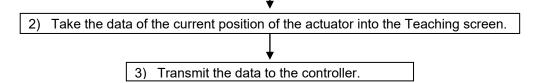
8.3.1 Teaching

Teaching is one way to input position data (moving the actuator to an arbitrary position and getting that actuator's current position as data).

Methods for moving the actuators to an arbitrary position are the jog operation, inching operation, and manual movement (direct teaching) with a servo OFF status.

The fundamental flow of teaching is as follows:





Input the position data by teaching and repeating 1) to 3). Teaching is transacted mainly at the Teaching screen.

🤄 Menu	
Edit	File
Play	
Monitor	Environment Set
Controller	Next
Edit Play I	Monitor Control ->

Touch Edit button in the Menu screen.

	ELLIGENT FUATOR ————	
← Edit		Touch Position button on the Edit screen.
Position	Coordinate System	* Example shown on the left is for XSEL-JX/KX,
Program		PX/QX, RX/SX, RXD/SXD, RAX/SAX, RAXD/SAXD, MSEL-PCX/PGX and XSEL2-TX.
Symbol		* There is no coordinate system buttons shown
Parameter	Back	when a controller other than above is connected.
Position Program	Symbol Para ->	1
← Position		Touch Teach(Scara) button in Position menu
Manual input	Teach(Scara)	screen.
Copy/Move	Teach(Linear)	 * For XSEL-RXD/SXD and RAXD/SAXD, touch either Teach (Axis 1 - 4) or Teach (Axis 5 - 8).
Clear		
	Back	
Modify TeachS Co	ppy/Move Clear ->]
Current arm system Axis1 Axis2 Axis3 Axis4 Position mov Arm: Indef. Jog Crd sys:	Vel Acc Dol Arm OutFn e type: PTP Chg Brake con Chg Jump: OFF Chg Crd. W 0 Chg Switch Axis Co InOut User JVel MVel Sc	age Dn HOME STOP HOME DRAVOFF J He Job Jump Setting Status Trol 2 He Job Jump Setting Status Jump Setting Status Jump Setting Status 1 He Job Jump Setting Status
Coordinate system fo Wn: Work coordina		
	inate system No. (0: Bas	se coordinate system)
	nate system No.	

n: Tool coordinate system No. A $\,$: Each axis system





Axis1-4 (Axis5-8) : Position d (Only theVel: VelocityAcc: AcceleratiDcl: DeceleratiArm: Target ArmPCX/PGX	: Currently displayed position number 5-8) : Position data for the SCARA axes for the 1st unit or 2nd unit (Only the valid SCARA axes should be shown.)			
Explanation for each Touch Pa				
Current Position Load	 Switch the input data screen to the current position display. Current position is loaded to the screen. From Axis 1 to 4 (from Axis 5 to 8) should be loaded when the cursor is placed on them, and all the valid SCARA axes in those from Axis 1 to 8 should be loaded when the cursor is placed somewhere else or the cursor is not displayed. 			
Clear	: It clears all the axes data in the displayed position number.			
Position move type Chg	: Position movement type should be switched.			
Brake control	: The screen should shift to the window to operate brake compulsory release / lock.			
Jog Coordinate System Chg	: It switches over the coordinate system for jog operation.			
JVel	: Set the jog velocity.			
Mvel	 It determines the operation speed in Continuous Operation Mode or operation with MOVE key. 			
Arm System Chg	: It switches over the arm system. (It is necessary that the servo is turned ON in advance)			
Coordinate System Setting	: Selection of the coordinate system number is conducted.			
In	: Input port is monitored.			
Out	: Output port is monitored.			
User	: Turn ON/OFF the output ports (sequential 8 points at the maximum set to parameters). (It is required to preset the I/O parameters No. 74 and No. 75.)			
Continuous Operation	: The mode is changed to Continuous Operation Mode.			
	g: Jump operation setting is conducted.			
InOut	: Monitoring is conducted on input and output ports (for applicable models only)			
Axis Switchover	: Display axis should be switched when axes after the fifth axis is valid, or when there is an added axis in the three-axis SCARA type.			





8.3.2 Jog Movement Direction and Coordinate System

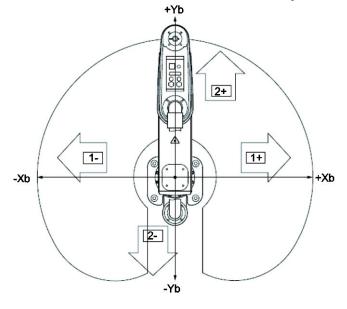
(1) Jog buttons and movement directions

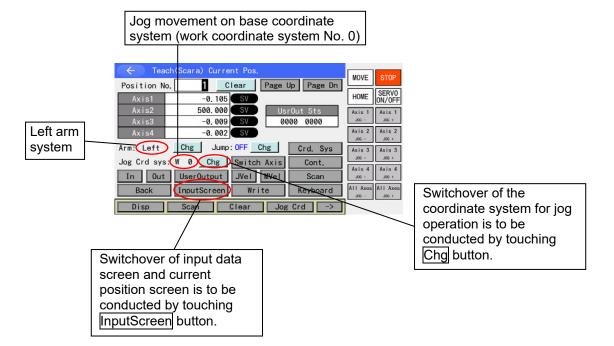
The movement direction during jog operation changes according to the coordinate system No. selected.

The status before shipment is the base coordinate system (work coordinate system No. 0) and tool coordinate system No. 0.

For the setting of coordinate system data, refer to [11. Coordinate System Data Edit].

1) Jog operation on base coordinate system The jog buttons and movement directions on the base coordinate system are as shown below.





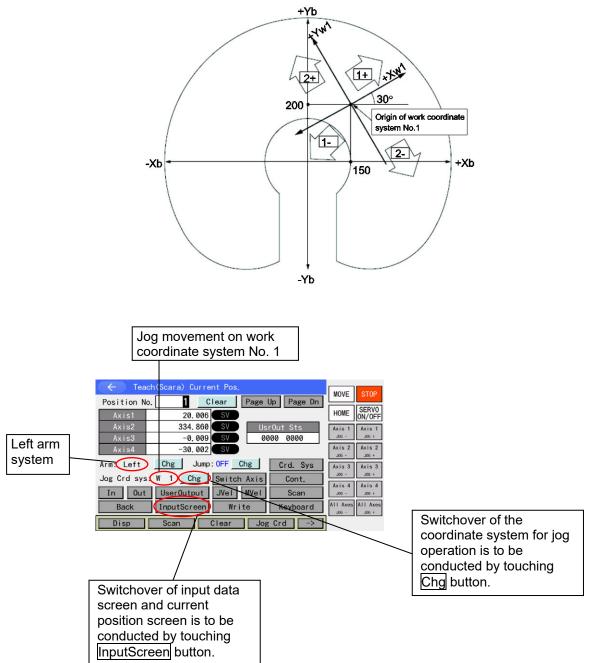
8. Position Edit





- 2) Jog operation on work coordinate system
 - Example) The jog buttons and movement directions on the work coordinate system No. 1 are as shown below.

The offset values from the work coordinate system No. 1 become Xofw1 = 150, Yofw1 = 200, Zofw1 = 0, and Rofw1 = 30.



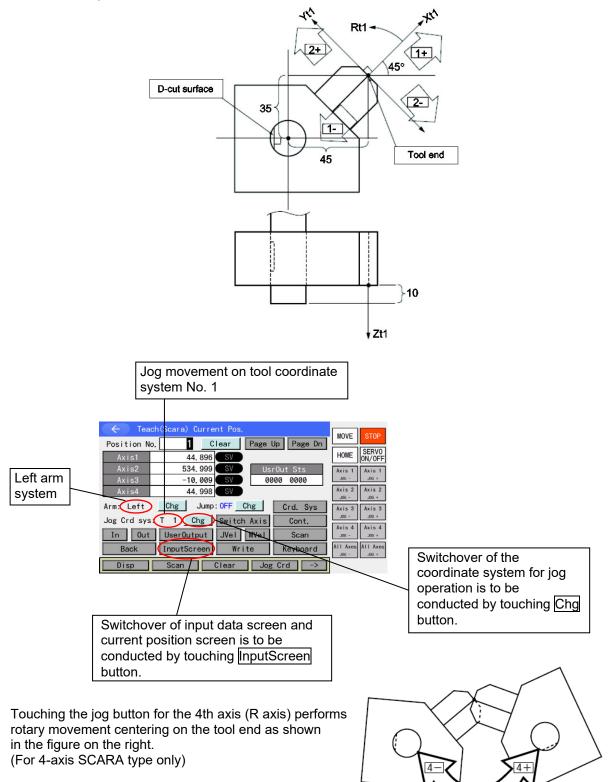




- 3) Jog operation on tool coordinate system
 - Example) The jog buttons and movement directions on the tool coordinate system No. 1 are as shown below.

The offset values from the tool coordinate system No. 1 become Xoft1 = 45, Yoft1 = 35, Zoft1 = -10, and Roft1 = 45.

(For 3-axis SCARA type, Roft will not be taken into account)

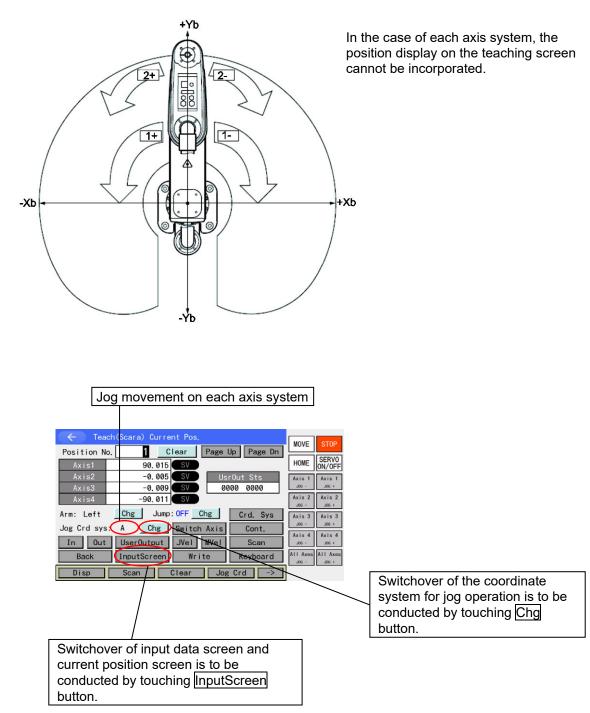


ME0356-11A



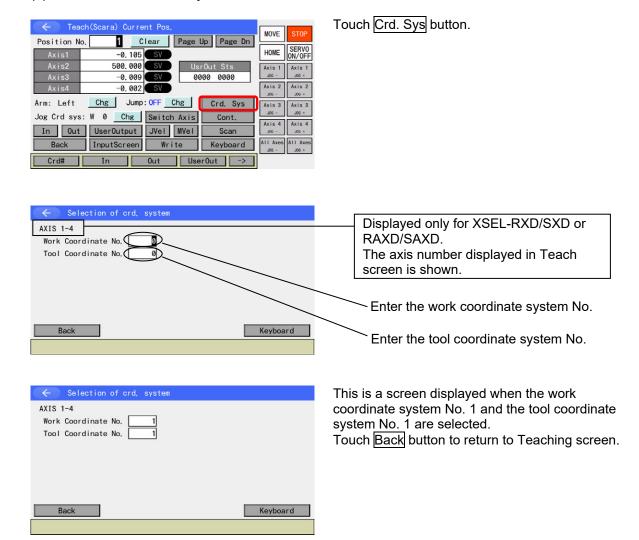


4) Jog operation on each axis system (jog operation on each arm) Each arm, jog buttons and movement directions are as shown below.





(2) Selection of coordinate system No.



C Teach	n(Scara) Current Pos.	MOVE	STOP
Position No.	1 Clear Page Up Page Dn		
Axis1	76. 477 SV	HOME	SERV0 0N/0FF
Axis2	342.669 SV UsrOut Sts	Axis 1	Axis 1
Axis3	-10.009 SV 0000 0000	J06 -	J0G +
Axis4	14. 998 SV	Axis 2 JOG -	Axis 2 JOG +
Arm: Left	Chg Jump: OFF Chg Crd. Sys	Axis 3	Axis 3
Jog Crd sys:	W 1 Chg Switch Axis Cont.	J06 -	J06 +
In Out	UserOutput JVel MVel Scan	Axis 4 JOG -	Axis 4 J06 +
Back	InputScreen Write Keyboard	All Axes J00 -	All Axes J00 +
Disp	Scan Clear JogCrd ->		

The coordinate values displayed indicate the tool tip position of the tool coordinate system No. 1 on the work coordinate system No. 1.





8.3.3 Actuator Operation

Jog the actuator or move it to the input (transferred) position data by using the Teaching Pendant. Operate the actuator on the Teaching screen.

How to Open to Teaching Screen

Go to $\overrightarrow{\text{Edit}} \rightarrow \overrightarrow{\text{Position}} \rightarrow \overrightarrow{\text{Teach (SCARA)}}$ in touch panel operation For XSEL-RXD/SXD/RAXD/SAXD, go to $\overrightarrow{\text{Edit}} \rightarrow \overrightarrow{\text{Position}} \rightarrow \overrightarrow{\text{Teach (Axis 1-4)}}$ or Teach (Axis 5-8)

(1) Jog operation

Teach (Scara)			MOVE	STOP
Position No. 1 Clear Page Up Page Dn				
Axis1	Vel		HOME	SERV0 ON/OFF
Axis2	Acc		Axis 1	Axis 1
Axis3	Dcl		SERVO OFF	SERVO ON
Axis4	Arm		Axis 2 SERVO OFF	Axis 2 SERVO ON
Arm: Right Chg Jump	: OFF Chg	Crd. Sys	Axis 3	Axis 3
Jog Crd sys: W 0 Chg	Switch Axis	Cont.	SERVO OFF	SERVO ON
In Out UserOutput	JVel MVel	Scan	Axis 4 SERV0 OFF	Axis 4 SERVO ON
Back Cur Pos.	Write	Keyboard	the second s	All Axes
Disp Scan	SERVO OFF	SERVO ON		

Turn the servo ON condition by touching the SERVO ON/OFF button and then the Servo all axes ON button in the Teaching screen condition.

To check if servo is turned ON or OFF, touch Cur Pos. button.



Cur Pos. (InputScreen) button

🗲 Teach(Scara) Current Pos.	MOVE STOP
Position No. Clear Page Up Page Dn Axis1 141.468 SV	HOME SERVO ON/OFF
Axis2 252.886 SV UsrOut Sts Axis3 51.686 SV 0000 0000	Axis 1 J0G - J0G +
Axis4 26.297 SV Arm: Right Chg Jump: 0+F Chg Crd, Sys	Axis 2 J06 - J06 + Axis 3 Axis 3
Jog Crd sys: W 0 Chg Switch Axis Sent.	Axis 3 J06 - J06 + Axis 4 Axis 4
In Out UserOutput JVel MVel Scan Back InputScreen Write Keyboard	
Disp Scan Clear Jog Crd ->	

Before operation, check the jog operation coordinate system selected. Touch the Axis 1 JOG-, Axis 1 JOG+, Axis 2 JOG-,

Axis 2 JOG+, Axis 3 JOG-, Axis 3 JOG+, Axis 2 JOG- and Axis 4 JOG+ (Axis 3 JOG+, Axis 1 JOG+, Axis 2 JOG-, Axis 2 JOG+, Axis 3 JOG- and Axis 3 JOG+, buttons for 3-Axis SCARA type) to move the actuator to any given position.

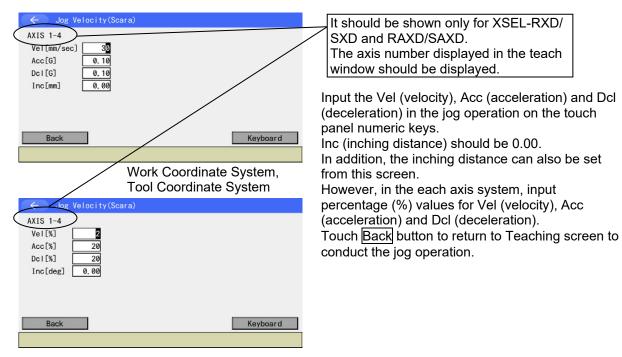
Servo ON





🔶 Teach(Scara) Curr	ent Pos.	MOVE
Position No. 1	Clear Page Up Pa	age Dn
Axis1 141.46	B SV	HOME SERVO ON/OFF
Axis2 252.88	BSV UsrOut S	ts Axis 1 Axis 1
Axis3 51.68	B <mark>SV</mark> 0000 00	JOG - JOG +
Axis4 26.29	Y SV	Axis 2 Axis 2 JOG - JOG +
Arm: Right Chg Jum	p: OFF Chg Crd.	Sys Axis 3 Axis 3
Jog Crd sys: W 0 Chg	Switch Axis Co	nt.
In Out UserOutput	JVel MVel Sc	Axis 4 Axis 4 306 - 306 +
Back InputScreen	Write Keyb	ooard All Axes All Axes
JVel	MVel Arm	->

Change of jog velocity The actuator movement velocity under jog operation is changed. Touch JVel button.



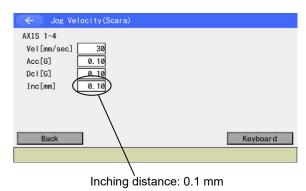
Each Axis System

* Refer to [next page] for the maximum setting of the velocity (Vel), acceleration (Acc) and deceleration (Dcl) in the jog operation.





(2) Inching operation



Set the inching distance (travel made every time the JOG button is pressed once). In the jog velocity screen, input a number in Inc (inching distance) on the touch panel numeric buttons. The numerical input range is between

0.01 and 1.00 [unit: mm]. Touch Back button to return to Teaching screen to conduct the inching operation.

Clicking the jog button once makes 1- inching distance movement.

Clicking any of Axis 1 JOG+ through Axis 4 JOG+ makes inching movement in the coordinate plus direction, while clicking any of Axis 1 JOG- through Axis 4 JOG- makes inching movement in the coordinate minus direction.

* The maximum setting of the velocity (Vel), acceleration (Acc) and deceleration (Dcl) in the jog operation are as shown below.

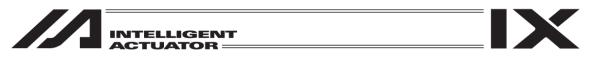
For Models Other than XSEL2-TX

⊙ 1st SCARA Axis in Controller for SCARA: Work Coordinate System, Tool Coordinate System

- Velocity : 250mm/s
- Acceleration : All Axes Common Parameter No. 22
- Deceleration : All Axes Common Parameter No. 23
- ⊙ 2nd SCARA Axis in Controller for SCARA: Work Coordinate System, Tool Coordinate System
 - Velocity : 250mm/s
 - Acceleration : All Axes Common Parameter No. 208
 - Deceleration : All Axes Common Parameter No. 209
- ⊙ Cartesian Axes in Controller for SCARA
 - Velocity : 250mm/s
 - Acceleration : All Axes Common Parameter No. 203
 - Deceleration : All Axes Common Parameter No. 204
- ⊙ 1st or 2nd SCARA Axis in Controller for SCARA: Each Coordinate System
 - Velocity : All Axes Common Parameter No. 35 (Input Range from 1 to 10%)
 - Acceleration : 100%
 - Deceleration : 100%

For XSEL2-TX

- 1st SCARA Axis in Controller for SCARA: Work Coordinate System, Tool Coordinate System
 - Velocity : 250mm/s
 - Acceleration : Robot Parameter No. 22
 - Deceleration : Robot Parameter No. No. 23
- Cartesian Axes in Controller for SCARA
 - Velocity : 250mm/s
 - Acceleration : All Axes Common Parameter No. 22
 - Deceleration : All Axes Common Parameter No. 23
- \odot 1st SCARA Axis in Controller for SCARA: Each Coordinate System
 - Velocity : Robot Parameter No. No. 35 (Input Range from 1 to 10%)
 - Acceleration : 100%
 - Deceleration : 100%



(3) Manual movement (direct teaching) under servo OFF

C Message	(Touch SERVO ON/OFF button and then touch
Messa	ge No. BE0	Servo all axes OFF button to turn the servo OFF. Press the EMERGENCY STOP button.
Emorge	moy Stop	Emergency stop input screen Touch Back button to return to Teaching screen.
Back	Inquiry	Warning: Be sure to execute manual movement when the EMERGENCY STOP button is pressed.

🗧 ← Teach(Scara) Current Pos.	MOVE	STOP
Position No. 1 Clear Page Up Page Dn	MOVE	
Axis1 141.462 SV	HOME	SERV0 ON/OFF
Axis2 252.888 SV UsrOut Sts	Axis 1	Axis 1
Axis3 51.685 SV 0000 0000	JOG -	J06 +
Axis4 26.297 SV	Axis 2 JOG -	Axis 2 JOG +
Arm: Right Chg Jump: OFF Chg Crd. Sys	Axis 3	Axis 3
Jog Crd sys: W 0 Chg Switch Axis Cont.	JOG -	J06 +
In Out UserOutput JVel MVel Scan	Ax15 4 J06 -	Ax15 4 J06 +
Back InputScreen Write Keyboard	All Axes JOG -	All Axes JOG +
Disp Scan Clear Jog Crd ->		

— Servo OFF

Move the actuator to any given position manually.

To move the Z-axis or R-axis manually, the brake must be released. Consequently, the Z-axis may drop under the weight of the hand attached to the tip when the brake is released. Do not perform teaching by manual movement of

the Z-axis or R-axis.





(4) Arm system change

Change the current arm system over to the opposite arm system (Right arm \rightarrow left arm, left arm \rightarrow right arm). The 1st arm does not move and the 2nd arm moves in such a way that it becomes straightened with the 1st arm.

Switchover of the arm system can be conducted on the teaching screen.

How to Open to Teaching Screen

Go to $\overrightarrow{\text{Edit}} \rightarrow \overrightarrow{\text{Position}} \rightarrow \overrightarrow{\text{Teach (SCARA)}}$ in touch panel operation For XSEL-RXD/SXD/RAXD/SAXD go to $\overrightarrow{\text{Edit}} \rightarrow \overrightarrow{\text{Position}} \rightarrow \overleftarrow{\text{Teach (Axis 1-4)}}$ or Teach (Axis 5-8)

🗧 🔶 Tea	ch(Scara)			MOVE	STOP
Position N	o. 1 C	lear Page	Up Page Dn		
Axis1	-25, 462	Vel		HOME	SERV0 ON/OFF
Axis2	308.268	Acc		Axis 1	Axis 1
Axis3	29.280	Dcl		SERVO OFF	SERVO ON
Axis4	46.689	Arm		Axis 2 SERVO OFF	Axis 2
Arm: Right	Chg Jump	: OFF Chg	Crd. Sys	Axis 3	SERVO ON Axis 3
Jog Crd sys	: W 0 Chg	Switch Axis	Cont.	SERVO OFF	SERVO ON
In Out	User0utput	JVel MVel	Scan	Axis 4 SERVO OFF	Axis 4 SERVO ON
Back	Cur Pos.	Write	Keyboard		All Axes
	JVel	MVel	Arm ->	SERVO OFF	SERVO ON

Touch SERVO ON/OFF button and then touch Servo all axes ON button to turn the servo ON.

Touch Arm Chg button.

Arm	MOVE STOP
	HOME SERVO
Caution! Arm 2 will start moving. Are you sure to continue? If MOVE button pushed ,it starts movement.	Axis 1 J06 - J06 +
IT move button pushed, it starts movement.	Axis 2 JOG - JOG +
	Axis 3 _J06J06 +
CANCEL	Axis 4
	All Axes All Axes

Select whether or not to change the arm system. Touch \underline{MOVE} button when desired to execute. When execution is not desired, touch \underline{CANCEL} button.

← Teac	ch(Scara) Current Pos.	MOVE	STOP
Position No Axis1	b. 1 Clear Page Up Page Dn 366, 034 SV	HOME	SERVO
Axis2 Axis3	335.597 SV UsrOut Sts 29.269 SV 0000_0000	Axis 1 MOVE	Axis 1 MOVE
Axis4 Arm: Left	46. 685 SV Chg Jamp: OFF Chg Crd. Sys	Axis 2 MOVE	Axis 2 MOVE
Jog (rd sys		Axis 3 MOVE	Axis 3 MOVE
In Out Back	UserOutput JVel MVel Scan InputScreen Write Keyboard	Axis 4 MOVE	Axis 4 MOVE
Disp	Scan Clear Jog Crd ->	MOVE	MOVE

Current arm system display

When the MOVE button is touched, the display changes over to the current position screen and the 2nd arm moves until it becomes straightened with the 1st arm.

After completion of the operation, the current arm system display will change.





(5) Load Current Position as Data

Check the work coordinate system No., tool coordinate system No., and arm system currently selected in advance.

Display Change : Go to $\boxed{\text{Edit}} \rightarrow \boxed{\text{Position}} \rightarrow \boxed{\text{Teach (SCARA)}} \rightarrow \boxed{\text{Crd. Sys}}$ in touch panel operation For XSEL-RXD/SXD/RAXD/SAXD, go to $\boxed{\text{Edit}} \rightarrow \boxed{\text{Position}} \rightarrow \boxed{\text{Teach (Axis1-4)}}$ or $\boxed{\text{Teach (Axis5-8)}} \rightarrow \boxed{\text{Crd. Sys}}$

← Teach(Scara) Position No. 1 Clear Page Up Page Dn	MOVE	STOP
Axis1 Vel	HOME	SERV0 ON/OFF
Axis2 Acc Axis3 Dcl	Axis 1 J06 -	Axis 1 J06 +
Axis4 Arm Arm: Right Chg Jump: OFF Chg Crd, Sys	Axis 2 JOG -	Axis 2 JOG +
Jog Crd sys: W 0 Chg Switch Axis Cont.	JOG -	JUG +
In Out UserOutput JVel MVel Scan Back Cur Pos. Write Keyboard		J06 + All Axes
Disp Scan Clear Jog Crd ->	J06 -	JOG +

The selected actuator's location is incorporated as position data into the teaching screen.

Touch in the position number input box to show the cursor and input a value with touch panel numeric keys. (Touch panel numeric keys can be shown by touching Keyboard button.)

Or, select the position number to load the data from by touching Page Up and Page Dn buttons.

The current position data of the axis where the cursor is placed is loaded by touching <u>Scan</u> button when the cursor is in the axis boxes. The current position data for all the axes is loaded if <u>Scan</u> button is touched when the cursor is not displayed or it is placed out of the axis boxes

- Teac	h(Scara)			[
Position No	. 1 c	lear Page	Up Page Dn	MOVE	STOP
Axis1	141.46 <mark>2</mark>	Vel		HOME	SERV0 0N/0FF
Axis2 Axis3		Acc Dcl		Axis 1 J00 -	Axis 1 J00 +
Axis3 Axis4		Arm		Axis 2 JOG -	Axis 2 JOG +
Arm: Right	Chg Jump	: OFF Chg	Crd. Sys	Axis 3	Axis 3
Jog Crd sys:	W 0 Chg	Switch Axis	Cont	JOG -	JOG + Axis 4
In Out	UserOutput	JVel MVel	Scan	- NATS 4	J06 +
Back	Cur Pos.	Write	Keyboard	All Axes	ATT Axes
Disp	Scan	Clear Jo	g Crd ->		

∽ Axis box

In the case of the XSEL-RX/SX, RXD/SXD, RAXD/SAXD, MSEL-PCX/PGX or XSEL2-TX controller, it can be selected as to whether or not the arm system is scanned and the data is set on the position data.

C Scan	
Teach the current arm system of Axis1-4 Teach the current arm system of Axis5-8	Arm System Data for Axes 1 to 4 Scanning Selection Arm System Data for Axes 5 to 8 Scanning Selection
OK CANCEL	
OK Cancel Axis1-4 Axis5-8	

For 3-axis SCARA type, the display shows Axis 1-3 instead of Axis 1-4. Also, Axes 5 to 8 arm system load check boxes are displayed only in XSEL-RXD/SXD, RAXD/SAXD. Touch in the check box for the applicable axis to put a check mark and establish the load setting. If you touch in the box in which there is already a check mark, the check mark will be removed and loading will not be conducted.





(6) Transfer to Controller

The incorporated data is transferred to the controller.

🔶 Tea	ch(Scara)			MOVE	STOP
Position N	o. 1 C	lear Page	Up Page Dn		
Axis1	141.460	Vel		HOME	SERV0 ON/OFF
Axis2	252.887	Acc		Axis 1	Axis 1
Axis3	51,685	Dcl		J06 -	J06 +
Axis4	26, 298	Arm		Axis 2 JOG -	Axis 2 JOG +
Arm: Right	Chg Jump	: OFF Chg	Crd. Sys	Axis 3	Axis 3
Jog Crd sys	: W 0 Chg	Switch Axis	Cont.	J06 -	J06 +
In Out	User0utput	JVel MVel	Scan	Axis 4 306 -	Axis 4 J0G +
Back	Cur Pos.	Write	Keyboard	All Axes J06 -	All Axes J06 +
Disp	Scan	Clear Jog	g Crd 🛛 ->		

In Teaching screen, touch Write button. The loaded data is stored in the memory in the controller. Once the transfer to the controller is complete, the position number is incremented by one.

The data available to transfer to the controller is one position data that is being displayed. It is not possible to transfer the data of more than one position number at a time.

If the screen is switched with touching Page Up, Page Dn or Back button, before the data is transferred, the input data will become invalid.

Only transferring the data to a controller by touching Write button will lose the edit data when the power gets rebooted or the software reset is conducted^{*1}. Go back from the position edit screen to the flash ROM writing screen by using Back button, and have [8.1.2 Flash ROM Writing] conducted. (*1 Except for controllers which possess feature to retain data)

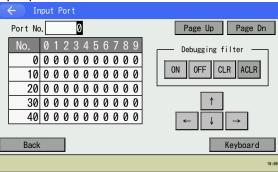




(7) I/O Monitor

1) Input/Output Monitor
 Touch In or Out button in Teaching screen.
 For models applicable for input and output ports, monitoring of the input and output ports is available by touching InOut button.

Input port



Output ports

< 0u	Itp		Po	r t							
Port No. 300											Page Up Page Dn
No.	0	1	2	3	4	5	6	7	8	9	
300	1	1	1	0	0	0	0	0	0	0	
310	0	0	0	0	0	0	0	0	0	0	ON 1 OFF
320	0	0	0	0	0	0	0	0	0	0	\leftarrow \downarrow \rightarrow
330	0	0	0	0	0	0	0	0	0	0	
340	0	0	0	0	0	0	0	0	0	0	
			_								
Back											Keyboard
0/1			I								

Refer to [14.2 Input Port] for debug filters.

Touching ON and OFF buttons, the output port of the cursor position can be turned ON/OFF (1/0).

InOut Port (for applicable models)

	← Ir	10u	t F	Por	t							
Port No. 7000 P												Page Up Page Dn
	No.	0	1	2	3	4	5	6	7	8	9	
	7000	0	1	0	0	0	0	0	0	0	0	
	7010	0	0	0	0	0	0	0	0	0	0	ON 1 OFF
	7020	0	0	0	0	0	0	0	0	0	0	$\leftarrow \downarrow \rightarrow$
	7030	0	0	0	0	0	0	0	0	0	0	
	7040	0	0	0	0	0	0	0	0	0	0	
	Back											Keyboard

The way to operate is the same as the output port.





(8) Movement

The actuator is moved to the location of the position data transferred to the controller. (Check the location of the teaching position data.)

🔶 Tea	ch(Scara)			MOVE	TOP
Position No		tear Page	Up Page Dn		
Axis1	0.000	Vel		HOME ON	ERV0
Axis2	300.000	Acc		Axis 1 Ax	cis 1
Axis3	0.000	Dcl			MOVE
Axis4	0.000	Arm			cis 2 NOVE
Arm: Right	Chg Jump	: OFF Chg	Crd. Sys	Axis 3 Ax	cis 3
Jog Crd sys	: W 0 Chg	Switch Axis	Cont.		MOVE
In Out	User0utput	JVel MVel	Scan		kis 4 MOVE
Back	Cur Pos.	Write	Keyboard		Axes NOVE
Disp	Scan	Clear Jog	g Crd 🛛 ->		

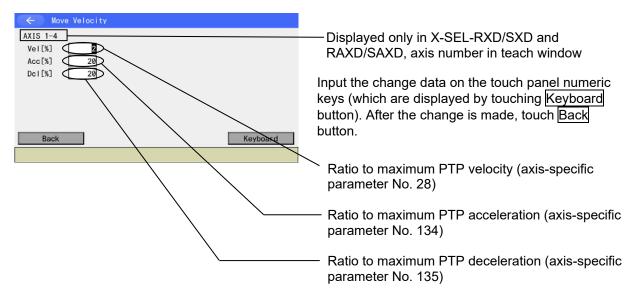
Position number to move

Select position No. to move in the Teaching screen condition.

Touch SERVO ON/OFF button and then touch Servo all axes ON button to turn the servo ON. To check if servo is turned ON or OFF, it is necessary to switch to the current position screen. It shows the servo is ON when SV mark beside the position in the current position screen is in light blue.

The actuator starts moving by touching the MOVE button and then the all axes moves button. To stop movement halfway, touch the STOP button.

To check or change the operation velocity, touch MVel button to open the operation velocity setting screen.



* The maximum setting in the velocity (Vel) depends on All Axes Common Parameter No. 35 (Input Range from 1 to 10%).





(9) Continuous movement

Teach(Scara)

200.000

250.000

0.000

90.000

Jump

Arm: Right Chg Jump: OFF Chg

Jog Crd sys: W 0 Chg Switch Axis

In Out UserOutput JVel MVel

Cur Pos.

Position No.

Axis

Axis4

Back

Disp MVel

The actuator is continuously moved to the location of the position data transferred to the controller.

MOVE

Axis 1 Axis 1

JOG

Axis 4

Crd. Sys

Scan

->

Cont.

Write Keyboard

HOME SERVO

J06 +

Axis 4

J06 - J06 +

Axis 2 Axis 2 JOG - JOG +

Axis 3 Axis 3 _J06 - ____J06 +

🔶 Tea	ch(Scara)		MOVE	STOP
Position N	Clear F	age Up Page Dn	liter	
Axis1	200.000 Vel		HOME	SERVO ON/OFF
Axis2	250.000 Acc		Axis 1	Axis 1
Axis3	0.000 Dcl		SERVO OFF	SERVO ON
Axis4	90.000 Arm		Axis 2 SERVO OFF	Axis 2 SERVO ON
Arm: Right	Chg Jump: OFF Ch	Crd. Sys	Axis 3	Axis 3
Jog Crd sys	: W 0 Chg Switch A	xis Cont.	SERVO OFF	SERVO ON
In Out	UserOutput JVel M	Vel Scan	Axis 4 SERVO OFF	Axis 4 SERVO ON
Back	Cur Pos. Write	Keyboard	The second se	All Axes
Disp	Scan Clear	Jog Crd ->	SERVO OFF	SERVO ON

2 Clear Page Up Page Dn

- Position No. to move first

In Teaching screen, use the numeric keys, Page Up and Page Dn buttons to select the position number to operate first. Touch the SERVO ON/OFF button and then the Servo all axes ON button to turn the servo ON. To check if servo is turned ON or OFF, it is necessary to switch to the current position screen. It shows the servo is ON when SV mark beside the position in the current position screen is in light blue.

Touch Cont. button.

Once the status gets in the continuous operation mode, the background color of Cont. button turns darker.

To check or change the movement velocity, touch $\underline{\mathsf{MVel}}$ button to open the edit screen for velocity and others.

Move Velocity AXIS 1-4 Vel[%] 2 Acc[%] 20 Dcl[%] 20	
Back	Keyboard

After change or confirmation of parameters, touch Back button to go back to the previous screen.

	ch(Scara) Current Pos. D. 3 Clear Page Up Page Dn	MOVE STOP
Position No Axis1	186. 389 SV	HOME SERVO
Axis2 Axis3	302. 507 SV UsrOut Sts 15. 276 SV 0000 0000	Axis 1 MOVE (-) MOVE (+)
Axis4 Arm: Right	92. 178 SV Chg Jump: 0FF Chg Crd. Sys	Axis 2 MOVE (-) Axis 3 Axis 3
Crd. sys:	W 0 Chg Switch Axis Cont.	AXIS 3 AXIS 3 MOVE (-) MOVE (+) Axis 4 Axis 4
In Out Back	UserOutput JVel MVel Scan InputScreen Write Keyboard	MOVE (-) MOVE (+) All Axes All Axes
Disp	Crd Axis	MOVE (-) MOVE (+)

Touch MOVE button, and then touch all axes moves+ or all axes moves- to have the actuator start the continuous operation.

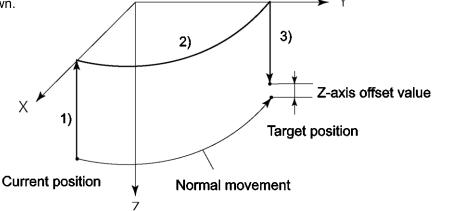
ME0356-11A





(10) Jump movement

The actuator is moved to the location of the position data transferred to the controller by jump motion (arch motion). Before/after normal movement or continuous movement, the Z-axis is moved up and down.



Motion sequence

- 1) Raise the Z-axis from the current position to the top position (Z = 0). (Motion of the Z-axis only)
- 2) Movement is performed to above the target position by PTP motion while the Z-axis stays at the top position. (Motion of the X-axis, Y-axis and R-axis only)
- 3) Lowering is performed to the target position. (Motion of the Z-axis only). When the Z-axis offset value is set, the Z-axis stops before (above) the target position by the same amount.
 Z axis offset value: Specify how many millimeters before the target position to stop the Z axis.
 - Z-axis offset value: Specify how many millimeters before the target position to stop the Z-axis. No minus value can be input.
 - (Example) When the Z-axis target position is 100.000 mm and the Z-axis offset value is 30.000 mm, the Z-axis stops at the position of 70.000 mm.

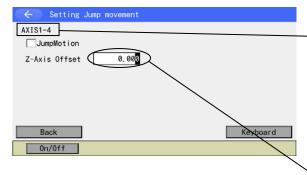
Setting of jump movement is performed on the Teaching screen.

	MOVE STOP
Position No. 3 Clear Page Up Page Dn	
Axis1 50.000 Vel	HOME SERVO 0N/0FF
Axis2 450.000 Acc	Axis 1 Axis 1
Axis3 70.000 Dcl	J06 - J06 +
Axis4 100.000 Arm	Axis 2 Axis 2 JOG - JOG +
Arm: Right Chg Jump:OFF Chg Crd. Sys	Axis 3 Axis 3
Jog Crd sys: W 0 Chg Switch Axis Cont.	J06 - J06 +
In Out UserOutput JVel MVel Scan	J06 - J06 +
Back Cur Pos. Write Keyboard	All Axes JOG - JOG +
Cont Jump Axis ->	

Touch Jump Chg button.







Displayed only in XSEL-RXD/SXD and RAXD/SAXD axis number in teach window

To set the jump operation valid/invalid, touch in the check box at JumpMotion, to put or remove a check mark.

Enter the Z-axis offset value. Enter the offset value (mm) from the Z-axis target position coordinate.

The set value is effective until the Teaching Pendant is reset or reconnected.

Position No.	n (Scara)	lear Page	Up Page Dn	MOVE	STOP
Axis1	50.000	Vel		HOME	SERV0 0N/0FF
Axis2 Axis3	450.000 70.000	Acc Dcl		Axis 1 J06 -	Axis 1 J0G +
Axis4	100.000	Arm		Axis 2 JOG -	Axis 2 JOG +
Arm: Right	Chg Jump		Crd. Sys	Axis 3 J06 -	Axis 3
Jog Crd sys: In Out	W 0 Chg UserOutput	Switch Axis	Cont. Scan	Axis 4	Axis 4
Back	Cur Pos.	Write	Keyboard		All Axes

Touch Back button to return to Teaching screen. After selecting the target position number, touch MOVE button, and then touch all axes moves button to start the jump operation. When the jump operation is active, the right of Jump: is turned to 'ON'. ('OFF' when inactivated)





(11) User-specified output port operation

The output ports set in the parameter can easily be turned ON/OFF. In Teaching screen (or the current position screen in Teaching), touch UserOutput button. When in Teaching screen, it automatically changes to the current position screen.



When UserOutput button is touched

(A) User-specified output port status

The conditions of user-specified output ports are displayed as '1' (=ON) and '0' (=OFF). (The conditions are displayed from the first specified port for the number of the specified ports from the left.)

(B) User-Specified Output Port Operation Panel Window

It is a panel window to perform the operation to turn ON/OFF the user-specified output ports. Assignment is made for the number of specified ports in the order of 'Usr1', 'Usr2', 'Usr3' ... from the top of the user-specified output ports.

By touching a Usr1 to Usr8 buttons, an operation can be performed to turn each output port ON/OFF.

(Port ON Command is executed when the port status display is '0' (OFF) and Port OFF Command when the status display is '1' (ON)).

To close this panel window, touch \times on the top right.

1) Setting of user-specified output port parameters

For the operation method for parameter setting, refer to [13. Parameter Edit].

The first port No. and the number of ports are set with the following parameters:

Number of ports

I/O parameter No. 74 "QntPrtUsrOut" (Number of output ports used by TP user (hand, etc.))First port No.

I/O parameter No. 75 "TopNo.UseOut" (First output port No. by TP user (hand, etc.))

(Setting example) When the first port No. is set to 308 and the number of ports is set to 8:

'Usr1' ······ Output port 308
'Usr2' ······ Output port 309
'Usr3' ······ Output port 310
'Usr4' ······ Output port 311
'Usr5' ······ Output port 312
'Usr6' ······ Output port 313
'Usr7' ······ Output port 314
'Usr8' ······ Output port 315





(12) Arm System setting

In the case of the XSEL-RX/SX, RXD/SXD, RAX/SAX, RAXD/SAXD, MSEL-PCX/PGX or XSEL2-TX Controller, the arm system data can be set on the position data.

← Teac	ch(Scara)			MOVE	STOP
Position No	. 1 Cle	ear Page	Up Page Dn	more	
Axis1	141.460	Vel		HOME	SERV0 0N/0FF
Axis2	252.887	Acc		Axis 1	Axis 1
Axis3	51.685	Dcl		J06 -	J06 +
Axis4	26. 298	Arm		Axis 2 JOG -	Axis 2 JOG +
Arm: Right	Chg Jump:	OFF Chg	Crd. Sys	Axis 3	Axis 3
Jog Crd sys	: W 0 Chg :	Switch Axis	Cont.	J06 -	J06 +
In Out	UserOutput	JVel MVel	Scan	Axis 4 J06 -	Axis 4
Back	Cur Pos.	Write	Keyboard	All Axes JOG -	All Axes JOG +
Clear	Right L	.eft			

The arm system settings for Axis1 to 4 (Axis 1 to 3 for 3-axis SCARA) or Axis5 to 8 (Axis5 to 8 are for XSEL-RXD/SXD, RAXD/SAXD only) that is currently shown can be established. Touch in Arm box to show the cursor. Refer to [8.1.1 Input of Target Arm System Data (Arm1 or Arm) and (Arm2)] for show to input.

(13) Changing Position Movement Type (for applicable models only) An operation type (CP/PTP) for position movement can be indicated.

🔶 Teach(Scara)	MOVE
Position No. 1 Clear Page Up Page Dn	
Axis1 90.508 Vel	HOME SERVO ON/OFF
Axis2 1.722 Acc	1軸 1軸
Axis3 24.000 Dcl	J0G - J0G +
Axis4 0.000 Arm Left OutFn	2 軸 2 軸
Position move type:PTP Chg Brake control	J0G - J0G +
Arm: Indef. Chg Jump: OFF Chg Crd. Sys	3 韩由 3 韩由 J0G - J0G +
Jog Crd sys: W 0 Chg Switch Axis Cont.	4 軸 4 軸
In Out InOut User JVel MVel Scan	J0G - J0G +
Back Cur Pos. Write Keyboard	All Axes All Axes JOG - JOG +
Disp Scan Clear Jog Crd ->	11:40

Touch the Chg button in the "Position Movement Type" label before the movement starts to select the operation type for the next movement. Change cannot be made during movement or continuous movement.

The default of SCARA axis should be PTP operation.

- (14) Brake Control (for applicable models only)
 - When it is connected to the brake control applicable model, the <u>Brake control</u> button should be displayed. Touch it and the screen should shift to the brake control window.

C Tea	ch(Scara)				MOVE	ST0P
Position No	o. 1 C	lear	Page l	Jp Page Dn	move	
Axis1	90. 508	Ve			HOME	SERV0 0N/0FF
Axis2	1.722	Aco			1 軸	1 軸
Axis3	24.000	Dc			JOG -	JOG +
Axis4	0.000	Arm	Left		2 軸 J0G -	2 車由 J0G +
	ve type:PTP		_	ke control	300-	3 軸
Arm: Indef.	Chg Jump	: 0FF	Chg	Crd. Sys	3 ≢⊞ J06 -	3 #ш J0G +
Jog Crd sys	:W0Chg	Switc	n Axis	Cont.	4 軸	4 軸
In Out	InOut User	JVel	MVel	Scan	JOG -	JOG +
Back	Cur Pos.	Wr	ite	Keyboard	All Axes JOG -	All Axes JOG +
Disp	Scan	Clear	Jog	Crd ->		11:40





e e	Brake con	trol			
Brake will	be locked/	released by	touching the "Bra	ake operat	ion" buttons.
Axis No.	Brake o	peration	Brake Status	Servo	Axes group No.1
Axis1	Lock	Release	Lock	\bigcirc	Axes group No.2
Axis2	Lock	Release	Lock	\bigcirc	
Axis3	Lock	Release	Release	\bigcirc	

When several axis group are set, an axis group of an axis that you would like to have a brake control should be selected with the Axes group No. 1 and Axes group No. 2 buttons.

The brake operation button and the status of an effective axis should be displayed.

Back

8:5

8:51

Axes group No.1

Axes group No.2

Back 8:51

	Brake cont				
Brake will	be locked/r	eleased by t	ouching the "Bra	ake operat	tion" buttons.
Axis No.	Brake o	peration	Brake Status	Servo	Axes group No.1
Axis1	Lock	Release	Lock	\bigcirc	Axes group No.2
Axis2	Lock	Release	Lock	\circ	
Axis3	Lock	Release	Release	\bigcirc	
					Back

①Drop of the movable part could cause injury or destruction of the actuator body, work piece or equipment.

0K

after work is finished.

Brake control

Axis1 Lock Release

Lock

Lock

Brake operation

Release

Release

Axis No.

Axis2

Axis3

②Lock the brake and return the brake control to the normal state

③Brake control will be automatically changed to the normal state when the servo is turned on or when returning to the menu. Do you want to release the brake forcibly?

Brake will be locked/released by touching the "Brake operation" buttons.

Brake Status

Release

Lock

Release

Cancel

Servo

 \bigcirc

 \bigcirc

 \mathbf{O}

To release an axis in brake lock status compulsorily, touch the Release button in the brake operation column.

As the screen shifts to the confirmation window, confirm the contents and touch the OK button when having a compulsory release, and touch the Cancel button when cancel.

When the brake is to be locked, confirm the servo in the axis number to lock is off, and touch the Lock button in the brake operation column. When it is locked, the brake status should be shown "Lock". When the servo is on, touch the Back button to return to the teach window, turn the servo off and turn it back on to lock it.

/ Warning: Caution for Brake Compulsory Release

- (1) The moving part may drop, which may cause injury or cause damage on the actuator main unit, workpiece or equipment. Pay special attention.
- (2) Make sure to lock the brake after the work is finished to set the brake control back to the normal condition.
- (3) When the servo is turned on and when it gets back to the menu window, the brake control should get back to the normal condition automatically.



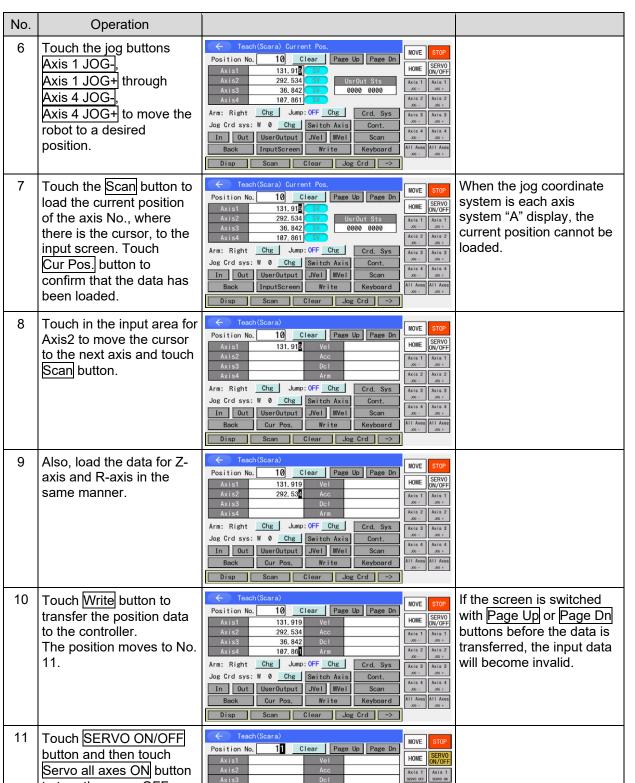


8.3.4 Example of Teaching Input

Entering the data into position No. 10 using the jog and into position No. 11 by manual movement (direct teaching) with Servo OFF status.

No.	Operation			
1	Touch Edit button.	🤇 🤆 🖉 Menu		
		Edit	File	
		Play		
		Monitor	Environment Set	
		Controller	Next	
		Edit Play Moni	itor Control ->	
2	Touch Position button.	🗲 Edit		
		Position	Coordinate System	
		Program		
		Symbol		
		Parameter	Back	
		Position Program Symb	bol Para ->	
3	Touch Teach(Scara)	← Position		There is no Teach(Linear)
	button.	Manual input	Teach(Scara)	button in XSEL-JX/KX.
		Copy/Move	Teach(Linear)	
		Clear		
			Back	
		Modify TeachS Copy/	/Move Clear ->	
4	Either use Page Up button and Page Dn button in the touch panel or input "10" in the position number on the software numeric key, and then touch ENT button for confirmation.	Ax is1 0.000 Vs1 Ax is2 300.000 Acc Ax is3 0.000 Dc1 Ax is4 0.000 Arm Arm: Right Chg Jump: OFF Chg Jog Crd sys: W Chg Switch Ax	Cont. JOG - JOG + Vel Scan JOG - JOG +	
5	Touch SERVO ON/OFF button and then touch Servo all axes ON button to turn the servo ON.	Clear Psition No. 10 Clear Psition No. Axis1 Vel Axis2 Acc Axis3 Dcl Axis4 Arm Arm: Right Chg Switch Ax Jog Crd sys: W 0 Chg Switch Ax In Out UserOutput JVel Back Cur Pos. Write Disp Scan Clear	xis Cont. Vel Scan Axis 4 servo or servo on Axis 4 servo or servo on	





Axis 2 Axis 2 SERVO OFF SERVO ON

Axis 3 Axis 3 SERVO OFF SERVO ON

Axis 4 Axis 4 SERVO OFF SERVO ON

Crd. Sys

Cont.

Scan

Cur Pos. Write Keyboard All Axes SENO OF SENO OF 8. Position Edi

to turn the servo OFF.

Axis4

Back

Arm: Right Chg Jump: OFF Chg

Jog Crd sys: W 0 Chg Switch Axis

In Out UserOutput JVel MVel

Disp Scan Clear Jog Crd ->

INTELLIGENT ACTUATOR ==
ACIOAIOR

No.	Operation		
12	Press the EMERGENCY STOP button. Touch Back button.	Kessage No. 858	Warning: Be sure to execute manual movement when the EMERGENCY STOP button is pressed.
		Back Inquiry	To have manual operation on Z-axis/R-axis, it is necessary to release the brake. As a result, the Z- axis may drop by the weight of such as a hand installed on the end when the brake is released. Do not attempt to conduct teaching manually on the Z-axis/R-axis.
13	Touch <u>Cur Pos.</u> button to confirm that the servo is OFF. Move each axis manually to a desired position.	Move Stop Position No. 11 Clear Page Up Axis1 131,039 Axis2 292,524 Axis3 36,654 Axis4 107,842 Arm: Right Chg Jog Crd svs: W 0.00 Back InputScreen Write Kis4 Josp Scan Clear Jog Crd	 Servo OFF It turns to light blue when the servo is turned ON.
14	Touch <u>Scan</u> button to load the axis number current position where the cursor is to the input screen.	Move Stop Position No. 11 Clear Page Up Page Dn Axis1 228, 135 SV UsrOut Sts Move Nove Axis2 279, 434 SV UsrOut Sts Axis1 Axis2 Axis3 62, 339 SV UsrOut Sts Axis2 Axis1 Axis4 22, 25 SV SV Axis2 Axis2 Jog Crd sys: 0 Chg Switch Axis Cont. In Out UserOutput JVe1 Mve1 Scan Back InputScreen Write Keyboard All Axes Disp Scan Clear Jog Crd ->	
15	Touch in the input area for Axis2 to move the cursor to the next axis and touch Scan button.	Axis1 228.135 Vei MOVE STOP Axis1 228.135 Vei HOME SERVO DU/OFF Axis2 Acc Axis1 Axis1 Axis3 Dci Axis2 Acc Axis4 Arm Arm Axis2 Arm: Right Chg Jump: DNS Chg Crd, Sys Jog Crd svs: W Ohg Switch Axis Cont. Back Cur Pos, Write Keyboard Disp Scan Clear Jog Crd	
16	Also, load the data for Z- axis and R-axis in the same manner.	Move STOP Position No. 11 Clear Page Up Page Dn Axis1 228.135 Vel HOWE SERVO Axis2 279.434 Acc Axis1 Axis1 Axis3 Dcl Axis1 Axis1 Axis1 Axis4 Arm Arm Axis2 Axis2 Jog Crd sys: W 0 Chg Switch Axis Cont. In Out UserOutput JVel NVel Scan Back Cur Pos. Write Keyboard All Ares Disp Scan Clear Jog Crd ->	





No.	Operation		
17	Touch Write button to transfer the position data to the controller. The position moves to No. 12.	Clear Page Up Page Up Page Dn Axis1 228.135 Vei HOME SERVO Axis1 228.135 Vei HOME SERVO Axis2 279.434 Acc Acc Aris1 Ari	If the screen is switched with Page Up or Page Dn buttons before the data is transferred, the input data will become invalid.
18	Finish the position data input with teaching. Touch Back button.	← Teach (Scara) MOVE STOP Position No. 12 Clear Page Up Page Dn Axis1 Vei HOME SERVO Axis2 Acc Axis3 Dcl Axis2 Axis3 Dcl Axis4 Arm Axis2 Acc Axis1 Arm: Right Chg Jump: MSE Chg Crd. Sys Axis3 Axis3 Axis3 Jog Crd sys: W Chg Switch Axis Cont. Axis3 Axis4 In Out UserOutput JVeI Wei Scan All Acs Axis4 Back Cur Pos, Write Keyboard All Acs All Acs Disp Scan Clear Jog Crd -> >	
19	Touch Back button.	← Position Manual input Teach(Scara) Copy/Move Teach(Linear) Clear Back Modify TeachS Copy/Move	The figures shown hereafter are in the condition of the emergency stop being cancelled.
20	Touch Back button.	← Edit Position Coordinate System Program Symbol Parameter Back Position Program	
21	To write the data to the flash ROM, touch Yes button. If writing is not necessary, touch No button.	Confirmation Flash Write ? Yes No Yes No	
22	While in writing process to flash ROM, the display 'Flash ROM writing…' flashes.	 ← Flash ROM writing Flash ROM writing Please Wait 	<i>Never shut off the power to the controller during Flash ROM writing.</i>

INTELLIGENT
ACTUATOR ==

No.	Operation	
23	The flash ROM writing process is finished. Touch OK button. The screen returns to Edit menu.	Complete!
24		<pre> Edit Position Coordinate System Program Symbol Parameter Back Position Program Symbol Para -> </pre>

IX



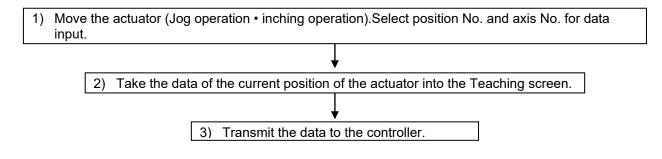


8.4 Teaching for 6-axis Cartesian Construction Axes RSEL 6-axis Cartesian Construction Axes

8.4.1 Teaching

Teaching is one way to input position data (moving the actuator to an arbitrary position and getting that actuator's current position as data).

Methods for moving the actuators to an arbitrary position are the jog operation, inching operation. The fundamental flow of teaching is as follows:



Input the position data by teaching and repeating 1) to 3). Teaching is transacted mainly at the Teaching screen.

🤇 🤆 Menu		Touch Edit button in the Menu screen.
Edit	File	
Play		
Monitor	Environment Set	
Controller	Next	
Edit Play I	Nonitor Control -> 10:00	
🔶 Edit		Touch Position button on the Edit screen.
Position	Coordinate System	
Program		
Symbol		
Parameter	Back	
Position Program	Symbol Para -> 10.00	

← Position Manual input Teach Copy/Move Clear Clear Back Modify Teach Copy/Move Clear	Touch Teach button in Position menu screen.
Teach (Or thog, 6axes) InputScreen All i axes i hold STOP Position No. Clear Page Up Page Dn X X SV Axis1 mm Vel mm/sec X X X SV Axis2 mm Acc G G Y Y Y SV Axis3 mm Pasiton G Back Z <td>Teach window appears.</td>	Teach window appears.

When an axis number assignment to activate several axes groups is performed in the axis number assignment feature (Refer to [15.17 Axis Number Assignment]), the select axes group window should appear after you touch the Teach button. Touch an axes group number button to select the axes group number that is to be subject to.

÷	Select axes group	
	Axes group No.1	
	Axes group No.2	
	Cance I	
		10:0

The select axes group window should appear after you touch the Teach button. Touch an Axes group No. button.

← Teach(0r thog. 6	axes)InputScreen	Axes group 1	All axes / Indiv STOP
Position No. 1	Clear Page Up I	Page Dn	X X J0G - J0G +
SV Axis2	mm Acc	G	Y Y
SV Axis3	mm Dcl		J0G - J0G +
SV Axis4	deg Position Each ax	is Crd. Jog	Z Z
SV Axis5	deg Wrist form		J06 - J06 +
SV Axis6	deg Output	MOVE	Rx Rx
Curt wrist form: NonFlip	function		J0G - J0G +
Jog Crd sys: W 0 Change	┙┝━━━┥┝━╸	d. Sys	Ry Ry J06 - J06 +
Monitor UserOutput		Scan	Rz Rz
Back Curt Pos		Cont.	J06 - J06 +
Disp Scan	Clear Jog	Crd ->	10:00

Teach window appears.

* The axes group number that was selected should be shown on the top right of the screen.





Explanation for ea Position No. SV MARKS Axis1-6 (X-Rz)	ch Display Area : Currently displayed position number : Servo-on status of each axis (Light blue: Servo on / Black: Servo off) : Position data for axis from 1 to 6 Label switches over in response to the coordinate system. (Input window: position type, Current position window: Jog coordinate system) X-Rz display for orthogonal coordinates, Axis1-6 display for each axis coordinates
Vel	: Velocity
Acc	: Acceleration
Dcl	: Deceleration
Position Type	: Indication of position type (orthogonal coordinates or each axis coordinate)
Wrist form	: Indication of wrist form (Flip/Non Flip/Not Indicated)
Output Function Curt wrist form	It can be indicated only when the position type is the orthogonal coordinates. : Output function in position output operation feature : Current wrist form
Jog Crd sys	: Coordinate system in JOG operation
	Wn : Work Coordinate System, n represents the work coordinate system number (0 is the base coordinate system)
	Tn : Tool Coordinate System, n represents the tool coordinate system number A : Each Axis System
Explanation for ea	ch Touch Panel Button
Curt Pos Scan	 Switch the input data screen to the current position display. The current position is to be read into the screen. When the cursor is placed on either of the axes from 1 to 6 (X to Rz), the current position of the axis with the cursor on, and the position of all the axes from 1 to 6 (X to Rz) should be read in when the cursor is placed on somewhere else or the cursor is not shown. Scanning on single axis includes the position data and wrist form. It is available to scan only when there is no position data (all blank in axes from 1 to 6 (X to Rz)) or the position type and the JOG coordinate system match to each other. When there is no position data, the JOG coordinate system should be read in as the position type. Scanning on all axes includes the position data, wrist form and the coordinate system. (The JOG coordinate system should be read in as the position type.)
Clear Jog Crd sys <u>Cha</u> Crd. Sys Switch Axis JogVelocity Monitor	 Selection of the coordinate system number can be performed. Axis to display can be switched when there is an additional axis. Setting can be established for such commands as the JOG velocity. The monitor menu can be shown in a pop-up window. Select an item and the screen switches to the corresponding monitoring window.
User	: The output ports (eight points max. in a row) get turned on/off. (It is necessary to set up Parameters No. 74 and 75 in advance)





8.4.2 Jog Movement Direction and Coordinate System

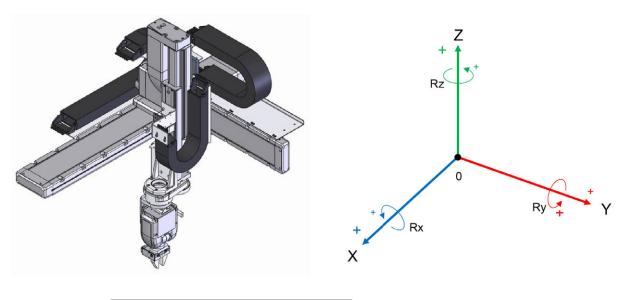
(1) Jog buttons and movement directions

The movement direction during jog operation changes according to the coordinate system No. selected.

The status before shipment is the base coordinate system (work coordinate system No. 0) and tool coordinate system No. 0.

For the setting of coordinate system data, refer to [11. Coordinate System Data Edit].

1) Jog operation on base coordinate system The jog buttons and movement directions on the base coordinate system are as shown below.



Jog movement on base coordinate system (work coordinate system No. 0)

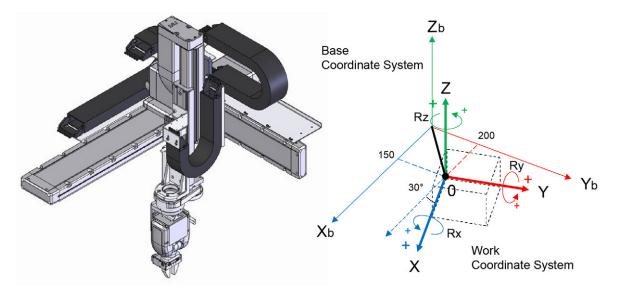
C Teach (Or thog, 6axes) Cur ren	tPos.		All axes / Indiv	STOP	
Position No. 1 Clear Pa	ge Up Page Dn		Х	X	
SV X 0.000 mm		SERV0 0N/0FF	J0G -	JOG +	
SV Y 0.000 mm	an das investion		Y	Y	
SV Z 0.000 mm	ser designation output port		J0G -	J0G +	
	0000 0000	Jog	Z	Z	
SV Ry 0.000 deg			J0G -	JOG +	
SV Rz 0.000 deg		HOUT	Rx	Rx	
Curt wrist form: NonFlip	kis Crd. Sys	MOVE	JOG -	JOG +	
Jog Crd sy: W O Change Switch A		┇┝──┤	Ry J0G -	Ry J0G +	
Monitor UserOutput logVeloc	ity Scan	Cont.			
Back Input Screen Write	Keyboard		Rz J0G -	Rz J0G +	
Disp Scan Clear	log Crd	->		10:00	
Switchover of input data Switchover of the				;	
screen and current		coordinate system for jog			
position screen is to be		operation is to be			
conducted by touching		conducted by touching			
Input Screen button.			ge bu		g
		onan	ye bu	tion.	

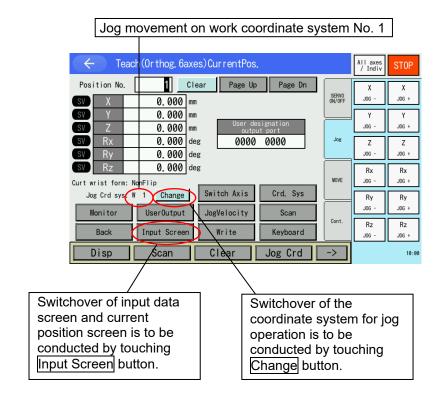




- 2) Jog operation on work coordinate system
 - Example) The jog buttons and movement directions on the work coordinate system No. 1 are as shown below.

The offset values from the work coordinate system No. 1 become Xofw1=150, Yofw1=200, Zofw1=0, Rxofw1=0, Ryofw1=0, Rzofw1=30



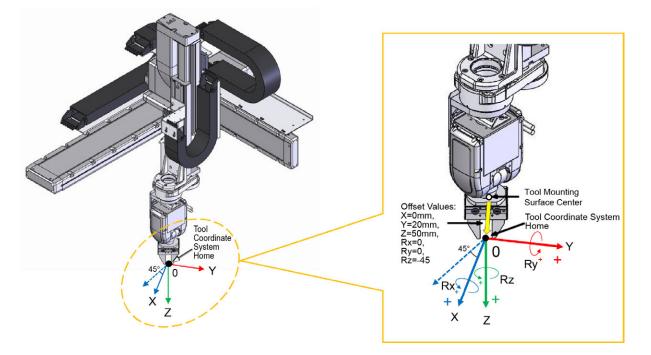






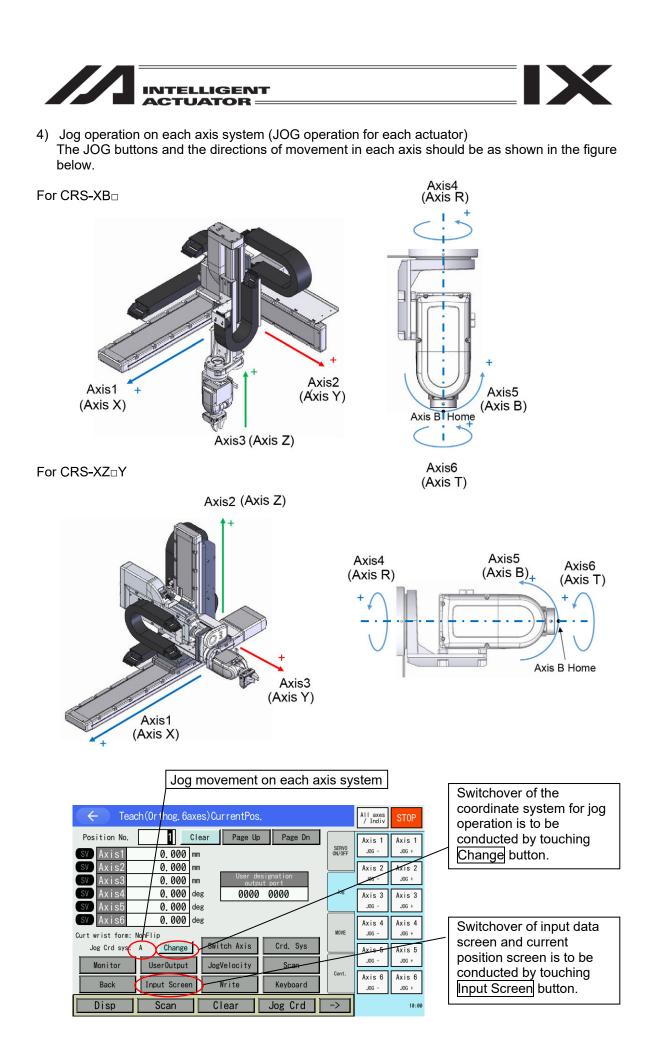
- 3) Jog operation on tool coordinate system
 - Example) The jog buttons and movement directions on the tool coordinate system No. 1 are as shown below.

The offset values from the tool coordinate system No. 1 become Xoft1=0, Yoft1=20, Zoft1=-50, Rxoft1=0, Ryoft1=0, Rzoft1=-45



Jog movement on work coordinate system No. 1			
Teach(Or thog, 6axes)Cur rentPos,		All axes / Indiv STOP	
	Page Dn	/ Indiv	
	SERVO ON/OFF	X X J0G - J0G +	
SV X 0.000 mm SV Y 0.000 mm	0N/0FF		
SV Z 0.000 mm User desig		J0G - J0G +	
	Jog Jog	ZZ	
SV Ry 0.000 deg		J0G - J0G +	
SV Rz 0.000 deg	MOVE	Rx Rx	
Curt wrist form: NonFlip Jog Crd syst: T 1 Change Switch Axis	Crd. Sys	J0G - J0G +	
		Ry Ry 	
Monitor UserOutput JogVelocity	Scan Cont.	Rz Rz	
Back Input Screen Write	Keyboard	J0G - J0G +	
Disp Scan Clear .	Jog Crd ->	10:00	
Switchover of input data	it also your of the		
	itchover of the		
screen and current coordinate system fo position screen is to be operation is to be			
	iducted by tou		
	ange button.	ioning	

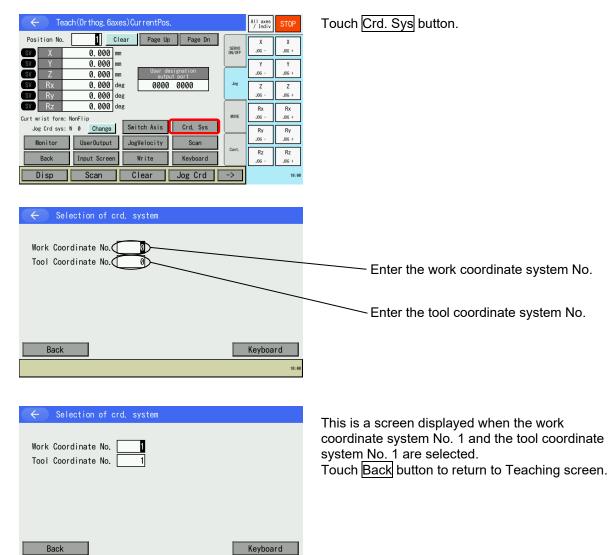
8. Position Edit





IX

(2) Selection of coordinate system No.



C Teach(Orthog. 6axes)CurrentPos.		All axes / Indiv	STOP
Position No. Clear Page Up Page Dn	SERVO ON/OFF	X JOG -	X J0G +
SV Y 0.000 mm SV Z 0.000 mm User designation output port		Y J06 -	Y J0G +
SY Rx 0.000 deg 0000 0000 SY Ry 0.000 deg 0000 0000	Jog	Z J06 -	Z J0G +
SV Rz 0,000 deg Curt wrist form: NonFlip	MOVE	Rx J0G -	Rx J0G +
Jog Crd sys: W 1 Change Switch Axis Crd. Sys Monitor UserOutput JogVelocity Scan		Ry J0G -	Ry J0G +
Back Input Screen Write Keyboard	Cont.	Rz J0G -	Rz J0G +
Disp Scan Clear Jog Crd	->		10:00

The coordinate values displayed indicate the tool tip position of the tool coordinate system No. 1 on the work coordinate system No. 1.





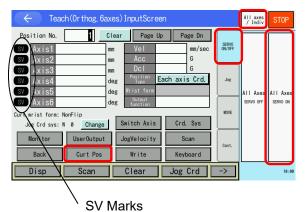
8.4.3 Actuator Operation

Jog the actuator or move it to the input (transferred) position data by using the Teaching Pendant. Operate the actuator on the Teaching screen.

How to Open to Teaching Screen

Go to $Edit \rightarrow Position \rightarrow Teach$ in touch panel operation

(1) Jog operation



SERVO ON/OFF button and then the All Axes SERVO ON button in the Teaching screen condition. * Turning the servo on/off is to be performed on all

Turn the servo ON condition by touching the

the axes at once
* If you cannot find the All Axes SERVO ON button, touch the All axes / Indiv button to switch the display.

The status of servo on/off can be checked on the SV marks.

(Light blue: Servo on, Black: Servo off)

 \Box

Curt Pos. (Input Screen) button

Teach(Or thog. 6axes)Cur rentPos.		All axes / Indiv	STOP
Position No. Clear Page Up Page Dn X 0.000 mm Y 0.000 mm	SERVO ON/OFF	X J0G - Y	X J0G + Y
SY Z 0.000 mm Output period SY Rx 0.000 deg output period SY Ry 0.000 deg deg	Jog	J06 - Z J06 -	J0G + Z J0G +
Rz 0.000 Cure wrist form: NonFlip og Crd sys: W 0 Og Crd sys: W 0 Change	MOVE	Rx J0G - Ry	Rx J06 + Ry
Molitor UserOutput JogVelocity Scan Back Input Screen Write Keyboard	Cont.	J06 - Rz J06 -	J0G + Rz J0G +
Disp Scan Clear Jog Crd	->		10:00

[∖] SV Marks

Before operation, check the jog operation coordinate system selected.

Select the JOG tab, and then touch the Axis 1
JOG - Axis 1 JOG + ~ Axis 6 JOG - Axis 6 JOG +
buttons or X JOG - X JOG + ~ Rz JOG - Rz JOG
+ buttons to move the actuator to a required
position.
* IOC aparation abould be parformed on each

 JOG operation should be performed on each axis (coordinate axis).

* When you cannot find the buttons for each axis (coordinate axis), touch the <u>All axes / Indiv</u> button to switch the display.

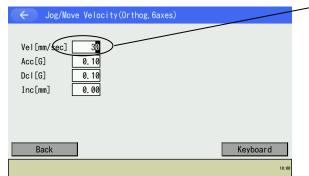




C Teach(Or thog. 6axes)CurrentPos.	All axes / Indiv	STOP	
Position No. 1 Clear Page Up Page Dn	SERVO ON/OFF	X J06 -	X J0G +
SV Y 0.000 mm		Y J0G -	Y J0G +
SV Z 0.000 mm output port SV Rx 0.000 deg 00000 0000	Jog	Z	Z
SV Ry 0.000 deg SV Rz 0.000 deg		J0G - Rx	J0G + Rx
Curt wrist form: NonFlip Jog Crd sys: W 0 Change Switch Axis Crd. Sys	MOVE	J06 - Ry	J0G +
Monitor UserOutput JogVelocity Scan	Cont.	J0G -	JOG +
Back Input Screen Write Keyboard		Rz J0G -	Rz J0G +
Disp Scan Clear Jog Crd	->		10:00

Change of jog velocity

The actuator movement velocity under jog operation is changed. Touch JogVelocity button.



(2) Inching operation

Vel[mm/sec]

Acc[G]

Dcl[G]

Inc[mm] (

Back

Jog/Move Velocity(Orthog.6axes)

30 0.30

0.30

0.10

JogVelocity

Input the Vel (velocity), Acc (acceleration) and Dcl (deceleration) in the jog operation on the touch panel numeric keys. Inc (inching distance) should be 0.000. (The numeric key touch panel can be opened by touching the Keyboard button.) Also, inching distance setting is available in this window.

Touch the Back button to return to the teaching window and perform the JOG operation.

Inching distance

Keyboard

10:00

Setting for inching distance (movement distance for each time of touch on the JOG button) can be established.

Input a number in Inc (inching distance) in the JOG velocity change window. (The numeric key touch panel can be opened by touching the Keyboard button.)

The range of numbers for input is from 0.01 to 1.00. (Unit: mm)

Touch the Back button to return to the teaching window and perform the inching operation.





(3) Scanning Current Position as Data

Check in advance the work coordinate system number and tool coordinate system number currently being selected.

(Window transfer: Edit \rightarrow Position \rightarrow Teach \rightarrow Coordinate System Setting from touch panel)

The determined actuator position should be read in as the position data.

C Teach (Or thog. 6		All axes / Indiv STOP	
Position No. 1	X X		
	Vel mm/sec	SERVO ON/OFF	J0G - J0G +
SV Y	mm Acc G		Y Y
SV Z	mm Dcl G		J0G - J0G +
SV Rx	deg Position Orthog. Crd.	Jog	Z Z
SV Ry	deg Wrist form		J0G - J0G +
sv Rz	deg Output function		Rx Rx
Curt wrist form: NonFlip		MOVE	J0G - J0G +
Jog Crd sys: W 0 Change	Switch Axis Crd. Sys		Ry Ry
Monitor UserOutput	JogVelocity Scan		J0G - J0G +
	Jogverocrty Jocan	Cont.	Rz Rz
Back Curt Pos	Write Keyboard		J06 - J06 +
Disp Scan	Clear Jog Crd	->	10:00

Indicate the position number to scan the data from. Touch the position number input box to show the cursor and input a number on the touch panel numeric keys. (The numeric key touch panel can be shown by touching the Keyboard button) Otherwise, touch the Page Up Page Dn buttons to select the position number to scan the data from. Touch the Scan button.

C Teac		All axes / Indiv	STOP						
Position No.	141. 460	Clear mm	Page Vel Acc	Up		ge Dn mm/sec G	SERVO ON/OFF	X J0G - Y	X J0G + Y
SV Z SV Rx SV Ry		mm mm deg deg	Dcl Position Type Wrist form	0rth NonF	log.	G Crd.	Jog	T J0G - Z J0G -	f J0G + Z J0G +
SV Rz Curt wrist form: N Jog Crd sys: W	kon Flip	deg	Output function	_	Crd.		MOVE	Rx J06 -	Rx J0G +
Monitor Back	UserOutput Curt Pos		JogVelocity Write		Sca	an	Cont.	Ry J0G - Rz J0G -	Ry J0G + Rz J0G +
Disp	Scan		Clear		og (Crd	->		10:00

[\] Axis box

Touching the Scan button while the cursor placed at an axis box should read in the current position data and the wrist form of the axis where the cursor is currently placed at. (Coordinate system data also gets scanned when the current position data is all blank.)

When there is no cursor shown or the cursor is placed somewhere other than the axis boxes, touch the <u>Scan</u> button and the current position data, wrist form and coordinate systems for all the axes should be read in

- * The wrist form can be scanned only when the position type is the orthogonal coordinates.
- ^t Coordinate system scan should read in the JOG coordinate system as the position type.





(4) Controller Data Transfer Scanned data can be transferred to the controller.

← Teach(0rthog	All axes / Indiv	STOP			
Position No. 1 SV X 141.60	-	Up Page Dn mm/sec G	SERV0 ON/OFF	Х J06 -	X JOG +
SV Y 252, 87 SV Z 51, 68 SV Rx 26, 29	5 mm Dcl	G G Orthog. Crd.	Jog	Y J06 - Z	Y J0G + Z
SV Ry 13.12 SV Rz 33.22	5 deg Wrist form	NonFlip		2 J0G - Rx	JOG +
Curt wrist form: NonFlip Jog Crd sys: W 0 Char		Crd. Sys	MOVE	J0G -	JOG +
Monitor UserOut			Cont.	J0G - Rz	JOG + Rz
Back Curt Po	s Write Clear	Keyboard Jog Crd	->]	JOG -	JOG + 10:00

Touch the Write button in the teaching window. The scanned data can be saved in the memory in the controller. Once the data transfer to the controller is completed, the position number should be incremented by 1. It should be one set of the position data in display that is capable for data transfer to the controller. It is not available to transfer data in several position numbers at once.

Data input will become invalid if the screen is switched by touching Page Up, Page Dn or Back button before the data is transferred.

Only transferring the data to a controller by touching Write button will lose the edit data when the power gets rebooted or the software reset is conducted^{*1}. Go back from the position edit screen to the flash ROM writing screen by using Back button, and have [8.1.2 Flash ROM Writing] conducted. (*1 Except for controllers which possess feature to retain data)

(5) I/O Monitor

Each port can be monitored during the teaching operation.

 Teach (0r thog.) 		All axes / Indiv	STOP	
Position No. 1	Clear Page Up Page Dn	0779110	X	X
SV X	mm Vel mm/sec	SERV0 ON/OFF	J0G -	J0G +
SV Y	mm Acc G		Υ	Y
SV Z	mm Dcl G		J0G -	J0G +
SV Rx	deg Position Orthog. Crd.	Jog	Z	Z
SV Ry	deg Wrist form		J0G -	J0G +
SV Rz	deg Output function		Rx	Rx
Curt wrist form: NonFlip		MOVE	J0G -	JOG +
Jog Crd sys: W 0 Chang	Switch Axis Crd. Sys		Ry	Ry
Monitor UserOutpu	t JogVelocity Scan		J0G -	J0G +
worn cor		Cont.	Rz	Rz
Back Curt Pos	Write Keyboard		J0G -	JOG +
Disp Scan	Clear Jog Crd	->		10:00

Touch Monitor in the teaching window.

The monitor menu pop-up window will show up.

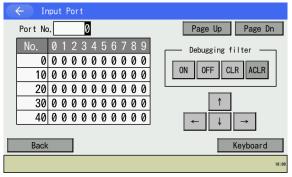
← Te	C ← Teach (Or thog, 6axes) InputScreen											
Position No	. 1			age Dn	SERVO	X J0G -	X J0G +					
SV X SV Y		mm Vel		mm/sec G	ON/OFF	- 306 - - - Ү	<u> </u>					
SV Z		mm Dc		G		т J0G -	JOG +					
sv Rx		deg Posit Type	or thog.	Crd.	Jog	Z	Z					
SV Ry		deg Wrist				J0G -	J0G +					
SV Rz		deg funct	ion		MOVE	Rx J0G -	Rx J0G +					
						Ry	Ry					
Inp	ort	Out port	InOut po	rt 🕇		J0G -	J0G +					
Back	Curt Po	os Writ	e Keyt	poard	Cont.	Rz J06 -	Rz J0G +					
Disp	Scan	Clea	r Jog	Crd	->		10:00					

Touch the port type you would like to monitor. The pop-up monitor closes and the each port monitor window will open.

Touch the X button on the top right of the pop-up window when it is required to cancel. The pop-up window closes and the teaching window will come back on.



Input ports



Refer to [14.2 Input Port] for debug filters.

Output ports

< − 0ı	itpi	ut	Po	ort							
Port No. 300										Page Up Page Dn	
No.	0	1	2	3	4	5	6	7	8	9	
300	1	1	1	0	0	0	0	0	0	0	
310	0	0	0	0	0	0	0	0	0	0	ON 1 OFF
320	0	0	0	0	0	0	0	0	0	0	\leftarrow \downarrow \rightarrow
330	0	0	0	0	0	0	0	0	0	0	
340	0	0	0	0	0	0	0	0	0	0	
			_								
Back Keyboard											
0/1											10:00

Touching ON and OFF buttons, the output port of the cursor position can be turned ON/OFF (1/0).

InOut Port

← Ir	n0u	t F	or								
Port No	o. [7,	, 0	00							Page Up Page Dn
No.	0	1	2	3	4	5	6	7	8	9	
7000	0	1	0	0	0	0	0	0	0	0	
7010	0	0	0	0	0	0	0	0	0	0	ON 1 OFF
7020	0	0	0	0	0	0	0	0	0	0	\leftarrow \downarrow \rightarrow
7030	0	0	0	0	0	0	0	0	0	0	
7040	0	0	0	0	0	0	0	0	0	0	
Back	(Keyboard
											10:00

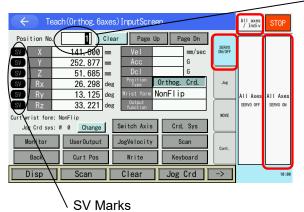
The way to operate is the same as the output port.





(6) Move

Move the actuator to the position of the position data transferred to the controller. (Position check of position data that teaching was conducted)

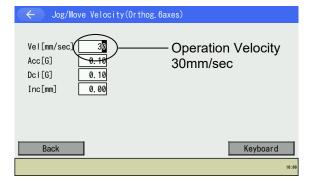


Position No. to move

Select the position number that you would like to have the actuator moved to in the teaching window. Touch the Servo ON/OFF tab and then touch the <u>All Axes SERVO On</u> button to turn the servo on. The status of servo on/off can be checked on the SV marks beside the positions. Light blue shows the servo is turned on.

* If you cannot find the All Axes SERVO On button, touch the All axes / Indiv button to switch the display.

To check the movement speed or to have a change, touch the JOG Velocity button.



Touch the Keyboard button to show the numeric key touch panel. (When the cursor is not in the Vel box, touch in the Vel box to show the cursor.) Input the change data on the numeric keys and touch ENT.

Touch the Back button after the change is made. If the velocity and acceleration/deceleration are set in the position data, they should be prioritized. Priority: Parameter < JVel < Position Data

🔶 Tea	All axes / Indiv	STOP						
Position No.	1 C	lear	Page	Up Pa	ige Dn			
SV X	141.600	nm	Vel		mm/sec	SERV0 ON/OFF		
SV Y	252. 877 r	nm	Acc		G			
SV Z	51. 685 r	nm	Dcl		G			
SV Rx	26. 298	deg	Position Type	Orthog.	Crd.	Jog		
SV Ry	13. 125	deg	Wrist form	NonFlip			All Axes	All Axes
SV Rz	33. 221	deg	Output function				MOVE	MOVE
Curt wrist form:	NonFlip	-		_		MOVE		
Jog Crd sys:	W 0 Change	S	witch Axis	Crd.	Sys			
Monitor	UserOutput	J	ogVelocity	So	can	Cont.		
Back	Curt Pos		Write	Keyt	board			
Disp	Scan		Clear	Jog	Crd	->		10:00

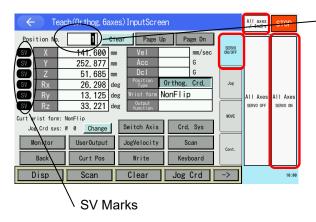
Touch the Move tab and then touch the All Axes Move button. The actuator will start moving. To stop the actuator on the way, touch the Stop button.





(7) Continuous Move

Move the actuator to the position of the position data transferred to the controller continuously.



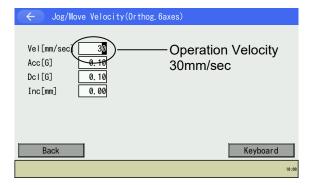
Position number to move in first step

Select the position number that you would like to have the actuator moved to in the first step by using the numeric keys or the Page Up Page Dn buttons in the teaching window.

Touch the Servo ON/OFF tab and then touch the All Axes SERVO On button to turn the servo on. The status of servo on/off can be checked on the SV marks beside the positions. Light blue shows the servo is turned on.

* If you cannot find the All Axes SERVO On button, touch the All axes / Indiv button to switch the display.

To check the movement speed or to have a change, touch the JOG Velocity button.



Touch the Keyboard button to show the numeric key touch panel. (When the cursor is not in the Vel box, touch in the Vel box to show the cursor.) Input the change data on the numeric keys and touch ENT.

Touch the Back button after the change is made. If the velocity and acceleration/deceleration are set in the position data, they should be prioritized. Priority: Parameter < JVel < Position Data

Central Teach (0r thog, 6axes) InputScreen						All axes / Indiv	STOP
Position No.	1 CI	ear Page	Up Page	e Dn			
SV X 1	41.600 🔤	n Vel	r	mm/sec	SERVO ON/OFF		
SV Y 2	52.877 🖿	n Acc	(G			
SV Z	51.685 🖿		(G			
SV Rx	26. 298 de	Position Bg Type	Orthog. (Crd.	Jog		
SV Ry	13.125 deg Wrist form NonFlip				All Axes	All Axes	
SV Rz	33. 221 de	eg Output function				MOVE (-)	MOVE (+)
Curt wrist form: NonFlip					MOVE		
Jog Crd sys: W 0 Change Switch Axis		Crd.	Sys				
Monitor UserOutput JogVelocity Scan		an	Cont.				
Back	Curt Pos	Write	Keybo	bard			
Disp	Scan	Clear	Jog C	rd	->		10:00

Touch the Cont. Tab and then touch the All Axes MOVE (+) or All Axes MOVE (-) button. The actuator will start making a continuous moving. To stop the actuator on the way, touch the Stop button.



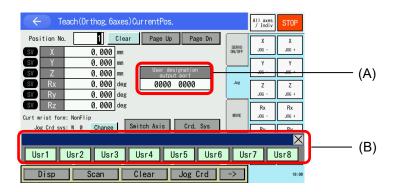


(8) User Indicated Output Port Operation

The output port indicated in the parameter can easily be turned on/off.

Centre Teach (0r thog, 6)	All axes / Indiv	STOP		
Position No. 1	Clear Page Up Page Dn	SERVO	X	X
SV X	mm Vel mm/sec	ON/OFF	JOG - Y	JOG + Y
SV Z	mm Dcl G		JOG -	JOG +
SV Rx	deg Position Orthog. Crd.	Jog	Z	Z
sv Ry sv Rz	deg Wrist form deg Output function		JOG -	J0G +
Curt wrist form: NonFlip			J0G -	JOG +
Jog Crd sys: W 0 Change	Switch Axis Crd. Sys		Ry J0g -	Ry J0G +
Monitor UserOutput	JogVelocity Scan	Cont.	306 -	JUG +
Back Curt Pos	Write Keyboard		J06 -	J0G +
Disp Scan	Clear Jog Crd	->		10:00

Touch the UserOutput button in the teaching window.



(A) User-specified output port status

The conditions of user-specified output ports are displayed as '1' (=ON) and '0' (=OFF). (The conditions are displayed from the first specified port for the number of specified ports from the left.)

(B) User-Specified Output Port Operation Panel Window

It is a panel window to perform the operation to turn ON/OFF the user-specified output ports. Assignment is made for the number of specified ports in the order of 'Usr1', 'Usr2', 'Usr3' ... from the top of the <u>user-specified</u> output ports.

By touching a <u>Usr1</u> to <u>Usr8</u> buttons, an operation can be performed to turn each output port ON/OFF.

(Port ON Command is executed when the port status display is '0' (OFF) and Port OFF Command when the status display is '1' (ON)).

To close this panel window, touch \times on the top right.





1) Setting of user-specified output port parameters

For the operation method for parameter setting, refer to [13. Parameter Edit].

The first port No. and the number of ports are set with the following parameters:

- Number of ports
 // nortPitt larOut" (Number of output ports
- I/O parameter No. 74 "QntPrtUsrOut" (Number of output ports used by TP user (hand, etc.)) • First port No.
 - I/O parameter No. 75 "TopNo.UseOut" (First output port No. by TP user (hand, etc.))

(Setting example) When the first port No. is set to 308 and the number of ports is set to 8:

 'Usr1'
 Output port 308

 'Usr2'
 Output port 309

 'Usr3'
 Output port 310

 'Usr4'
 Output port 311

 'Usr5'
 Output port 312

 'Usr6'
 Output port 313

 'Usr7'
 Output port 314

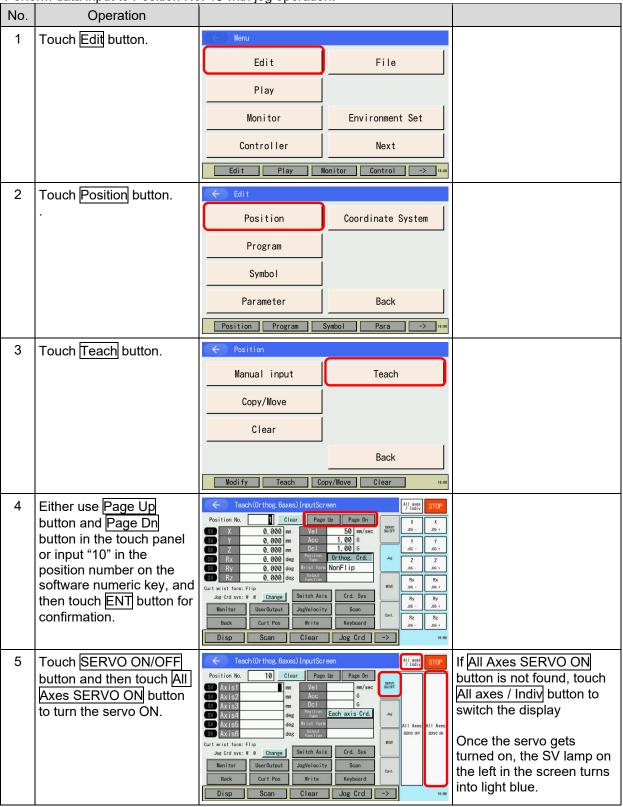
 'Usr8'
 Output port 315





8.4.4 Example for Teaching Input

Perform data input to Position No. 10 with jog operation.





No.	Operation		
6	Touch the <u>Curt Pos</u> button to switch the screen to the current position display.	Yeach(Orthog, 6axes) InputScreen Hill ave India STOP Position No. 10 Clear Page Up AxisS Page Up MaxisS Page Up MaxisS Page Up MaxisS Stop SN AxisS mm Acc 6 Stop Acc 6 SN AxisS mm Dcl 6 Acc 6 Acc 6 SN AxisS deg Mist tore Each axis Crd. Acc 6 Acc 6 SN AxisS deg Mist tore Each axis Crd. Acc 6 Acc 6 Acc 6 Acc Column Acc 6 Acc Column Column Acc Column	
7	Touch the Change button for the jog coordinate system to select the coordinate system to perform the jog operation. Touch the jog buttons from Axis 1 jog - and Axis 1 jog + to Axis 6 jog - and Axis 6 jog + (or from X jog - and X jog + to Rz jog - and Rz jog +) to move the robot to a desired position.	Image: State of the set of	If the jog buttons from Axis 1 jog - and Axis 1 jog + to Axis 6 jog - and Axis 6 jog + (or from X jog - and X jog + to Rz jog - and Rz jog +) are not found, touch All axes / Indiv button to switch the display
8	Touch the Scan button and the current position of an axis number where the cursor is pointing at should get scanned to the input window.	← Teach(Or thog, 6axes)Cur rentPos. ↓↓↓ and ↓↓↓ and ↓↓↓ and ↓↓↓ and ↓↓↓↓ and ↓↓↓↓ and ↓↓↓↓ and ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓	Touch the Scan button while the cursor is not shown or it is at the position number box, and the current positions of all the axes for the 6-axis Cartesian should be scanned.
9	Touch the Input Screen button to confirm that the data has been scanned.	✓ Teach(0r thog, 6axes) InputScreen ↓↓↓ and ↓↓↓ and ↓↓ and ↓↓ a	*The figure on the left is the window after touching Input Screen
10	Touch Write button to transfer the position data to the controller. The position proceeds to No. 11.	Control Clear Page Up	If the screen is switched with Page Up or Page Dn buttons before the data is transferred, the input data will become invalid.

IX

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ACTUATOR =

No.	Operation		
11	Finish the position data input with a teaching tool. Touch the Back button.	← Teach(0r thog, 6axes) InputScreen ^[1] and ^[1] and 	
12	Touch Back button.	← Position Manual input Teach Copy/Move Clear Clear Back	
13	Touch <u>Back</u> button.	<pre></pre>	
14	Write to the flash ROM. Touch the Yes button.	Confirmation Flash Write ? Yes No	
15	While in writing process to flash ROM, the display 'Flash ROM writing'flashes.	Flash ROM writing Flash ROM writing Please Wait	<i>Never shut off the power to the controller during Flash ROM writing.</i>

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ACTUATOR ===

No.	Operation		
16	The flash ROM writing	← Confirmation	
	process is finished. Touch OK button. The screen returns to Edit menu.	Complete!	
		ОК	10:00
17		Edit	
		Position Coordinate S	System
		Program	
		Symbo I	
		Parameter Back	
		Position Program Symbol Para	10:00





8.5 Copy and Movement of Position Data

It is a way to copy or move the position data to another position number.

(🤆) Menu	
Edit	File
Play	
Monitor	Environment Set
Controller	Next
Edit Play M	Nonitor Control ->

Touch Edit button in the Menu screen.

Edit	
Position	Coordinate System
Program	
Symbo I	
Parameter	Back
Position Program	Symbol Para ->

Touch Position button on the Edit screen.

Touch Copy/Move button in Position screen.

← Position	
Manual input	Teach (Scara)
Copy/Move	
Clear	
	Back
Modify Teach Co	ppy/Move Clear

Position data Copy/Move

 First No.
 Last No.

 From No.

 To No.

 Copy
 Move

 Copy
 Move

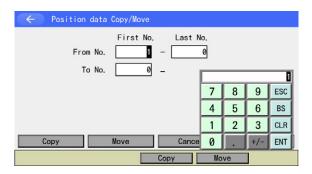
 Copy
 Move

Touch Keyboard button to show the touch panel keyboard.

If the cursor is not on From No. First No., touch on From No. First No. to show the cursor.

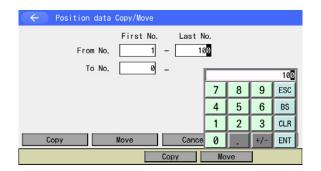






Input a value in From No. First No. and touch ENT button.

The cursor moves to From No. Last No. and touch panel keyboard closes.



Touch Keyboard button again to show the touch panel keyboard. Input a value in From No. Last No. and touch ENT

Input a value in To No. First No. in the same

After completing the input, To No. Last No. will be

When you want to copy, touch Copy button. When

manner.

shown.

Input a value in From No. Last No. and touch <u>ENI</u> button.

First No. Last No. 1 -100 From No. 100 199 To No. _ Сору Move Cancel Keyboard Сору Move

Copy Move Cancel Keyboard Copy Move

> Position data will be copied Are you sure to continue?

> > No

Yes

No

If you want to copy, touch Yes button. If copy is not necessary, touch No button.

you want to move, touch Move button. Execution Confirmation screen appears.



Touch OK button to go back to the previous screen. When you want to write in the flash ROM, go back to Flash ROM Writing screen by touching Back button and so on. Write the data in the Flash ROM referring to [8.1.2 Flash ROM Writing].





When an axis number assignment to activate several axes groups is performed in the axis number assignment feature (refer to [15.17 Axis Number Assignment]), position data copy/move in an axes group and also among axes groups can be performed.

← Position	n data Copy/M	love			
	kes group No.	First No.			
From No.	1	1 -	10	(Max.	18,000)
To No.	2	100 -	109	(Max.	18,000)
Crown conv	Crown mov				
Group copy	Group mov				
Сору	Move	Ca	ancel	Key	/board
GroupCopy	GroupMove	Сору	Mov	е	10:00

Each contents and button operations are as shown below.

Axes group No.	: Indicate the axes group number of the data to copy/move from
First No.	: Indicate the top number of the data to <u>copy/move fr</u> om
	It is available only for copy/move with Copy / Move buttons
Last No.	: Indicate the last number of the data to copy/move
	It is available only for copy/move with Copy / Move buttons
Max Display	: It is the maximum position number on the indicated axes group number.
	Indicate the top and last numbers in the range of this number.
[Copy / Move]	
Axes group No.	: Indicate the axes group number of the data to copy/move to.
5 1	Indicating the same axes group number as the one to copy/move from
	determines as the copy/move in the axes group, and indicating a different axes
	group number determines as the copy/move between axes groups.
First No.	: Indicate the top number to copy/move to.
	It is available only for copy/move with Copy / Move buttons
Last No.	: It is the last number to copy/move to. It should automatically be calculated.
	It is available only for copy/move with Copy / Move buttons
Max Display	: Indicate the top number so the last number falls in the range of this number.
max biopidy	The position data in the range indicated with the top number and last number
	to copy from get copied to the top number and last number to copy to.
[Button]	
Сору	: The position data in the range indicated with the top number and last number
0007	to move from get moved to the top number and last number to move to.
Move	: Copy between axes groups is to be performed. Data in the positions from No.
MOVE	1 to the maximum position number in the axes group to copy from can be
	copied to the positions from No. 1 in the axes group to copy to.
Group copy	: Copy between axes groups is to be performed. Data in the positions from No.
Group copy	
	1 to the maximum position number in the axes group to copy from can be
	copied to the positions from No. 1 in the axes group to copy to.
	Indicate different axes group numbers for the group to copy from and the
	group to copy to.
Group move	: Move between axes groups is to be performed. Data in the positions from No.
	1 to the maximum position number in the axes group to move from can be
	moved to the positions from No. 1 in the axes group to move to.
	Indicate different axes group numbers for the group to move from and the
Qaraal	group to move to.
Cancel	: The screen goes back to the position menu.
Keyboard	: It should show the keyboard. Touch a box to input data to show the cursor and
	then touch the Keyboard button.





8.6 **Deletion of Position Data**

The following operating instructions are to delete the position data.

🤇 🤆 🔪 Menu	
Edit	File
Play	
Monitor	Environment Set
Controller	Next
Edit Play I	Monitor Control ->

Coordinate System Position Program Symbol Parameter Back Position Program Symbol Para

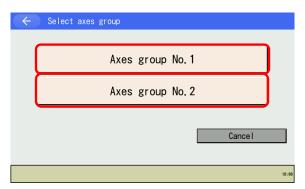
Manual input Teach(Scara) Copy/Move Clear Back Teach Copy/Move Clear Modify

Touch Position button on the Edit screen.

Touch Edit button in the Menu screen.

Touch Clear button on the Position screen.

When an axis number assignment to activate several axes groups is performed in the axis number assignment feature (refer to [15.17 Axis Number Assignment]), the select axes group screen should appear after you touch the Clear button. Touch an axes group number button to select the axes group number that is to be subject to.



The select axes group screen should appear after you touch the Manual Input button. Touch an Axes group No. button.

	R
← Position data Clear	Axes group No. 1
First No. Last No. Clear Area 0 - 0	(Max. 18,000)
Clear All Clear Cancel	Keyboard

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Clr Type Clear

All Clr

The position data clear window will appear.

* The axes group number that was selected should be shown on the top right of the screen.

Touch Keyboard button to show the touch panel keyboard.

If the cursor is not on the top number, touch the top number to show the cursor.

First No. Last No. Clear Area 1 _ 0 Clear type Π ●Clear all items 7 8 9 ESC Clear except the comment 4 5 6 BS OClear only the comment 2 1 3 CLR 0 +/-ENT Clear All Clear Cance Clr Type Clear All Clr

Input the First No. and touch ENT button. The cursor moves to the Last No. and the touch panel keyboard closes.

← Position data Clear		
First No. Clear Area 1	Last No. - 10	
Clear type		
●Clear all items		
OClear except the comment		
OClear only the comment		
Clear All Clear	Cancel	Keyboard
Cir Type C	lear All C	lr

Touch Keyboard button again to show the touch panel keyboard.

Input the Last No. and touch ENT button. When you want to delete the selected position data, touch Clear button.

When you want to delete all the positions, touch ALL Clear button.

Execution Confirmation screen appears.

INTELLIGENT ACTUATOR	
Confirmation Position data will be cleared. Are you sure to continue?	If you want to delete, touch Yes button. If deletion is not necessary, touch No button.
Yes No	
Confirmation	Touch OK button to go back to the previous screen. When you want to write in the flash ROM, go back to Flash ROM Writing screen by touching Back button and so on. Write the data in the Flash ROM referring to [8.1.2 Flash ROM Writing].
ОК	









9. Program Edit

(Excluding the positioner mode of the SSEL, ASEL and PSEL controller.)

9.1 How to Input Program

Input the program step below as an example.

Program No. 2

No.	Е	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Comment
1			601					
2	А	Ν	600	CPGE	200	*201	900	Compare Data
3				SCPY	1	'1234		

Only input conditions for Step No. 1 and all for Step No. 2 are input.

e Menu	
Edit	File
Play	
Monitor	Environment Set
Controller	Next
Edit Play M	onitor Control ->

Touch Edit button in the Menu screen.

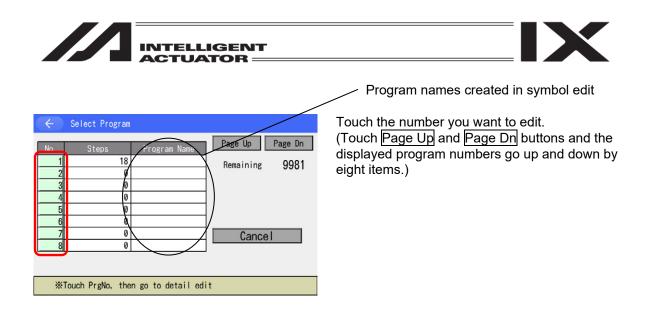
← Edit	
Position	
Program	
Symbol	
Parameter	Back
Position Program	Symbol Para

Touch Program button in the Edit screen.

← Program	
Modify	
Copy/Move	
Clear	
Play	Back
Modify Copy/Move	Clear Play

Touch Modify button in the Program screen.

* Touch the Change/New button when it is shown.



When an axis number assignment to activate several axes groups is performed in the axis number assignment feature (refer to [15.17 Axis Number Assignment]), the initial setting values* in the axes group numbers will be displayed in the select program number screen. Establish the initial settings in the axes group number as well as the program step edit.

(* Axes group numbers subject to control at the program execution start)

$\left(\leftarrow \right)$	Select	Program					
		Remaining	19, 975	Page Up 🛛 Pa	ge Dn		
No.	Steps	Program N	lame	Axes Grp. No. D	efault		
1	18			1	Change		
2	7			2	Change		
3	0			1	Change		
4	0			1	Change		
5	0			1	Change		
6	0			1	Change		
7	0			1	Change		
8	0			1	Change		
			[Cancel			
*1	≫Touch PrgNo, then go to detail edit ™™						

Touch the Change button at a program number that you would like to edit. The keyboard will comes up.

÷	Select	Program					
		Remaining	19, 975	Page	e Up	Pag	ge Dn
No.	Steps	Program N	ame	A:	kes Grp.	No. De	efault
1	18					1	Change
2	7					2	Change
3	0						1
4	0			7	8	9	ESC
5	0			<u> </u>	_	_	
6	0			4	5	6	BS
7	0			1	2	3	CLR
8	0					<u> </u>	ULK
				0		+/-	ENT
*1	Fouch Pr	gNo, then go to de	etail edit				10:0

Input the initial value for an axes group number and then touch the ENT button.

After the setting is changed, follow [9.8 Flash ROM Writing] to conduct the flash ROM writing.

	LIGENT JATOR		
	Step	No. Input Area	Program No. Display Area
Step No. Display Area	No. E N Cnd Cmnd Operand1 Ope 1	rand2 Pst Comment Edit Edit Edit Edit Edit Edit Edit Edit	— Step Data
	Back	Write Keyboard	

[Items Shown in Program Step Edit Screen]

Program No. Display Area : It shows the editing program No.	
Step No. Input Area : Is to input Step No.	
By the input values, Display Area is changed.	
Step No. Display Area : Is to display Step No.	
Step Data	
E : Input an extension condition.	
N : Input the reversion of input condition.	
Cnd : Input the input condition.	
Cmnd : Input a SEL command language.	
Operand1 : Input Operation 1 (Operand1).	
Operand2 : Input Operation 2 (Operand2).	
Pst : Input the output part (Operand3).	
Comment : Input a comment if necessary (18 letters with half-size font at	max. and In RSEL and
XSEL2-T/TX, 32 letters with half-size font at max.)	
(Hiragana, Katakana and Kanji (1st standard) characters can	be displayed, but cannot
be input.)	





← P	P	rogram	Number	2				
Step Num	ber 🗌		1		Pag	e Up	Page	Dn
No. E N	Cnd	Cmnd	Operand1	Operand2	Pst	Com	ment	
1)					Edit
2								Edit
3								Edit
4								Edit
5								Edit
6								Edit
7								Edit
8			j					Edit
Back	ĸ				Write		Keyboar	d

Program Editor Program Number 1 Page Up Page Dn Step Number Edit Edit Edit Edit Edit Edit Edit Edit Keyboard Back Write Symbol

Condition of Touch Panel Keyboard Displayed

🗧 ← Program Editor	Program Number 2
Step Number 1	Page Up Page Dn
No. E N Cnd Cmnd Operand1 Operand2 P	st Comment
601	
ESC 1 2 3 4 5 6 7 8	90-=BS
TAB q w e r t y u i	o p []
CAP a s d f g h j	k ; '
SHIFT z x c v b n m	, . / ENT
Ctrl Alt `¥	$\downarrow \uparrow \leftarrow \rightarrow$
Symbol	

Program Editor Program Number Step Number Page Up Page Dn 1 E N Cnd 601 Edit Edit Edit Edit Edit Edit Edit Edit Write Keyboard Back CmndList

With the cursor being in Cnd input area, touch the keyboard button to show the touch panel keyboard and input 601.

Move the cursor to No.1, Cnd area by touching.

Input 601 and touch ENT.

The touch panel keyboard closes and 601 is input in Cnd.

The cursor moves to Cmnd column. Also, to show that it is being edited (controller writing not yet done), the background color in the step number display box turns to orange.

Touch No. 2, Column E to move the cursor.





\leftarrow	← Program Editor						Program Number 2				
Ste	οN	lumber		1		Pag	e Up	Page	Dn		
No.	Е	N Cnd	Cmnd	Operand1	Operand2	Pst	Comn	ient			
1		601							Edit		
2									Edit		
3									Edit		
4									Edit		
5									Edit		
6									Edit		
7									Edit		
8									Edit		
	B	ack				Write		Keyboar	d		
		LD		A	0		AB	_>			

Touch the keyboard button with the cursor being displayed at E Column to show the touch panel keyboard in order to A.

The touch panel keyboard closes and A gets to be

Input A and touch ENT.

input to E Column.

🔶 Program Editor	Program Number 2
Step Number 1	Page Up Page Dn
No. E N Cnd Cmnd Operand1 Operand2	Pst Comment
A	
ESC 1 2 3 4 5 6 7 8	90-=BS
TAB Q W E R T Y U	I 0 P []
CAP A S D F G H J	K L ; '
SHIFT Z X C V B N M	, . / ENT
Ctrl Alt ~ ¥	$\downarrow \uparrow \leftarrow \rightarrow$
LD A O	AB ->

← Pro	gram Editor	Pr	Program Number 2			
Step Numbe	er 1		Page	Up Page	Dn	
No. EN O	Cnd Cmnd O	perand1 Operand	2 Pst	Comment		
1 601					Edit	
2 A					Edit	
3					Edit	
4					Edit	
5					Edit	
6					Edit	
7					Edit	
8					Edit	
Back			Write	Keyboar	'd	
		N				

The cursor moves to N Column. Touch Keyboard button to show the touch panel keyboard, and input 'N'.

🗧 🔶 Program Editor	Program Number 2
Step Number 1	age Up Page Dn
No. E N Cnd Cmnd Operand1 Operand2 Pst	Comment
N	
ESC 1 2 3 4 5 6 7 8 9	0 – = BS
TAB Q W E R T Y U I	0 P []
CAP A S D F G H J K	L ; '
SHIFT Z X C V B N M ,	. / ENT
Ctrl Alt `¥	$\downarrow \uparrow \leftarrow \rightarrow$
N	

Example for input on touch panel keyboard





\leftarrow	🔶 Program Editor							rogram	Number	2
Ste	Step Number 1						Pag	e Up	Page	Dn
No.	Ε	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Com	nent	
1			601							Edit
2	А	Ν								Edit
3										Edit
4										Edit
5										Edit
6										Edit
7										Edit
8										Edit
	E	Bad	ck				Write		Keyboar	d
	S	iyn	nbo l							

The cursor moves to the Cnd input area. Touch Keyboard button to show the touch panel keyboard, and input 600.

Example for input on touch panel keyboard

	Program Number 2
Step Number 1	Page Up Page Dn
No. E N Cnd Cmnd Operand1 Operand2 Pst	Comment
600	
ESC 1 2 3 4 5 6 7 8 9	0 – = BS
TAB q w e r t y u i	o p []
CAP asdfghjk	
SHIFT Z X C V b n m	, <u> </u>
Ctrl Alt ~ ¥	$\downarrow \uparrow \leftarrow \rightarrow$
Symbol	

\leftarrow			Program	Edit	or	Р	rogram	Number	2	
Ste	рI	Nu	mber		1		Pag	e Up	Page	Dn
No.	Е	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Corr	ment	
1			601							Edit
2	А	Ν	600							Edit
3										Edit
4										Edit
5										Edit
6										Edit
7										Edit
8										Edit
	E	Bad	ck				Write		Keyboar	d
				Cm	ndList					

The cursor moves to the Cmnd input area. Touch Keyboard button to show the touch panel keyboard, and input CPGE.

🔶 Program Editor	Program N	umber 2
Step Number 1	Page Up	Page Dn
No. E N Cnd Cmnd Operand1 Operand2 F	Pst Comme	ent
CPG		
ESC 1 2 3 4 5 6 7 8	9 0 -	= BS
TAB Q W E R T Y U	I O P	[]]
CAP A S D F G H J	K L ;	'
SHIFT Z X C V B N M	, . /	ENT
Ctrl Alt È ¥	↓↑	$\leftarrow \rightarrow$
CmndList		

Example for input on touch panel keyboard

es to the Cmnd input area. Touch





\leftarrow	← Program Editor							rogram	Number	2
Ste	Step Number 1							e Up	Page	Dn
No.	Ε	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Com	nent	
1			601							Edit
2	А	Ν	600							Edit
3										Edit
4										Edit
5										Edit
6										Edit
7										Edit
8										Edit
	B	Ba	ck				Write		Keyboar	d
				Cm	ndList					

For Cmnd Column, command list is also available to input from.

Have the cursor displayed in Cmnd Column and touch Edit button.

Touch ComdList	button in the edit menu.
----------------	--------------------------

÷			Program	Edit	tor	Р	rogram	Number	2	
Ste	рΙ	Nu	mber 🗌		1		Pag	e Up	Page	Dn
No.	Ε	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Со	mment	
1			601							Edit
2	Α	Ν	600							Edit
3										Edit
4										Edit
5	L			1	I					Edit
6	Lr							1		Edit
7	L,	1	nsBlank		Delete	Clear	Сору		Paste	Edit
8	L	I	ns&Paste	e 🛛 🕻	Comment	CmndList				Edit
	E	Bad	ck	ĺ			Write		Keyboar	d
				Crr	ındList					

Command Initial Letters Button

\leftarrow	Command List	
	C D E F G H I J K L P Q R S T U V W X Y	Page Up Page Dn
Cmnd	Cnd Operand1 Oper Function	and2 Pst Category
ABPG	Opt. Program No. Program No. Abort Task	Command Complete Set
ACC	Opt. Acceleration Set Acceleration	Command Pass Act Ctrl Designation Set
ACHZ	Opt. Axis No. Arch Motion Z decleration	Command Pass Set
ACMX	Opt. Data ACMX Addition-Subtraction Speed Data Spee	Command Pass cification Act Ctrl Designation Set
	Back	
	ABPG ACC AC	HZ ACMX ->

The command list window appears. Touch the command initial letters or Page Up / Page Dn buttons to switch the display in order to show the command that you would like to input.

÷		ommand List							
		DEFGHI QRSTUV		Page Up Page	Dn				
	Cnd								
onii ra		Functi	on	Category					
COS	Opt.	Real Variable No.	Data	ZERO	Set				
003	Cosine			Function Computation	381				
CPEQ	Opt.	Variable No.	Data	Equal					
UPEU	Equal			Compar i son	Set				
CPGE	Opt.	Variable No.	Data	Equal or Greater Than	0				
UPGE	Equal	or Greater Than		Compar i son	Set				
CPGT	Opt.	Variable No.	Data	Greater Than					
CPGI	Greate	r Than	Compar i son	Set					
	Back	<							
	C03	S CPEQ	CPGE	CPGT ->					

Touch Set button of the command that you would like to input.

Return to the previous screen.





\leftarrow	CProgram EditorProgram Number2									2
Ste	Step Number 1 Page Up Page Dr								Dn	
No.	Е	Ν	Cnd	nd Cmnd Operand1 Operand2 Pst Comment						
1			601							Edit
2	А	Ν	600	CPGE						Edit
3										Edit
4										Edit
5										Edit
6										Edit
7										Edit
8										Edit
	Back Write Keyboard							d		
	Symbol &Symbol &B &H									

The cursor moves to the Operand1 input box. Touch Keyboard button to show the touch panel keyboard, and input 200.

← Program Editor	Program Number 2
Step Number 1	Page Up Page Dn
No. E N Cnd Cmnd Operand1 Operand2 Ps	st Comment
200	
ESC 1 2 3 4 5 6 7 8	9 0 - = BS
TAB q w e r t y u i	o p []
CAP a s d f g h j	k ; '
SHIFT z x c v b n m	, . / ENT
Ctrl Alt ~ ¥	$\downarrow \uparrow \leftarrow \rightarrow$
Symbol *Symbol &B	&H

Program Editor 1 Step Number Page Up Page Dn E N Cnc d Opera 601 Edit N 600 Edit CPGE 200 Edit Edit Edit Edit Edit Edit Write Keyboard Back Symbol *Symbol &B &H

Example for input on touch panel keyboard

The cursor moves to the Operand2 input box. Touch Keyboard button to show the touch panel keyboard.

← Program Editor	Program Number 2
Step Number 1	Page Up Page Dn
No. E N Cnd Cmnd Operand1 Operand2	Pst Comment
ESC 1 2 3 4 5 6 7	8 9 0 - = BS
TAB q w e r t y u	i o p []
CAP as dfgh.	j k l ; '
SHIFT z x c v b n	m , . / ENT
Ctrl Alt ~ ¥	$\downarrow \uparrow \leftarrow \rightarrow$
Symbol *Symbol &B	&H

Touch SHIFT button to switch the letters displayed on the keyboard.





🔶 Program Editor	Program Number 2
Step Number 1	Page Up Page Dn
No. E N Cnd Cmnd Operand1 Operand2 Ps	t Comment
ESC ! @ # \$ % ^ & *	() <u>+</u> DEL
TAB Q W E R T Y U I	0 P { }
CAP A S D F G H J P	(<u>L</u> : "
SHIFT Z X C V B N M	< > ? ENT
Ctrl Alt ~	$\downarrow \uparrow \leftarrow \rightarrow$
Symbol *Symbol &B	&H

← Program Editor	Program Number 2
Step Number 1	Page Up Page Dn
No. E N Cnd Cmnd Operand1 Operand2	Pst Comment
*	
ESC 1 2 3 4 5 6 7	8 9 0 - = BS
TAB q w e r t y u	i o p []
CAP a s d f g h j	i k l ; '
SHIFT z x c v b n	m , . / ENT
Ctrl Alt `¥	$\downarrow \uparrow \leftarrow \rightarrow$
Symbol *Symbol &B	&H

← Program Editor	Program Number 2
Step Number 1	age Up Page Dn
No. E N Cnd Cmnd Operand1 Operand2 Pst	Comment
*201	
ESC 1 2 3 4 5 6 7 8 9	0 – = BS
TAB q w e r t y u i	o p []
CAP a s d f g h j k	
SHIFT z x c v b n m ,	. / ENT
Ctrl Alt `¥	$ \downarrow\uparrow\uparrow\leftarrow\rightarrow$
Symbol *Symbol &B	&H

\leftarrow	Program Editor Program Number 2									
Ste	Step Number 1							e Up	Page	Dn
No.	Е	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Comr	nent	
1			601							Edit
2	А	Ν	600	CPGE	200	*201				Edit
3										Edit
4										Edit
5										Edit
6										Edit
7										Edit
8										Edit
	Back Write Keyboard						d			
	Symbol *Symbol									

The letters displayed on the keyboard return to normal.

Touch *.

Input * followed by 201, and then touch ENT.

The touch panel keyboard closes and the cursor moves to Pst box. Touch Keyboard button to show the touch panel

keyboard, and input 900.





🔶 Program Editor	Program Number 2
Step Number 1	Page Up Page Dn
No. E N Cnd Cmnd Operand1 Operand2 Ps	t Comment
900	
ESC 1 2 3 4 5 6 7 8	9 0 - = BS
TAB q w e r t y u i	o p []
CAP a s d f g h j	k ; '
SHIFT Z X C V b n m	, . / ENT
Ctrl Alt È ¥	$\downarrow \uparrow \leftarrow \rightarrow$
Symbol *Symbol	

Program Editor Program Number Step Number Page Up Page Dn 1 E N Cnd Cmnd Operand1 Operand2 601 Edit *201 N 600 CPGE 200 900 Edit Edit Edit Edit Edit Edit Edit Write Keyboard Back

	Program Number 2
Step Number 1	Page Up Page Dn
No. E N Cnd Cmnd Operand1 Operand2	Pst Comment
Compare Data	
ESC 1 2 3 4 5 6 7 8	3 9 0 - = BS
TAB q w e r t y u	i o p []
CAP a s d f g h j	k I ; '
SHIFT Z X C V b n	m , . / ENT
Ctrl Alt ~ ¥	$\downarrow \uparrow \leftarrow \rightarrow$

The cursor moves to the Comment input area.

Example for input on touch panel keyboard

Touch Keyboard button to show the touch panel keyboard. Any alphabetical and numerical letters can be used for input.

If you touch SHIFT button, buttons with capital letters show up, and go back to small letters once a letter is input.

If you touch \overrightarrow{CAP} button, buttons with capital letters show up, and capital letters will be kept unless \overrightarrow{CAP} button is pressed again.

Touch **ENT** for confirmation and the touch panel keyboard closes.

Touch No. 3, Cmnd	Column to mov	e the cursor.
-------------------	---------------	---------------

÷			Program	Edit	or	F	rogram	Number		
Ste	Step Number 1							ge Up	Page	Dn
No.	Ε	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Com	nent	
1			601							Edit
2	Α	Ν	600	CPGE	200	*201	900	Compare [)ata	Edit
3										Edit
4										Edit
										Edit
6										Edit
7										Edit
8										Edit
Back Write Keyboard								d		
		L	D		A	0		AB	->	





\leftarrow	🗧 🔶 Program Editor							Program	Number	2
Step	Step Number 1						Page Up Page			Dn
No.	Ε	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Corr	ment	
1			601							Edit
2	Α	Ν	600	CPGE	200	*201	900	Compare	Data	Edit
3										Edit
4										Edit
5										Edit
6										Edit
7										Edit
8										Edit
	Back Write Keyboard						d			
	CmndList									

Touch Keyboard button to show the touch panel keyboard.

← Program Editor	Program Number	2
Step Number 1	Page Up Page	Dn
No. E N Cnd Cmnd Operand1 Operand2 P	st Comment	Edi+
SCPY		
ESC 1 2 3 4 5 6 7 8	9 0 - =	BS
TAB Q W E R T Y U I	0 P []	
CAP A S D F G H J	K L ; '	
SHIFT Z X C V B N M	, . / E	NT
Ctrl Alt ~ ¥		\rightarrow
CmndList		

\leftarrow	← Program Editor						P	Program Number	2
Ste	Step Number 1						Pag	ge Up Page	e Dn
No.	Ε	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Comment	
1			601						Edit
2	А	Ν	600	CPGE	200	*201	900	Compare Data	Edit
3				SCPY					Edit
4									Edit
5									Edit
6									Edit
7									Edit
8									Edit
	E	Bad	ck				Write	Keyboa	rd
	S	iyn	nbo I	*	Symbol	&B		&H	

Input SCPY, and then touch ENT. The touch panel keyboard closes and SCPY gets displayed in Cmnd Column.

The cursor moves to the Operand1 input box. Touch Keyboard button to show the touch panel keyboard, and input 1.

← Program Editor	Program Number 2
Step Number 1	Page Up Page Dn
No. E N Cnd Cmnd Operand1 Operand2	Pst Comment
1	
ESC 1 2 3 4 5 6 7 8	90-=BS
TAB q w e r t y u	i o p []
CAP a s d f g h j	k ; '
SHIFT z x c v b n m	1 , . / ENT
Ctrl Alt È ¥	$\downarrow \uparrow \leftarrow \rightarrow$
Symbol *Symbol &B	&H

Example for input on touch panel keyboard





\leftarrow	←Program EditorProgram Number2									
Ste	Step Number 1						Pag	e Up	Page	Dn
No.	Е	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Comr	nent	
1			601							Edit
2	Α	Ν	600	CPGE	200	*201	900	Compare D	lata	Edit
3				SCPY	1					Edit
4										Edit
5										Edit
6										Edit
7										Edit
8										Edit
	Back Write Keyboard						d			
	Symbol *Symbol &B &H									

The cursor moves to the Operand2 input box. Touch Keyboard button to show the touch panel keyboard.

← Program Editor	Program Number 2
Step Number 1	Page Up Page Dn
No. E N Cnd Cmnd Operand1 Operand2 Ps	t Comment
'1234	
ESC 1 2 3 4 5 6 7 8	9 0 - = BS
TAB q w e r t y u i	o p []
CAP a s d f g h j l	< ; '
SHIFT z x c v b n m	, . / ENT
Ctrl Alt ~ ¥	$\downarrow \uparrow \leftarrow \rightarrow$
Symbol *Symbol &B	&H

Program Editor Program Number Page Up Step Number 1 Page Dn E N Cnd d Opera 601 A N 600 Edit Compare Data CPGE 200 *201 Edit 900 SCPY '1234 Edit Edit Edit Edit Edit Edit Write Keyboard Back Symbol *Symbol

Input '1234 and touch ENT.

The touch panel keyboard closes and the cursor moves to Pst box. Touch Write button to transfer the data to the controller.

When the screen is changed with the Page Up and Page Dn buttons and Back button before data transfer, the input data becomes invalid.

← Program Editor								Program N	lumber	2
Step Number 1							Pag	ge Up	Page	Dn
No.	E	N	Cnd	Cmnd	Operand1	Operand2	Pst	Comm	ent	
1			601							Edit
2	A	Ν	600	CPGE	200	*201	900	Compare Da	ata	Edit
3				SCPY	1	'1234'				Edit
4										Edit
5										Edit
6										Edit
7										Edit
8										Edit
Back						Write	K	eyboar	d	
	Symbol *Symbol				Symbol					

Once the transfer to the controller is complete, the background color in the step number display column will turn to the normal condition.

Finish the program input. Return to the flash ROM writing window by using the return button.

Follow [9.8 Flash ROM Writing] to conduct the flash ROM writing.





[For Operand Binary/Hexadecimal Digit Input]

For XSEL-RA/SA/RAX/SAX/RAXD/SAXD, RSEL and XSEL2-T/TX binary/hexadecimal digits can be used for Operand 1 and 2.

- Only constant value can be used. They cannot be used for indirection.
- When binary digits are to be used, input them each with "&B" before the value, and hexadecimal digits are to be used, "&H" before the value (When there is no such prefix, the figures are treated as decimal digits).
 - * When Operand is for axis pattern, input the figure without prefix "&B" (The figure is treated as binary digit).
- For binary/Hexadecimal digits, max. 8 figures can be input.
- For binary digits, they are treated as integral numbers without codes (ex. &B11111111 = 255). For hexadecimal digits, they are treated as integral numbers with codes (ex. &HFFFFFFF = -1).
- Even in the case that binary/hexadecimal digits are to be used, the input range is unchanged.
- In the case that the program using binary/hexadecimal digits is backed up and transmitted to the incompatible controller, the binary/hexadecimal digits are converted to decimal numbers.





9.2 Symbol Input During Program Edit

Symbol input is available when the cursor is on Operand1 or 2 (Operation 1 or 2) or Pst (output).

- Method 1: In case symbol registration has already been conducted, direct input is available from the touch panel keyboard.
- Method 2: Access the symbol edit screen to have symbol registration, and symbol input becomes available.

Example:

Input of following program steps

Program No. 3

No.	Е	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Comment
1				MOVL	TAIKIITI			

Position No. 10 is registered as 'TAIKIITI'.

9.2.1 When Symbol Not Defined

← Program	Editor	Р	rogram	Number	3	
Step Number	1	Pag	e Up	Page	Dn	
No. E N Cnd	Cmnd Operand1	Operand2	Pst	Com	nent	
1	MOVL					Edit
2						Edit
3						Edit
4						Edit
5						Edit
6						Edit
7						Edit
8						Edit
Back]		Write		Keyboar	d
Symbol	*Symbol	&B		&H		

Touch Edit button area within the state of the cursor that has been located in Operand1 input box.

÷	Program	Edit	or	Р	rogram Number	3	
Step	Number		Page	e Up 🛛 Page	Dn		
No. E	N Cnd	Cmnd	Operand1	Operand2	Pst	Comment	
1		MOVL					Edit
2							Edit
3							Edit
4							Edit
5				1		X	Edit
6	I. Diaula			01	0		Edit
7	InsBlank		Delete	Clear	Сору	Paste	Edit
8	Ins&Paste	e C	omment	Symbol	*Symbo	· _	Edit
Back Write Keyboard						d	
	Symbol	*	Symbol	&B		&H	

Touch Symbol button in the edit menu.

ME0356-11A

Back

9-15

Tag No.	Back
Subroutine No.	Prev.
OutPort Program	Tag Sub ->
🧲 Symbol Edit	
	Page Up Page Dn
Type: Position No.	Rest 1000
No. Symbol	
1	

Touch Keyboard button to show the touch panel

numeric keys.	

1		

Touch Next button.

Touch	Position	No.	button

🔶 Symbol Edit					
		Page	Up	Pag	e Dn
Type: Position No.			Re	est 10	000
No. Symbol					
10					10
		7	8	9	ESC
		4	5	6	BS
		1	2	3	CLR
Back	Write	0		+/-	ENT

Write

Keyboard

Input 10 on the touch panel numeric keys and then touch ENT. Touch panel keyboard will close.

	>

INTELLIGENT ACTUATOR =

Flag No.

Input port No.

Back

Symbol Edit

Integer Variables No.

Real Variables No.

Integer Constants

Real Constants	Next
VarItg VarReal C	ConstItg ConstReal ->
🔶 Symbol Edit	
Output port No.	Position No.
Program No.	Axis No.
Tag No.	Back
Subroutine No.	Prev.





🔶 Symbol Edit	
	Page Up Page Dn
Type: Position No.	Rest 1000
TAIKIITI	
ESC ! @ # \$ % ^	& * () _ + DEL
TAB Q W E R T	Y U I O P { }
CAP A S D F G	HJKL:"
SHIFT Z X C V B	N M < > ? ENT
Ctrl Alt ~	$\downarrow \uparrow \leftarrow \rightarrow$

With the cursor being in the symbol input box, touch Keyboard button. Input TAIKIITI on the touch panel keyboard and touch ENT. (If you touch CAP button, the keyboard changes to capital-letter input. If you touch CAP button again, it goes back to small-letter input.)

🔶 Symbol	Edit		
		Page Up	Page Dn
Type: Positi	on No.		Rest 1000
No.	Symbol		
10	TAIKIITI		
	-		
Back		Write	Keyboard

Touch Write button to transfer the symbol data to the controller. Once the transfer to the controller is complete, the display returns to the original program edit screen.





9.2.2 When There is Symbol Definition

	3
Step Number 1 Page Up Page D	n
No. E N Cnd Cmnd Operand1 Operand2 Pst Comment	-di+
TAIKIITI	
ESC ! @ # \$ % ^ & * () _ + D	EL
TAB Q W E R T Y U I O P { }	
CAP A S D F G H J K L : "	
SHIFT Z X C V B N M < > ? ENT	·
Ctrl Alt ~ ↓ ↑ ←	\rightarrow
Symbol *Symbol &B &H	

With the cursor being in Operand1 input box, touch Keyboard button to show the touch panel keyboard. Input 'TAIKIITI' and touch ENT.

Program Editor Program Number										
Step Number 1 Page Up Page I							Dn			
No.	Ε	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Com	ment	
1				MOVL	TAIKIITI					Edit
2										Edit
3										Edit
4										Edit
5										Edit
6										Edit
7										Edit
8										Edit
	B	lac	k				Write		Keyboar	d
	S	ym	bol	*	Symbol	&B		&H		

The touch panel keyboard closes and the cursor moves to Operand2 input box. Touch Write button to transfer the data to the controller.

\leftarrow		Program	Edit	or		Р	rogram	Number	3
Ste	p Nu	mber [1		Pag	e Up	Page	Dn
No.	ΕN	Cnd	Cmnd	Oper and 1	Oper and 2	Pst	Com	ment	
1			MOVL	TAIKIITI					Edit
2									Edit
3									Edit
									Edit
									Edit
6									Edit
7									Edit
8									Edit
	Bad	:k				Write		Keyboar	d
	Syn	nbo l	*	Symbol	&B		&H	1	

Once the transfer to the controller is complete, the background color in the step number display column will turn to the normal condition.

Finish the program input. Return to the flash ROM writing window by using the return button.

Follow [9.8 Flash ROM Writing] to conduct the flash ROM writing.



9.3 Single Line Comment Input

Turns a step from a program into a comment (invalid step) and you can input numbers, alphabets and signs.

Ste	p Nu	mber [1		Page Up Page Dn			
No.	ΕN	Cnd	Cmnd	Oper and 1	Oper and 2	Pst	Comment		
1								Edit	
								Edit	
3				1				Edit	
4								Edit	
								Edit	
6								Edit	
7				į			2	Edit	
8								Edit	
	Bad	ck	1			Write	Keyboar	d	

After switching the display range with Page Up / Page Dn buttons or the step number direct input, touch the edit button in the step number that you would like to input a comment.

÷	C Program Editor Program Number										
Step	Nu	mber		1		Pag	e Up 🛛 Page	Dn			
No.	E N Cnd		Cmnd	Operand1	Operand2	Pst	Comment				
1								Edit			
2				1				Edit			
3								Edit			
4								Edit			
5	_							Edit			
6								Edit			
7		InsBlank		Delete	Clear	Сору	Paste	Edit			
8	I	Ins&Paste		Comment				Edit			
	Back					Write	Keyboar	d			

Touch Comment.

No. F N Cnd Cmnd Operand1 Operand2 Pst Comment 1 Ed 2 A A A A A A A A A A A A A A A A A A A	← Pr	ogram Editor	Р	rogram Number 64
1 Ed 2 Ed 3 Ed	Step Numb	ber 1	Pag	e Up 🛛 Page Dn
2 Ed 3 Ed	No. F N	Cnd Cmnd Operand1	Operand2 Pst	Comment
3 Ed				Edi
	2			Edi
	3			Edi
4 Ed	4			Edi
5 Ed	5			Edi
6 Ed	6			Edi
7 Ed	7			Edi
8 Ed	8			Edi
Back Write Keyboard	Back		Write	Keyboard

After the edit menu is closed, the display of the step data box changes. The background color turns into dark yellow, and

the boundary for E and N columns will disappear.

Touch in the input box.

← Program	n Editor			rogram Number	64
Step Number	1		Pag	e Up 🛛 Page	Dn
No. E N Cnd	Cmnd Operand1	Operand2	Pst	Comment	
1					Edit
2					Edit
3					Edit
4					Edit
5					Edit
6					Edit
7					Edit
8					Edit
Back]		Write	Keyboai	ď

The cursor gets displayed in the input box. Touch Keyboard button to show the touch panel keyboard.





← Program Editor	Program I	Number 64
Step Number 1	Page Up	Page Dn
No. E N Cnd Cmnd Operand1 Operand2 Ps	st Comm	nent
Palette1		
ESC 1 2 3 4 5 6 7 8	9 0 -	= BS
TAB q w e r t y u i	o p	[]]
CAP a s d f g h j	k I ;	
SHIFT z x c v b n m	, . /	/ ENT
Ctrl Alt ~ ¥	↑	$\leftarrow \rightarrow$

Input desirable letters on the keyboard. An example for when Palette1 is input is shown in the figure on the left. (To input capital letters, touch CAP key or SHIFT

key to switch the mode.) Touch ENT for confirmation.

← Program	Editor		P	rogram Number	64
Step Number	1		Page	e Up 🛛 Pag	e Dn
No. E N Cnd	Cmnd Operand1	Operand2	Pst	Comment	
1 Palette1					Edit
2					Edit
3					Edit
4					Edit
5					Edit
6					Edit
7					Edit
8					Edit
Back			Write	Keyboa	rd
LD	A	0		AB –	>

Once the comment input is finished, touch Write button to transfer the input data to the controller.

When the screen is changed with the Page Up and Page Dn buttons, and Back button before data transfer, the input data becomes invalid.

← Program	n Editor		Р	rogram Number	64
Step Number	1		Pag	e Up Page	e Dn
No. E N Cnd	Cmnd Operand1	Operand2	Pst	Comment	
1 <mark>Palette1</mark>					Edit
2					Edit
3					Edit
4					Edit
5					Edit
6					Edit
7					Edit
8					Edit
Back			Write	Keyboa	rd
LD	A	0		AB ->	>]

Once the transfer to the controller is complete, the background color in the step number display column will turn to the normal condition.

Finish the program input. Return to the flash ROM writing window by using the return button.

Follow [9.8 Flash ROM Writing] to conduct the flash ROM writing.





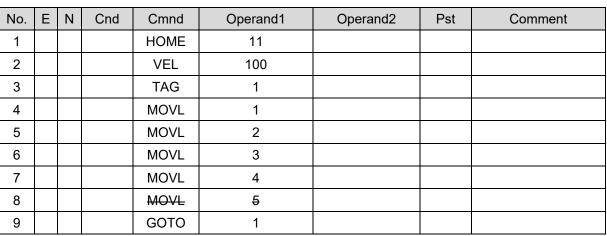
9.4 To Change Program Steps

Program No. 4

It is assumed the top line program below is already input. And it is assumed that the contents will be changed to those in the bottom line below by editing.

No.	Е	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Comment
1				HOME	11			
2				VEL	100			
3				MOVL	1			
4				MOVL	2			
5				MOVL	3			
6				MOVL	4			
7				MOVL	5			
8				MOVL	6			
9				EXIT				

Modify



(Insert TAG 1 to Step 3, inactivate MOVL 5 (single line comment), delete MOVL 6 and overwrite EXIT to GOTO 1)

Open Program No. 4.

C Program Editor Program Number 4										
Ste	p Nu	umber		1		Page Up Page Dn				
No.	ΕN	Cnd	Cmrnd	Oper and 1	Oper and 2	Pst	Comm	ent		
1			HOME	11					Edit	
2			VEL	100					Edit	
3			MOVL	1					Edit	
4			MOVL	2					Edit	
5	П		MOVL	3					Edit	
6			MOVL	4					Edit	
7			MOVL	5					Edit	
8			MOVL	6					Edit	
	Ba	ick]			Write	К	leyboar	d	

Insert a line of step between Program Step No. 2 and No. 3. Touch Edit button on No. 3.





Touch InsBlank button in the edit menu.

← Program	Editor		Pro	gram Number	4
Step Number	1		Page Up Pag		
No. E N Cnd	Cmnd Operand1	Operand2	Pst	Comment	
1	HOME 11				Edit
2	VEL 100				Edit
3	MOVL 1				Edit
4	MOVL 2				Edit
5	una la		L		Edit
6					Edit
7 InsBlank	Delete	Clear	Сору	Paste	Edit
8 Ins&Paste	e Comment				Edit
Back			Write	Keyboar	d

÷		Р	rogram	Edit	tor		Р	rogram Num	ber 4		
Ste	p I	lum	ber		1		Page Up Page Dn				
Vo.	Е	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Comment			
1				HOME	11				Edit		
2	Γ			VEL	100				Edit		
3									Edit		
4				MOVL	1				Edit		
5				MOVL	2				Edit		
6				MOVL	3				Edit		
7				MOVL	4				Edit		
8				MOVL	5				Edit		
	B	acl	<				Write	Key	board		

The original data in Step No. 3 and below move to No. 4 and below. Also, the line for Step No. 3 gets blank.

÷		Program	Edit	or		P	rogram	Number	4
Ste	p Nu	umber		1		Page Up Page Dn			
No.	ΕN	Cnd	Cmrnd	Oper and 1	Oper and 2	Pst	Com	nent	
1			HOME	11					Edit
2			VEL	100					Edit
3				()					Edit
4			MOVL	1					Edit
5			MOVL	2					Edit
6			MOVL	3					Edit
7			MOVL	4					Edit
8			MOVL	5					Edit
	Back					Write		Keyboar	d
			Cm	ndList					

Touch No. 3, Cmnd Column to move the cursor. Touch Keyboard button to show the touch panel keyboard.

← Program Editor	Program Number 4
Step Number 1	Page Up Page Dn
No. E N Cnd Cmnd Operand1 Operand2 P	Pst Comment
TAG	
ESC 1 2 3 4 5 6 7 8	9 0 - = BS
TAB Q W E R T Y U I	
CAP A S D F G H J	K L ; '
SHIFT Z X C V B N M	, . / ENT
Ctrl Alt ~ ¥	$\downarrow \uparrow \leftarrow \rightarrow$
CmndList	

Input TAG and touch ENT.





\leftarrow	CProgram EditorProgram Number4								
Step	o Nu	mber		1	Pag	e Up	Page	Dn	
No.	ΕN	Cnd	Cmnd	Operand1	Operand2	Pst	Com	ient	
1			HOME	11					Edit
2			VEL	100					Edit
3			TAG						Edit
4			MOVL	1					Edit
5			MOVL	2					Edit
6			MOVL	3					Edit
7			MOVL	4					Edit
8			MOVL	5					Edit
	Back Write Keyboard							ı	
	Syn	nbo l	*(Symbol	&B		&H		

The cursor moves to the Operand1 input box. Touch Keyboard button to show the touch panel keyboard again.

← Program Editor	Program	Number 4
Step Number 1	Page Up	Page Dn
No. E N Cnd Cmnd Operand1 Operand2 Ps	t Com	ment Edit
1 ESC 1 2 3 4 5 6 7 8	9 0 -	= BS
TAB a w e r t y u i		
CAP a s d f g h j l	k ;	
SHIFT Z X C V b n m	, . /	/ ENT
Ctrl Alt ~ ¥	↓ 1	$\leftarrow \rightarrow$
Symbol *Symbol &B	&H	

÷		1	Program	Edit	or	Р	rogram	Number		
Step Number 1							Pag	e Up	Page	Dn
No.	Е	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Com	nent	
1				HOME	11					Edit
				VEL	100					Edit
				TAG	1					Edit
4				MOVL	1					Edit
5				MOVL	2					Edit
				MOVL	3					Edit
				MOVL	4					Edit
8				MOVL	5					Edit
Back					Write		Keyboar	d		
	S	iyn	nbo l	*	Symbol	&B		&H		

Input 1 and touch ENT.

Inactivate MOVL 5 next. Touch Edit button in Step No.8.

Program E	ditor	Prog	gram Number				
Step Number 1 Page Up							
N Cod C	mnd Onerand1	Onerand?	Pet	Comment	Edit		
InsBlank	Delete	Clear	Сору	Paste	Edit		
Ins&Paste	Comment			Edit			
					Edit		
M	DVL 2				Edit		
M	DVL 3				Edit		
M	DVL 4				Edit		
M	DVL 5				Edit		
Back Write Keyboard							
	Number	N Cod Canod Operand1 InsBlank Delete Ins&Paste Comment WovL 2 WovL 3 WovL 5	Number Image: Content of the state of th	Number Page L Ni Cod Omerand1 Operand2 Pst InsBlank Delete Clear Copy Ins&Paste Comment 0 0 NOVL 2 0 0 NOVL 3 0 0 NOVL 4 0 0 NOVL 5 0 0	Number Page Up Page N Cod Cond Operand1 Operand2 Pst Comment InsBlank Delete Clear Copy Paste Ins&Paste Comment Comment NOVL 2		

Touch Comment in the Edit menu.





\leftarrow		Program	Edit	or		Program Number 4			
Ste	o Nu	umber		1	Page Up Page Dn				
No.	ΕN	l Cnd	Cmnd	Operand1	Operand2	Pst	Com	ment	
1			HOME	11					Edit
2			VEL	100					Edit
3			TAG	1					Edit
4			MOVL	1					Edit
5			MOVL	2					Edit
6			MOVL	3					Edit
7			MOVL	4					Edit
8			MOVL	5					Edit
	Back					Write		Keyboar	d

The background color of the step data box in Step No. 8 turns to dark yellow, which shows it is invalid (Comment status).

(To cancel the invalid condition, show the edit menu again and touch the <u>comment cancel</u> button.)

It is only the displayed range available for editing at once. Touch the writing button to transfer the program data to the controller.

When the screen is changed with the Page Up and Page Dn buttons, and Back button before data transfer, the input data becomes invalid.

((Program	Edit	or	Р	rogram	Number	4	
Step Nu	umber		Pag	Page Up Page Dn				
No. E N	l Cnd	Cmnd	Operand1	Operand2	Pst	Com	ment	
1		HOME	11					Edit
2		VEL	100					Edit
3		TAG	1					Edit
4		MOVL	1					Edit
5		MOVL	2					Edit
6		MOVL	3					Edit
7		MOVL	4					Edit
8		MOVL	5					Edit
Ba	ick				Write		Keyboar	d

Once the transfer to the controller is complete, the background color in the step number display column will turn to the normal condition.

Switch the display range with Page Up / Page Dn or the step number direct input in order to show the data in Step No. 9.

Step Number 9						Page Up Page Dr		
No.	ΕN	Cnd	Cmnd	Oper and 1	Oper and 2	Pst	Commer	it
9			MOVL	6				Edi
10			EXIT					Edi
11		<u>[</u>		()				Edi
12								Edi
13								Edi
14								Edi
15		i.						Edi
16								Edi
Back					Write	Ko	yboard	

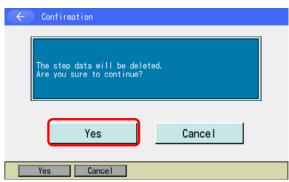
Touch Edit button in Step No.9.

÷	Program	Edit	or	Р	rogram Number	4	
Step M	Number		9	Pag	e Up 🛛 Page	Dn	
No. E	N Cnd	Cmnd	Oper and 1	Operand2	Pst	Comment	
9		MOVL	6				Edit
10		EXIT					Edit
11							Edit
12							Edit
13						X	Edit
14	T DI I			01			Edit
15	InsBlank		Delete	Clear	Сору	Paste	Edit
16	Ins&Paste		Comment				Edit
B	Back				Write	Keyboar	d

Touch Delete button in Edit Menu.







Confirmation window gets displayed. Touch the Yes button. (If you wish to cancel the deletion, touch the Cancel button.)

	gram Number	Pro	← Program Editor							
e Dn	Up Page	Page	Step Number 9							
	Comment	Pst	Operand2	Operand1	Cmnd	Cnd	ΕN	No.		
Edit					EXIT			9		
Edit								10		
Edit				1				11		
Edit								12		
Edit								13		
Edit								14		
Edit								15		
Edit										
rd	Keyboar	Write	Back							
	Keyboa	Write				:k	Bac			

(Program Editor Program Number 4									
Step Nu	umber		Pag	e Up	Page	Dn				
No. E N	l Cnd	Cmnd	Oper and 1	Oper and 2	Pst	Com	nent			
9		EXI						Edit		
10								Edit		
11			1					Edit		
12								Edit		
13								Edit		
14								Edit		
15								Edit		
16								Edit		
Ba	ick			Write		Keyboar	d			
		Cm	ndList							

Touch No. 9, Cmnd Column to move the cursor.

Touch Keyboard button to show the touch panel keyboard.

← Program Editor	Program Number 4
Step Number 9	age Up Page Dn
No. E N Cnd Cmnd Operand1 Operand2 Pst	Comment
GOTO	
ESC 1 2 3 4 5 6 7 8 9	0 – = BS
TAB Q W E R T Y U I	0 P []
CAP A S D F G H J K	L ; '
SHIFT Z X C V B N M ,	. / ENT
Ctrl Alt `¥	$\downarrow \uparrow \leftarrow \rightarrow$
CmndList	

Input GOTO on the touch panel keyboard and touch $\boxed{\text{ENT}}$.





(\	C Program Editor Program Number								
Step Nu	mber		9		Pag	Dn			
No. E N	Cnd	Cmnd	Operand1	Operand2	Pst	Comr	nent		
9		GOTO						Edit	
10								Edit	
11								Edit	
12								Edit	
13								Edit	
14								Edit	
15								Edit	
16								Edit	
Ba	ck	1			Write		Keyboar	d	
Syı	Symbol *Symbol &B &H								

The touch panel keyboard closes and the cursor moves to Operand1 box.

Input the same value as that input in Operand1 box in Step No. 3 TAG Command to Operand1 box. Touch Keyboard button to show the touch panel keyboard.

← Program Editor	Program Number	4
Step Number 9	Page Up Page	e Dn
No. E N Cnd Cmnd Operand1 Operand2 Ps:	: Comment	Edi+
ESC 1 2 3 4 5 6 7 8	9 0 - =	BS
TAB q w e r t y u i	op[]]
CAP a s d f g h j k		
SHIFT z x c v b n m	, . /	ENT
Ctrl Alt `¥	↓ ↑ ←	\rightarrow
Symbol *Symbol &B	&H	

1 E

\leftarrow	Program	Edit		rogram	Number			
Step N	Number		9		Page Up			Dn
No. E	N Cnd	Cmnd	Operand1	Operand2	Pst	Com	ment	
9		G0T0	1					Edit
10								Edit
11								Edit
12								Edit
13								Edit
14								Edit
15								Edit
16								Edit
Back Write Keyboard							d	
S	ymbol	*S	ymbol	&B		&H	1	

The touch panel keyboard closes and the cursor moves to Operand2 box.

Touch the writing button.

Input 1 and touch ENT.

When the screen is changed with the Page Up and Page Dn buttons, and Back button before data transfer, the input data becomes invalid.

÷		Program	Edit	or		Program Number 4				
Ste	Step Number 9						e Up	Page	Dn	
No.	ΕN	Cnd	Cmnd	Oper and 1	Oper and 2	Pst	Comm	ent		
9			GOTO	1					Edit	
10									Edit	
11				<u>(</u>					Edit	
12									Edit	
13									Edit	
14									Edit	
15									Edit	
16									Edit	
	Ba	ck]			Write	K	leyboard		
	Syr	nbol	*	Symbol	&B		&H	1		

Once the transfer to the controller is complete, the background color in the step number display column will turn to the normal condition.

Finish the program input. Return to the flash ROM writing window by using the Back button or cancel button.

Follow [9.8 Flash ROM Writing] to conduct the flash ROM writing.





9.5 Other Editing Features

Copy and Clear of the step data can be conducted.

[Copy of Step Data]

For example, here explains the case to copy the step data in Step No. 3 to Step No. 4.

$\left(\leftarrow \right)$	Program	Edit	or	Р	rogram Number	4	
Step N	Number		1	Page Up Page Dn			
No. E	N Cnd	Cmnd	Operand1	Operand2	Pst	Comment	
1		HOME	11				Edit
2		VEL	100				Edit
3		MOVL	1				Edit
4							Edit
5							Edit
6							Edit
7							Edit
8							Edit
В	ack				Write	Keyboar	d

Switch the display range with Page Up / Page Dn or the step number direct input in order to show the data in Step No. 3.

Touch Edit button in Step No.3.

C Program Editor Program Number									
Step Number	Step Number 1 Page Up Page D								
No. E N Cno	d Cmnd	Operand1	Operand2	Pst	Comment				
1	HOME	11				Edit			
2	VEL	100				Edit			
3	MOVL	1				Edit			
4						Edit			
5	1	1	1	1		Edit			
6		10				Edit			
7 InsBl	ank	Delete	Clear	Сору	Paste	Edit			
⁸ Ins&Pa	aste (Comment				Edit			
Back				Write	Keyboar	d			

Touch Copy button in Edit Menu.

Edit menu is closed.

\leftarrow	← Program Editor						Р	rogram Number	4
Step Number 1						Page Up Page Dn			
No.	Е	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Comment	
1		Π		HOME	11				Edit
2		Π		VEL	100				Edit
3				MOVL	1				Edit
4									Edit
5									Edit
6									Edit
7									Edit
8									Edit
	E	Bac	:k				Write	Keyboar	d

Touch Edit button in Step No.4.





\leftarrow		Program	Edit	tor		Р	rogram Numbe	r 4	Touch Paste button in Edit Menu.
Step	Nu	umber		1		Page	e Up 🛛 Pag	ge Dn	
No.	ΕN	l Cnd	Cmnd	Operand1	Operand2	Pst	Comment		Edit menu is closed.
1			HOME	11				Edit	
2			VEL	100				Edit	
3			MOVL	1				Edit	
4								Edit	
5		1	1	1	1 1			Edit	
6			- 10			11		Edit	
7		InsBlank		Delete	Clear	Сору	Paste	Edit	
8		Ins&Paste	e (Comment				Edit	
	Ba	ick				Write	Keybo	ard	

÷		Ρ	rogram	Edit	or		Р	rogram	Number	4
Ste	p١	lur	ıber		1	Pag	Page Up Page Dn			
No.	Е	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Corr	ment	
1	П			HOME	11					Edit
2				VEL	100					Edit
3	Π			MOVL	1					Edit
4				MOVL	1					Edit
5		Т								Edit
6										Edit
7	П									Edit
8										Edit
	В	ac	k				Write		Keyboar	d

The step data copied in Step No. 4 gets displayed. Also, to show that it is being edited (controller writing not yet done), the background color in the step number display box turns to orange.

Touch Write button.

When the screen is changed with the Page Up and Page Dn buttons, and Back button before data transfer, the input data becomes invalid.

\leftarrow	C Program Editor Program Number										
Ste	ο Νι	umber		1		Page Up Page Dn					
No.	ΕN	l Cnd	Cmnd	Operand1	Operand2	Pst	Comment				
1			HOME	11				Edit			
2			VEL	100				Edit			
3			MOVL	1				Edit			
4			MOVL	1				Edit			
5								Edit			
6								Edit			
7								Edit			
8								Edit			
	Back					Write	Keyboar	ď			

Once the transfer to the controller is complete, the background color in the step number display column will turn to the normal condition.

Finish the program input. Return to the flash ROM writing window by using the Back button or cancel button.

Follow [9.8 Flash ROM Writing] to conduct the flash ROM writing.





[Insertion of Step Data]

For example, here explains the case to copy the step data in Step No. 3 to Step No. 2.

÷	Program Editor Program Number 4											
Ste	o Nu	mber		1	Pag	e Up	Page	Dn				
No.	ΕN	Cnd	Cmnd	Operand1	Operand2	Pst	Cor	nment				
1			HOME	11					Edit			
2			VEL	100					Edit			
3			MOVL	1					Edit			
4									Edit			
5									Edit			
6									Edit			
7									Edit			
8									Edit			
	Back					Write		Keyboar	ď			

Switch the display range with Page Up / Page Dn or the step number direct input in order to show the data in Step No. 3.

Touch Edit button in Step No.3.

\leftarrow		Program	Ρ	rogram Numbe	r 4						
Step	Step Number 1 Page Up Page D										
No. E	ΞN	Cnd	Cmnd	Operand1	Operand2	Pst	Comment				
1			HOME	11				Edit			
2			VEL	100				Edit			
3			MOVL	1				Edit			
4								Edit			
5			1	I	1			Edit			
6								Edit			
7		nsBlank		Delete	Clear	Сору	Paste	Edit			
8	I	ns&Paste	e C	Comment				Edit			
	Bad	ck				Write	Keybo	ard			

Touch Copy button in Edit Menu.

Edit menu is closed.

\leftarrow	C Program Editor Program Number 4										
Ste	Step Number 1 Page Up										
No.	Ε	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Comr	ment		
1				HOME	11					Edit	
2				VEL	100					Edit	
3				MOVL	1					Edit	
4										Edit	
5										Edit	
6										Edit	
7										Edit	
8										Edit	
	E	Bac	k				Write		Keyboar	d	

Touch Edit button in Step No.2.

\leftarrow)	Program	Edit	or		Program Number		
Step	Nu	mber		1		Page Up Page		
No. E	E N	Cnd	Cmnd	Operand1	Operand2	Pst	Comment	
1			HOME	11				Edit
2			VEL	100				Edit
3			MOVL	1				Edit
4								Edit
5			1	1	1			Edit
6	_		-10			11		Edit
7	I	nsBlank		Delete	Clear	Сору	Paste	Edit
8	I	ns&Paste	e (Comment				Edit
	Bac	k				Write	Keyboar	d

Touch Ins&Paste button in the edit menu.

Edit menu is closed.





\leftarrow)	Program	Edit	or		Р	rogram	Number	4
Step	Page	Dn							
No. I	ΞN	Cnd	Cmnd	Operand1	Operand2	Pst	Con	ment	
1			HOME	11					Edit
2			MOVL	1					Edit
3			VEL	100					Edit
4			MOVL	1					Edit
5									Edit
6									Edit
7									Edit
8									Edit
	Back					Write		Keyboar	d

The step data copied in Step No. 2 gets inserted.

Data transfer (step data writing) to the controller is automatically conducted for Ins&Paste button.

Finish the program input. Return to the flash ROM writing window by using the Back button or cancel button.

Follow [9.8 Flash ROM Writing] to conduct the flash ROM writing.





[Clear of Step Data]

For example, here explains the case to clear the step data in Step No. 2.

\leftarrow		F	Program	Edit	or		Р	rogram Nu	umber 4		
Ste	p I	Nur	mber		1		Page Up Page Dn				
No.	Ε	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Comme	nt		
1				HOME	11				Edit		
2				VEL	100				Edit		
3				MOVL	1				Edit		
4									Edit		
									Edit		
6									Edit		
7									Edit		
8									Edit		
	Back						Write	Ke	eyboard		

Switch the display range with Page Up / Page Dn buttons or the step number direct input in order to show the data in Step No. 2.

Touch Edit button in Step No.2.

\leftarrow		Program	Edit	or		Р	rogram Number	4
Step	Nu	mber		1		Pag	e Up 🛛 Page	Dn
No. I	ΕN	Cnd	Cmnd	Operand1	Operand2	Pst	Comment	
1			HOME	11				Edit
2			VEL	100				Edit
3			MOVL	1				Edit
4								Edit
5			1	1	1	1		Edit
6			10					Edit
7	L	nsBlank		Delete	Clear	Сору	Paste	Edit
8	I	ns&Paste	e C	Comment				Edit
	Bad	sk				Write	Keyboar	d

Touch Clear button in Edit Menu.

Edit menu is closed.

(\	Program	Edit	or		Р	rogram Nu	umber 4	
Step Nu	umber		1		Page Up Page Dn			
No. E N	l Cnd	Cmnd	Operand1	Operand2	Pst	Comme	nt	
1		HOME	11				Edit	
2							Edit	
3		MOVL	1				Edit	
4							Edit	
5							Edit	
6							Edit	
7							Edit	
8							Edit	
Ba	ick	1			Write	Ke	eyboard	

The step data in Step No. 2 gets deleted. Also, to show that it is being edited (controller writing not yet done), the background color in the step number display box turns to orange.

Touch Write button.

When the screen is changed with the Page Up and Page Dn buttons, and Back button before data transfer, the input data becomes invalid.

🔶 Program	1 Editor			rogram Number		
Step Number	1		Page Up Page Dn			
No. E N Cnd	Cmnd Operand1	Operand2	Pst	Comment		
1	HOME 11				Edit	
2					Edit	
3	MOVL 1				Edit	
4					Edit	
5					Edit	
6					Edit	
7					Edit	
8					Edit	
Back			Write	Keyboar	d	

Once the transfer to the controller is complete, the background color in the step number display column will turn to the normal condition.

Finish the program input. Return to the flash ROM writing window by using the Back button or cancel button.

Follow [9.8 Flash ROM Writing] to conduct the flash ROM writing.





9.6 Program: Copy or Move

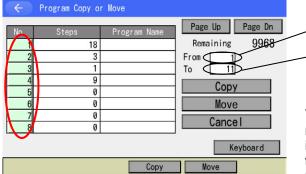
The following operating instructions are to copy or move a program to another program No.

Menu	
Edit	File
Play	
Monitor	Environment Set
Controller	Next
Edit Play I	Monitor Control ->

← Edit			
Position			
Program			
Symbol			
Parameter	Back		
Position Program	Symbol Para		

← Program	
Modify	
Copy/Move	
Clear	
Play	Back
Modify Copy/Move	Clear Play
Touch Edit \rightarrow Program	n ightarrow Copy/Move





When you want to copy, touch Copy button. When you want to move, touch Move button. Execution Confirmation screen appears.

Confirmation

 Program will be copied.

 Are you sure to continue?

 Yes
 No

-			
. C	opy/Origir	Program	Number
-	op ji ongin	i i i egiaini	110111001

Copy/Destination Program Number

Touch Keyboard button and input the program number on the touch panel keyboard. If the cursor is in "From" or "To" box, touch the No. column in the table and the number you touched gets input in the box. The table can be changed with Page Up and Page Dn buttons.

To execute, touch Yes button. To cancel, touch No button.

← Confirmatio	1	
	Complete!	
	ОК	

Touch OK button to go back to the previous screen. In addition, touch Back or Cancel button several times to go to Flash ROM writing screen.

Follow [9.8 Flash ROM Writing] to conduct the flash ROM writing.

For the models applicable for the local symbol simultaneous copy/move, it is available to have the local symbol copy/move at the same time as program copy/move. In order to perform the local symbol simultaneous copy/move, turn on the checkbox for the local symbol simultaneous copy/move indication in the program copy/move screen and then touch the Copy or Move button.

INTELLIGENT ACTUATOR —



	\leftarrow	Progra	m Copy or Move	
	No.	Steps	Program Name	Page Up Page Dn
	1	18		Remaining 19,975
	2	7		From 1
	3	0		To 11
	4	0		
	5	0		Сору
	6	0		Move
	7	0		
	8	0		Cancel
<	Co	py/Move	the local symbols, too.	Keyboard
				10:00
			\	

Touch in the checkbox for Copy/Move the local symbols, too and the checkmark can be turned on/off.

* The checkbox for the local symbol simultaneous copy/move is to be displayed only for the applicable models.

Checkbox for Local Symbol Simultaneous Copy/Move (displayed only for applicable models)

← Co	nfirmation		
	Program and local sym Are you sure *Existing symbols at will be o	to continue? the copy destination	
	Yes	No	
Yes	No		10:00

To execute, touch $\underline{\text{Yes}}$ button. To cancel, touch $\underline{\text{No}}$ button.

* Figure in the left shows an example for copy
* When the local symbol simultaneous copy/move is executed, the existing local symbols in the program number to copy/move to should all be discarded.



9.7 Program: Clear

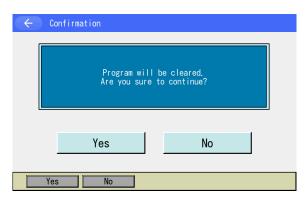
← Program				
Modify				
Copy/Move				
Clear				
Play	Back			
Modify Copy/Move	Clear Play			

Touch Clear button in the program menu screen. Refer to [Section 9.5] for how to go to the program menu screen.

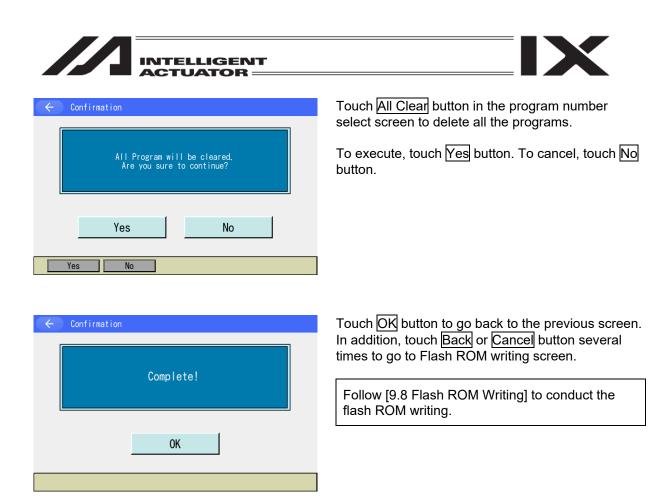
🔶 Program Clear		
No. Steps Program Name	Page Up Page Dn	Top number to be deleted
1 18 2 3 3 1	Remaining 9968 From 2 To 3	Last number to be deleted
4 9 5 0 6 0 7 0 8 0	Clear All Clear Cancel	Input the program number to be deleted on the touch panel numeric keys. To show the touch panel numeric keys, touch Keyboard button. If the
Clear	Keyboard	cursor is in From or To box, touch the No. column and the number you touched gets set in From or To input box.
		When the same number is input in the top number

When the same number is input in the top number and the last number, just one program will be deleted.

Touch Clear button, and the execution confirmation screen opens.



To execute, touch $\underline{\text{Yes}}$ button. To cancel, touch $\underline{\text{No}}$ button.



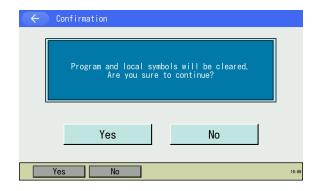
For the models applicable for the local symbol simultaneous copy/move, it is available to have the local symbol clear at the same time as program clear. In order to perform the local symbol simultaneous clear, turn on the checkbox for the local symbol simultaneous clear indication in the program clear screen and then touch the Clear or All Clear button.

	\leftarrow	Progra	m Clear	
	No.	Steps	Program Name	Page Up Page Dn
	1	18		Remaining 19,975
	2	7		From 1
	3	0		To 11
	4	0		
	5	0		Clear
	6	0		All Clear
	7	0		
	8	0		Cancel
<	CI	ear the	local symbols, too.	Keyboard
				10:00

The Touch in the checkbox for Clear the local symbols, too and the checkmark can be turned on/off.

* The checkbox for the local symbol simultaneous clear is to be displayed only for the applicable models.

[\]Checkbox for Local Symbol Simultaneous Clear (displayed only for applicable models)



To execute, touch Yes button. To cancel, touch No button.

- * Figure in the left shows an example for clear
- * When the local symbol simultaneous clear is executed, the existing local symbols in the program number subject to clear should all be discarded.



9.8 Flash ROM Writing

The edit data will be cleared by restoring the power and executing software reset, only if the program edit data was transmitted to the controller.

To save the data after restoring the power and executing software reset, write the data to Flash ROM. From the final editing screen, return to Flash ROM writing screen with Back button.



To write the data to the flash ROM, touch Yes button.

If writing is not necessary, touch No button.

$\langle \langle \cdot \rangle$	Flash ROM writing
ſ	
	Flash ROM writing
	Please Wait

While in writing process to flash ROM, the screen shown in the left will be displayed.

Never turn off the power to the Controller at this time.

← Confirmation		
	Complete!	
	ОК	

Flash ROM writing is completed. Touch OK button to return to the edit menu screen.





10. Program Execution

(Excluding the positioner mode of the SSEL, ASEL and PSEL controller.)

10.1 Operation Confirmation

Menu							
Edit	File						
Play							
Monitor	Environment Set						
Controller	Next						
Edit Play Monitor Control ->							

Touch Play in the main menu.

Also, in the program edit menu, there is Play button.

← Program Operation	
Select Program	
Task Status	
All Stop	
	Back
Select TStatus All	Stop

Touch Select Program button.

There are three items in the program operation menu.

Select Program : It opens the screen to select the program to be executed.

Task Status : It opens the screen to show the task status.

All Stop : It terminates all the programs.

No.	Steps	Program Name	Page Up Page Dn
	18		Remaining 9969
2	3		
3	1		7
4	8		1
5	0		1
6	0		1
7	0		Cancel
8/	0		Garloot

Touch the number box (where marked with a circle in the figure in the left) on the table of the program number that you would like to run the program in. To show No. 9 and further, use Page Up and Page Dn buttons to change the display.





	Up	Page Dn							
No.	Prg.	Sts	LvI	Step	T	W	Н	С	
1	1	WAT	9	7	1	0	0	0	
2									
3									
4									
5									
6									
7									
8									Back

To show Task No. 9 and further, use Page Up and Page Dn buttons to change the display. Touch Back button to return to Program Operation Menu screen.

- No. : Task No.
- Prg. : Program No.
- Sts : Task Status (Task status in OS administration inside) (For XSEL-J/K, the main application is applicable in Ver. 0.14 and later.)
- Lvl : Task Level
- Step: Step number in execution
- T : In execution stop command (Stop by step operation, stop at break point and stop by pause button)
- W : WAIT in process (In condition to wait for completion of TIMW, WTxx, WZxx, WRIT, READ, servo command, etc.)
- H : HOLD input (For XSEL-J/K, the main application is applicable in Ver. 0.26 and later.)
- C : CANC input (For XSEL-J/K, the main application is applicable in Ver. 0.26 and later.)

When an axis number assignment to activate several axes groups is performed in the axis number assignment feature (refer to [15.17 Axis Number Assignment]), the initial setting values* in the axes group numbers will be displayed in the select program number screen. Also, the axes group numbers subject to control should be displayed in the task status screen.

(* Axes group numbers subject to control at the program execution start)

No. Steps Program Page Up Page Dn 1 18 1 </th <th> Initial Values in Axes Group Numbers</th>	Initial Values in Axes Group Numbers
WTouch PrgNo, then go to play program Performance C Task Status No. Prg. Sts Lvi AGrp No. Step T W H C 1 1 WAT 8 2 1 3 1 4 1 5 1	Axes Group Numbers Subject to Control
6 7 8 Back	

10. Program Execution





Step

Once a program is selected in the program select screen, the display is switched to the following screen. (Figure below is the case Program No. 1 is selected.) Select whether to operate one step by one or have the continuous operation.

÷	F	Pro	ogi	ram Exe	Pr	ogram No. 1						
Step No. 1							Brk	AllClr	Page Up	age Up Page Dn		
No.	В	Е	N	Cnd	Cmnd	Oper	and1	Operand2	Pst	Comment		
1					HOME	11						
2					VEL	10						
3					TAG	1						
4					MOVL	1						
5					MOVL	2						
6		Г			MOVL	3						
7					MOVL	4						
8					MOVL	5						
Ba	ck			Start		Step		Stop	Monito	r Keyboard		
	St	ar	t		Step				Monito	or -> 10:00		

Touch Start button to start operation.

	$\langle \rangle$	
Start		Stop

Continuous Operation Mode

← Prog	ram Execution		Prog	ram No. 1	
Step No.	5 Run	BrkAllClr	Page Up	Page Dn	_
No. B E N	Cnd Cmnd Op	perand <mark>1</mark> Operand	2 Pst	Comment	Susp
3	TAG 1				
4	MOVL 1				
5	MOVL 2				
6	MOVL 3				
7	MOVL 4				4
8	MOVL 5				
9	MOVL 6				(
10	MOVL 7				\ <u></u>
Back	Start Sus	pend Stop	Monitor	Keyboard	N Sta
	Suspend	Stop	Monitor	-> 10:00	0.0

								$\overline{\}$	7		
		Step Operation Mode									
	\leftarrow		Pro	og	ram Exec	cutio	on		Р	rogi	ram No. 1
	Ste	p No).		4	Sus	Br	kAllClr	Page U	р	Page Dn
spend	No.	В	Е	Ν	Cnd	Cmnd	Operand1	0perand2	Pst		Comment
N	2					VEL	10				
_ \	3					TAG	1				
/	4					MOVL	1				
V	5					MOVL	2				
	6					MOVL	3				
	7					MOVL	4				
	8					MOVL	5				
	9					MOVL	6				
Start	Ba	ick			Cont		Step	Stop	Monito	or	Keyboard
		Со	nt			Step		Stop	Monit	or	-> 10:00

Touch Step button to start step operation.

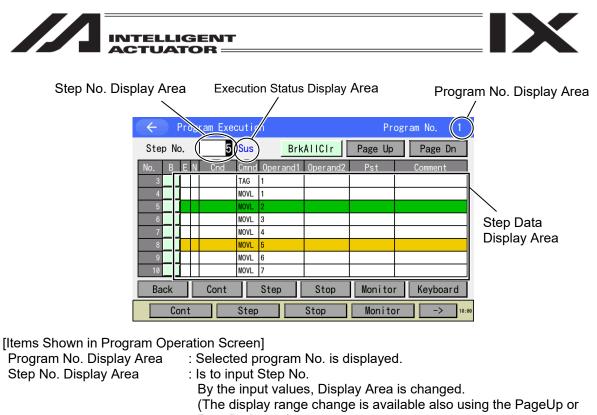
Stop

It shows the currently on-going program step and the status before and after it. Touch <u>Suspend</u> button and the operation program switches to the step operation. Touch <u>Stop</u> button to terminate the operation.

After the completion of the on-going program step, it shows the next step and the status before and after it. Then, the step operation is stopped.____

Touch Step button to execute one step. Touch Start button and the operation program switches to the continuous operation. Touch Stop button to terminate the operation.

Caution: When a teaching pendant is connected, the condition is in 'limited for safety speed'. Therefore, the maximum velocity for the orthogonal axis is limited to 250mm/s or lower no matter the setting in the programs or parameters. The maximum velocity for the SCARA axis is limited to 250mm/s or lower in CP operation, and 3% or less in PTP operation. Refer to [15.8 Safety Speed] for how to activate/inactivate the safety speed.



	PageDn button).
	The display range change using parameter input is available only
	during the operation stop or pause condition. During the continuous
	operation, the display range is changed automatically and on-going
	step No. is displayed in the Step No. input area.
a:	Execution status of the selected program is displayed.

(Blank: Operation Stop, Run: Continuous Operation, Sus: Pause)

The background color shows the each step type and status.

Execution Status Display Area

Step Data Display Area

Mustard : Comment step

White : Normal step

Green : Step number in execution (Pause)

: Step data for the selected program is displayed.

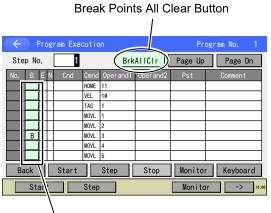
- Red : Step number in execution (WAIT section processing)
- Blue : Step number in execution (Others)





10.2 Setting of Break Point

Break point can be set with the continuance operation.



Set break point button

(B: Set break point, Blank: Release brake point)

Showing stopped at break point											
Step No.	6 Sus	(Brk)Brk	AllCir	Page Up	Page Dn						
No. B E N	Cnd Cmn	d Operand1	Operand2	Pst	Comment						
4	MOVL	. 1									
5	MOVE	. 2									
6 B	MOVL	3									
7	MOVL	4									
8	MOVL	5									
9	MOVL	6									
10	MOVL	. 7									
11	MOVL	. 8									
Back	Cont	Step	Stop	Monitor	Keyboard						
Cont	Ste	p	Stop	Monito	r -> 10:00						

Change the display range so that the step No. for setting the break point, is displayed in the screen, by means of direct input of Step No. using the touch panel ten-key pad, or touching the Page Up or Page Dn button.

Each touching of the break point setting button, sets or cancels the break point.

When the [BrkAllClr] button is touched, all the break points in the selected program, are cleared.

When the continuous operation is carried out with the break point setting established, the program gets paused before executing a command in the step number that the setting is conducted in. To resume the continuous operation after the pause, touch Start button. Also, if you touch Step button, the step operation starts executed. The break points are all cleared if the power supply to the controller is turned OFF/ON or the software reset is conducted.





10.3 Monitoring in Program Operation

The current position of the actuator and the data in the local and global domains can be monitored during the continuous operation or step operation.

← Prog	ram Executio	Pr	ogram No. 1		
Step No.	5 Sus	Sus BrkAllClr			Page Dn
No. B E N	Cnd Cmnd	Operand1	Operand2	Pst	Comment
3	TAG	1			
4	MOVL	1			
5	MOVL	2			
6	MOVL	3			
7	MOVL	4			
8	MOVL	5			
9	MOVL	6			
10	MOVL	7			
Back	Cont	Step	Stop	Monitor	r Keyboard
Cont	Step		Stop	Monito	or -> 10:00

Touch Monitor button.

The monitor menu is opened.

÷	Program Execution Program No. 1												
Step	No.		5 Sus	BrkA	llClr F	Page Up	Р	age Dn					
No.	ΒE	EN	Cnd Cmn	d Operand1	Operand2	Pst	Cor	nment					
3													
4 5			InPort	G Flag	L Flag	Erro	or						
6	_		OutPort	G Integer L Integ		Curt F	Pos						
8		╈	In0utPort	tPort G Real L Real			-						
9 10	_			G String	L String		J						
Bac	- 1-		Cont	Ster.	Sten 1	Monitor		u de e e u el					
Вас	JK		Cont	Step	Stop	worn tor		eyboard					
	Con	t	Ste	p S	Stop	Monitor	·	-> 10:00					

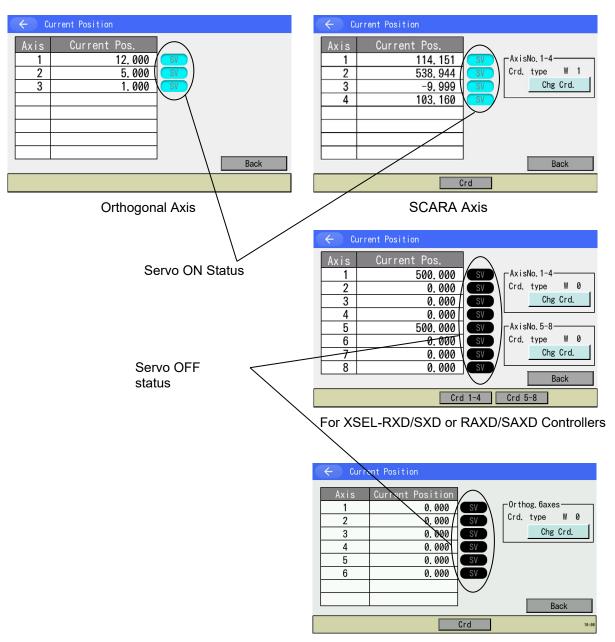
Touching the button selects the monitor item.

When the monitor menu screen is closed, the selected monitor screen appears.





(1) Display the Current PositionDisplay the current position of the actuators.Touch Cur pos. button in the monitor menu.



When 6-axis Cartesian Activated

The coordinate system type in display can be switched over for SCARA Type and the 6-axis cartesian type.



(2) Local Flag This is <u>the loc</u>al flag ON/OFF display. It can be switched ON/OFF. Touch L-Flag button in the monitor menu.

← Local Flag	Program No. 1	← Local Flag	Program No. 1
Flag No. 900	Page Up Page Dn	Flag No. 900	Page Up Page Dn
No. 0 1 2 3 4 5 6 7 8 9 900 0 <th>0N ↑ 0FF ← ↓ →</th> <th>No. 0 1 2 3 4 5 6 7 8 9 900 0<th>0N ↑ 0FF ← ↓ →</th></th>	0N ↑ 0FF ← ↓ →	No. 0 1 2 3 4 5 6 7 8 9 900 0 <th>0N ↑ 0FF ← ↓ →</th>	0N ↑ 0FF ← ↓ →
Back	Keyboard	Back 0/1	Keyboard

When the cursor is in the flag data box as the figure on the top right shows, switchover of ON/OFF is available for the flag which the cursor is placed on.

To move the cursor from a flag number box to a flag data box, touch a flag data box. To switch ON/OFF at the cursor place, either touch ON or OFF button in the touch panel, for switchover.

To operate the cursor, either touch $\leftarrow |\uparrow| |\downarrow| \rightarrow$ in the touch panel.

Every touch of Page Up and Page Dn buttons scrolls up/down the flag numbers by 50 items.





(3) Local Variables

Displays the contents of the local variable. Moreover, values can be substituted for a local integer variable and a local real variable, and then the character sequence can be substituted for a local string. Touch L Integer L Real L String buttons in monitor menu.

1) Local Integer Variables

← Local	Integer Variable	Program No. 1	← Local	Integer Variable		Progra	am No. 1
No.	1	Page Up Page Dn	No.	1	[Page Up	Page Dn
No.	Value		No.	Value			
1		0	1		0		
2		0	2		0		
3		0	3		0		
4		0	4		0		
5		0	5		0		
Back		Keyboard	Back			ł	Keyboard

When the Local Integer Variable screen is opened, the cursor should be placed in a number box. Make the number to be monitored shown by using Page Up and Page Dn buttons.

Inputting a number on the touch panel numeric keys is also available. The cursor moves to the Value input box.

The data with the cursor placed on can be substituted by inputting on the touch panel numeric keys and touching ENT.

To move the cursor, touch in the Value input box.

2) Local Real Variables

← Local Rea	al Variable	Program No. 1	← Local Rea	l Variable	Program No. 1
No. 100		Page Up Page Dn	No. 100		Page Up Page Dn
No.	Value		No.	Value	
100	0. 000000		100	0.00000	
101	0. 000000		101	0.000000	
102	0. 000000		102	0.00000	
103	0. 000000		103	0.00000	
104	0. 000000		104	0. 000000	
Back		Keyboard	Back		Keyboard

When the Local Real Variable screen is opened, the cursor should be placed in a number box. Make the number to be monitored shown by using Page Up and Page Dn buttons.

Inputting a number on the touch panel numeric key is also available. The cursor moves to the Value input box.

The data with the cursor placed on can be substituted by inputting on the touch panel numeric keys and touching ENT.

To move the cursor, touch in the Value input box.





3) Local String Variables

No. 1 Page Up Page Dn	No. 1 Page Up Page Dn
No. 00 01 02 03 04 05 06 07 08 09	No. 00 01 02 03 04 05 06 07 08 09
0 00 00 00 00 00 00 00 00 00 00	0 00 00 00 00 00 00 00 00 00 00
10 00 00 00 00 00 00 00 00 00 00	10 00 00 00 00 00 00 00 00 00 00
20 00 00 00 00 00 00 00 00 00 00 00	20 00 00 00 00 00 00 00 00 00 00 00
30 00 00 00 00 00 00 00 00 00 00	30 00 00 00 00 00 00 00 00 00 00
40 00 00 00 00 00 00 00 00 00 00 00	40 00 00 00 00 00 00 00 00 00 00 00
Back Keyboard	Back Keyboard

When the Local String variable screen is opened, the cursor should be placed in a number box. Make the number to be monitored shown by using Page Up and Page Dn buttons.

Inputting a number on the touch panel numeric keys is also available. The cursor moves to the data box.

The data with the cursor placed on can be substituted by inputting ASCII code on the touch panel numeric keys and touching $\boxed{\text{ENT}}$.

← Local String	Program No. 1	
No. 1	Page Up Page Dn	
No. 00 01 02 03	04 05 06 07 08 09	
0 00 00 00 00	00 00 00 00 00 00	
10 00 00 00 00	00 00 00 00 00 00	
20 00 00 00 00	00 00 00 00 00 00	Character strings display
30 00 00 00 00	00 00 00 00 00 00	and input box
40 00 00 00 00	00 00 00 00 00 00	
	\smile	
Back	Keyboard	

Touch in a character strings display and input box to show the cursor in it, and input of character strings is available.

Touch Keyboard button to show the touch panel keyboard to input.

In order to move the cursor among the character string displays, input columns and data columns, touch a place where you would like to show the cursor.

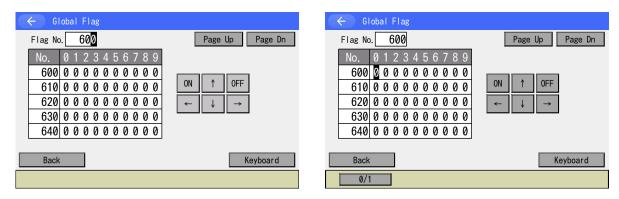
In the character display column, only alphabetical and numerical letters and half-size font Kana characters can be displayed. Input is available only with the alphabetical and numerical letters.





(4) Global Flag It shows the status ON/OFF of the global flags. In this screen, the global flags can be switched ON/OFF.

Touch G-Flag button in Monitor menu.



The way to operate is the same as (2) Local Flag.





(5) Global Variables

Touch G Integer G Real G String buttons in monitor menu.

1) Global Integer variables

🗲 Global Integer Variable	Global Integer Variable
No. 200 Page Up Page Dn	No. 200 Page Up Page Dn
No. Value	No. Value
200 1	200
201 0	201 0
202 0	202 0
203 0	203 0
204 0	204 0
Back Keyboard	Back Keyboard

When the Global Integer Variable screen is opened, the cursor should be placed in a number box. Make the number to be monitored shown by using Page Up and Page Dn buttons. Inputting a number on the touch panel numeric keys is also available. The cursor moves to the Value input box.

The way to substitute a value is the same as (3) 1) Local Integer Variables.

2) Global Real Variables

🔶 Global Real Va	riable			← Globa	l Real Variable	
No. 300		Page Up Page Dn		No. 3	00	Page Up Page Dn
No.	Value			No.	Value	
300	0.00000			300	0.00000	
301	0.00000			301	0. 000000	
302	0.00000			302	0. 000000	
303	0.00000			303	0. 000000	
304	0.00000			304	0. 000000	
Back		Keyboard	ſ	Back		Keyboard

When the Global Real Variable screen is opened, the cursor should be placed in a number box. Make the number to be monitored shown by using Page Up and Page Dn buttons.

Inputting a number on the touch panel numeric keys is also available. The cursor moves to the Value input box.

The way to substitute a value is the same as (3) 2) Local Real Variables.





3) Global String Variables

← Global String	← Global String
No. 300 Page Up Page Dn	No. 300 Page Up Page Dn
No. 00 01 02 03 04 05 06 07 08 09	No. 00 01 02 03 04 05 06 07 08 09
300 00 00 00 00 00 00 00 00 00 00	300 00 00 00 00 00 00 00 00 00 00
310 00 00 00 00 00 00 00 00 00 00	310 00 00 00 00 00 00 00 00 00 00
320 00 00 00 00 00 00 00 00 00 00	320 00 00 00 00 00 00 00 00 00 00
330 00 00 00 00 00 00 00 00 00 00	330 00 00 00 00 00 00 00 00 00 00
340 00 00 00 00 00 00 00 00 00 00	340 00 00 00 00 00 00 00 00 00 00
Back Keyboard	Back Keyboard

When the Global String variable screen is opened, the cursor should be placed in a number box. Make the number to be monitored shown by using Page Up and Page Dn buttons.

Inputting a number on the touch panel numeric keys is also available. The cursor moves to the data box.

The way to substitute a value is the same as (3) 3) Local String Variables.

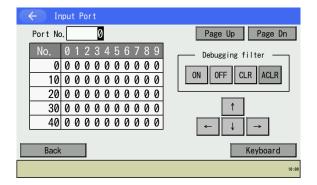
In the character display column, only alphabetical and numerical letters and half-size font Kana characters can be displayed. Input is available only with the alphabetical and numerical letters.





(6) Inp<u>ut Port</u>

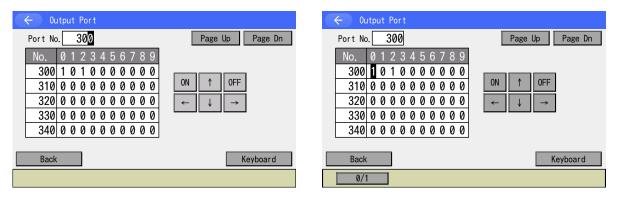
Touch In port button in monitor menu.



Touch Keyboard button to open the touch panel numeric keys, input a port number that you want to show, and touch ENT for confirmation. Every touch of Page Up and Page Dn buttons scrolls up/down the displayed input port numbers by 50 items.

Refer to [14.2 Input Port] for debug filters.

(7) Out<u>put Port</u> Touch Out port button in monitor menu.



When the cursor is in the output port data box as the figure on the top right shows, switchover of ON/OFF is available for the output port which the cursor is placed on.

To move the cursor from a port number box to an output port data box, touch an output port data box. To switch ON/OFF at the cursor place, either touch ON or OFF button in the touch panel for switchover.

To operate the cursor, touch \leftarrow \uparrow \downarrow \downarrow \rightarrow in the touch panel .

Every touch of Page Up and Page Dn buttons scrolls up/down the output port numbers by 50 items.

(8) Input/Output Port (for applicable models only) Touch InOutPort button in monitor menu.

← Ir	n0ut	t P	or								
Port No	o. [7(00	0							Page Up Page Dn
No.	0	1	2	3	4	5	6	7	8	9	
7000	0	1	0	0	0	0	0	0	0	0	
7010	1	1	0	0	0	0	0	0	0	0	ON 1 OFF
7020	0	0	0	0	0	0	0	0	0	0	\leftarrow \downarrow \rightarrow
7030	0	0	0	0	0	0	0	0	0	0	
7040	0	0	0	0	0	0	0	0	0	0	
			_								
Back											Keyboard

The way to operate is the same as (7) Output Port.





10.4 Program Execution Time Measurement Function

In the program execution window, the period of time while the program was executed in the indicated section can be measured.

e Pro	ogra	Pro	ogram No. 1									
Step No.		1		BrkA	llClr	Page Up	Page Dn					
No. B T	ΕN	Cnd	Cmnd	Operand1	Operand2	Pst	Comment					
1			VEL	50								
2			TAG	1								
3			MOVL	1								
4			MOVL	2								
5			MOVL	3								
6			MOVL	4								
7			MOVL	5								
8			MOVL	6								
Back	S	Start	5	Step	Stop	Monitor	Keyboard					
Star	Start Step Monitor -> 10:00											

Open the program execution window.

For the models that support the program execution time measurement function, the program execution time measurement section indication button (T Button) should be displayed between the break point setting button (B Button) and Column E. Touch T Button and the program execution time measurement section can be indicated.

Touch T Button of the step you would like to edit setting and the display of the touched button should change.

The meanings of each type of display are as shown below.

- (Blank): Setting not established
- S : Execution time measurement start point
- E : Execution time measurement end point
- SE : Execution time measurement start and end points in the same step
- * The area between the point before execution of a step that the execution time measurement start point is indicated and the point after execution of a step that the execution time measurement end point is indicated should be the execution time measurement section.

(In case the execution time measurement start and end points are set in the same step, the area between the point before that step and after it should be the execution time measurement section.)





10.4.1 Indication of Execution Time Measurement Section

Indicate the execution time measurement section while the program is stopped.

+ Pro	gram Execution	Pro	ogram No. 1		
Step No.	1	BrkA	llClr	Page Up	Page Dn
No. B T E	EN Cnd Cmnd	Operand1	Operand2	Pst	Comment
1	VEL	50			
2	TAG	1			
3 S	MOVL	1			
4	MOVL	2			
5	MOVL	3			
6	MOVL	4			
7	MOVL	5			
8	MOVL	6			
Back	Start	Step	Stop	Monitor	Keyboard
Start	Step]	Monito	r -> 10:00

- Touch a blank T Button, and the display of the touched button turns to S as shown in the figure in the left and the execution time measurement start point can be established.
- * Shown in the left is an example of T Button in Step 3 being touched.

$\left(\leftarrow \right)$	← Program Execution							Pro	ogram No. 1	
Ste	ρĺ	Vo.			1		BrkA	llClr	Page Up	Page Dn
No.	В	Τ	Ε	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Comment
1			Г			VEL	50			
2						TAG	1			
3		SE				MOVL	1			
4						MOVL	2			
5						MOVL	3			
6						MOVL	4			
7			Γ			MOVL	5			
8						MOVL	6			
Ba	ick			0,0	Start	5	Step	Stop	Monitor	Keyboard
	S	tar	t		S	tep			Monito	r -> 10:00

÷		Pr	og	ra	m Execu	ition			Pro	ogram No. 1
Ste	рl	No.			1		BrkA	llClr	Page Up	Page Dn
No.	В	T	Ε	Ν	Cnd	Cmnd	Operand1	Operand2	Pst	Comment
1						VEL	50			
2						TAG	1			
3		E	Γ			MOVL	1			
4			Γ			MOVL	2			
5						MOVL	3			
6						MOVL	4			
7			Γ			MOVL	5			
8						MOVL	6			
Ba	ick			ç	Start	5	Step	Stop	Monitor	Keyboard
	S	tar	t		S	tep		[Monito	r -> 10:00

- Touch a T Button with S being shown while S is shown in the T Button, and the display of the touched button turns to SE as shown in the figure in the left and the execution time measurement start and end points can be established in the same step.
 Also, if you touch a button other than that with S being shown, the display of the touched button turns to E and the execution time measurement end point can be established.
- 3) Touch a T Button with SE being shown while SE is shown in the T Button, and the display turns from SE to E as shown in the figure in the left and the execution time measurement end point can be established.





e Pro	gram Execu	ution		Pro	ogram No. 1
Step No.	1	BrkA	llClr	Page Up	Page Dn
No. B T	E N Cnd	Cmnd Operand1	Operand2	Pst	Comment
1		VEL 50			
2		TAG 1			
3		MOVL 1			
4		MOVL 2			
5		MOVL 3			
6		MOVL 4			
7		MOVL 5			
8		MOVL 6			
Back	Start	Step	Stop	Monitor	Keyboard
Start	S	Step		Monito	r -> 10:00

← Pro	ogra	am Execu	Pro	ogram No. 1			
Step No.		1		BrkA	llClr	Page Up	Page Dn
No. B T	ΕN	Cnd	Cmnd	Operand1	Operand2	Pst	Comment
1			VEL	50			
2			TAG	1			
3 S			MOVL	1			
4			MOVL	2			
5 E			MOVL	3			
6			MOVL	4			
7			MOVL	5			
8			MOVL	6			
Back		Start	5	Step	Stop	Monitor	Keyboard
Start	t	S	tep		[Monito	r -> 10:00

- Touch a T Button with E being shown while E is shown in the T Button, and the display of E disappears as shown in the figure in the left and the execution time measurement start and end points become not set.
 Also, if you touch a button other than that with E being shown, the display of the touched button turns to S and the execution time measurement start point can be established.
- 5) Touch a T Button with S being shown while S and E are shown in two T Buttons, and the display of S disappears as shown in the figure in the left and the execution time measurement start point becomes not set.

Also, touch a T Button with E being shown, and the display of E disappears and the execution time measurement end point becomes not set.





10.4.2 Display of Execution Time Measurement Result

Follow the procedures below to display the result of the execution time measurement.

1) Touch Monitor button.

e Pro	gram Executior	Prog	gram No. 1	
Step No.	3 Run	BrkAllClr	Page Up	Page Dn
No. B T E	EN Cnd Cmnc	d Operand1 Operand2	Pst	Comment
1	VEL	50		
2	TAG	1		
3 S	MOVL	1		
4	MOVL	2		
5 E	MOVL	3		
6	MOVL	4		
7	MOVL	5		
8	MOVL	6		
Back	Start Su	uspend Stop	Monitor	Keyboard
	Suspen	d Stop	Monitor	-> 10:00

← Prog	ram Executi		Prog	gram No. 1		
Step No.	3 Run	BrkA	llClr F	Page Up	Page Dn	
No. B T E	N Cnd Cm	nd Operand1	Operand2	Pst	Comment	
1			· ·	·		
2 3 S	InPort	G Flag	L Flag	Erro	r	
4 E	OutPort	G Integer	L Integer	Curt F	os	
5 E	In0utPort	G Real	L Real			
7		G String	L String	Exec T	i me	
Back Start Suspend Stop Monitor Keyboard						
	Suspe	end S	top	Monitor	-> 10:00	

e Prog	ram Execution	Pro	gram No. 1				
Step No.	6 Run	BrkA	llClr	Page Up	Page Dn		
No. B T E	N Cnd Cmnd	Operand1	Operand2	Pst	Comment		
4	MOVL 2	2					
5 E	MOVL 3	3					
6	MOVL 4	4					
7	MOVL 5	ō					
8	MOVL 6	6					
9	MOVL 7	7					
10	MOVI						
Executi	Execution Time = 2.060s						
Back	Start Sus	pend	Stop	Monitor	Keyboard		
	Suspend	S	top	Monito	r -> 10:00		

2) Touch Exec Time button.

- 3) The monitor menu closes automatically and the it becomes that the execution time measurement result gets displayed in the program operation window.
- * Switchover of the display can be conducted both during program operation and stop.
- Touch Exec Time button again in the monitor menu and the display goes back to normal.

The status of the execution time measurement in each type of display should be as stated below.

- (Not Displayed) : Execution time not measured
- Displayed as -----: In process of execution time measurement : Execution time measurement completed
- Time displayed
- If any change gets applied to the execution time measurement section after measurement is completed, the condition becomes measurement not conducted.
- If the step which the execution time measurement start point has been set to gets executed after the measurement has been completed, measurement will be restarted.





10.4.3 Cautions

- It should be only one section that the execution time measurement section is available to set up.
- Once measurement gets started, measurement will be kept on until the step which the end point has been set to completes.
- In case a section gets set to an area that loops in a short period of time, as a cycle of measurement starts straight after another one finishes, the display may look as if it keeps showing -----s.
- The execution time should keeps added up even during the program being stopped at the break point or by pause.
- The execution time measurement start and end points should be set to the command (Cmnd Box) statement step.

In case they are set up in the step only for input / extension condition or comment step, measurement will not start or end.

- In case the input / extension condition are set up in the execution time measurement start and end points setting step, measurement will start or end only if the condition is satisfied.
- In case a break point is set up in the execution time measurement start and end points setting step, measurement of the execution time will start after execution of the program gets resumed.
- The maximum duration of time to measure should be 99999.999 seconds.







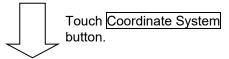


11. Coordinate System Data Editing

1st to 4th^{*} Axes of XSEL-JX/KX/PX/QX/RX/SX/RAX/SAX and XSEL2-TX (Axes Group No. 1) 1st to 4th Axes or 5th to 8th Axes of XSEL-RXD/SXD/RAXD/SAXD, 1st to 4th^{*} Axes on MSEL-PCX/PGX, RSEL 6-axis Cartesian (* 1st to 3rd Axes for 3-axis SCARA Type)

🤄 Menu	
Edit	File
Play	
Monitor	Environment Set
Controller	Next
Edit Play	Monitor Control ->
	Touch Edit button.
🗧 Edit	
Position	Coordinate System
Program	

recreation	
Program	
Symbo I	
Parameter	Back
Position Program	Symbol Para ->



← Coordinate System	
Modify	
Clear	
	Back
Modify Clear	
	Touch Modify button.





← Coordinate System Data Select

- Work coordinate system offset
- Tool coordinate system offset

Simple interference check zone

Back Work Tool Itfr

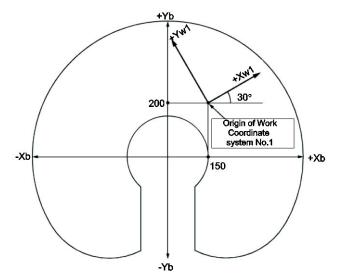
Select the coordinate system subject to editing in this screen.



11.1 Editing of Work Coordinate System Data

As an input example of the work coordinate system data, a coordinate system as shown below is set for the work coordinate system No. 1.

(Motion range at the arm length 500-type stroke)



The offset values from the work coordinate system No. 1 are Xofw1 = 150, Yofw1 = 200, Zofw1 = 0 and Rofw1 = 30.

Touch Work coordinate system offset button in the all Coordinate System Data Edit screen.

← Coordi	inate System Data Ed	it	
Type: Work Co	ordinate Offset	No. 1	Clear
X [mm]	0.000	>	
Y[mm]	0.000		
Z [mm]	0.000		
R[deg]	0.000		
Page Up	Page Dn		
Back		Write	Keyboard
Clear			

— X-axis Offset Input Box

The cursor is placed at the number. To select the work coordinate system number, touch Keyboard button to show the touch panel keyboard to input, input on the hardware numeric keys, or use Page Up and Page Dn buttons. Touch in an X-axis offset input box.

		ELLIGEN TUATOR	
Coordi	inate System Data E	dit	
Type: Work Co	ordinate Offset	No. 1	Clear
Axis1	0.000]	
Axis2	0.000]	
Axis3	0.000		
Axis4	0.000		
Page Up	Page Dn		
Back		Write	Keyboard
Clear			

← Coord	inate System Data Ed	lit		
Type: Work Co	oordinate Offset	No.	1	Clear
Axis1	0.000	Axis5		0.000
Axis2	0.000	Axis6		0.000
Axis3	0.000	Axis7		0.000
Axis4	0.000	Axis8		0.000
Page Up	Page Dn			
Back		Write		Keyboard
Clear	1			

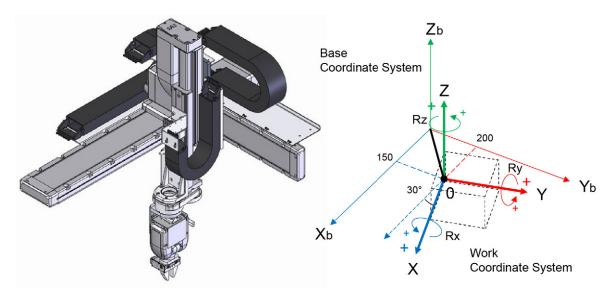
For XSEL-RXD/SXD, RAXD/SAXD

For XSEL-RX/SX, RAX/SAX, XSEL2-TX

← Coordinate S	ystem Data Edit		
Type: Work Coordina	te Offset	No. 1	Clear
X [mm]	0.000		
Y[mm]	0.000		
Z[mm]	0.000		
Rx[deg]	0.000		
Ry[deg]	0.000		
Rz[deg]	0.000		
Page Up Page	Dn		
Back		Write	Keyboard
Clear			10:00

For 6-axis Cartesian

Work Coordinate System in 6-Axis Cartesian Robot When offset at Xofw1 = 150, Yofw1 = 200, Zofw1 = 0, Rxofw1 = 0, Ryofw1 = 0 and Rzofw1 = 30.





Coordir	nate System Data Edi	t	
Type: Work Coo	ordinate Offset	No. 1	Clear
X [mm]	0.000		
Y [mm]	0.000		
Z[mm]	0.000		
R[deg]	0.000		
Page Up	Page Dn		
Back		Write	Keyboard
Clear			

With the cursor placed at the X-axis offset data, touch the Keyboard button to show the touch panel keyboard.

← Coordi	nate System Da	ata Ec	lit				
Type: Work Coordinate Offset No.		1]	Cle	ar		
X [mm]		150					
Y [mm]	(0.000					
Z[mm]	(0.000					150
R[deg]	(0.000		7	8	9	ESC
Page Up	Page Dn			-	0	3	200
1 430 69				4	5	6	BS
				1	2	3	CLR
Back			Writ	0		+/-	ENT
Clear]						

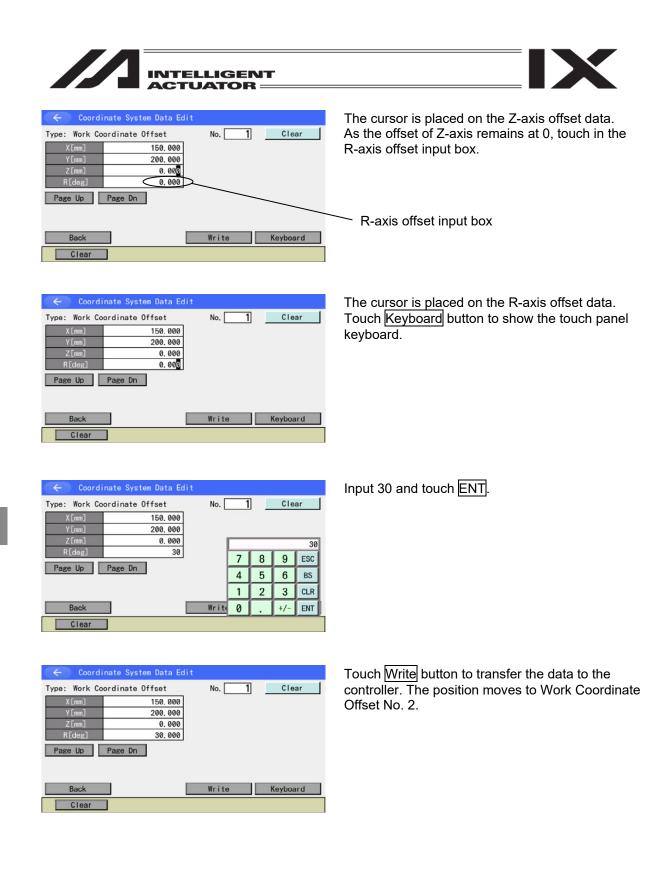
Input 150 and touch ENT.

← Coordi	nate System Data Edit		
Type: Work Co	Type: Work Coordinate Offset		Clear
X [mm]	150.000		
Y [mm]	0. 00 <mark>0</mark>		
Z[mm]	0.000		
R[deg]	0.000		
Page Up	Page Dn		
Back		Write	Keyboard
Clear	1		

The cursor is placed on the Y-axis offset data. Touch Keyboard button to show the touch panel keyboard.

← Coordinat	te System Data Ec	dit				
Type: Work Coord	linate Offset	No.	1		Cle	ar
X [mm]	150.000					
Y [mm]	200					
Z[mm]	0.000					200
R[deg]	0.000		7	8	9	ESC
Page Up Pa	ige Dn		4	5	6	BS
			1	2	3	CLR
Back		Write	0		+/-	ENT
Clear						

Input 200 and touch ENT.



Coordinate System Data Edit Type: Work Coordinate Offset No. 2 X[mm] 0.000 Y[mm] 0.000 Z[mm] 0.000 R[deg] 0.000 Page Up Page Dn	Touch Back button or Cancel button to go to Flash ROM writing screen.
Back Write Keyboard	
Confirmation Flash Write ? Yes No	To write the data to the flash ROM, touch <u>Yes</u> button. If writing is not necessary, touch <u>No</u> button.
Yes No	
Flash ROM writing	While in writing process to flash ROM, the screen shown in the left will be displayed.
Please Wait	<i>Never turn off the power to the Controller at this time.</i>
Complete!	Flash ROM writing is completed. Touch OK button to return to the edit menu screen.
ОК	





Regarding Clear button in Work Coordinate System Data Edit screen

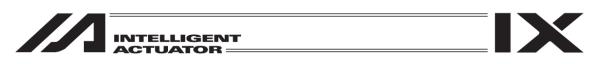
pe: Work Coord	linate Offset	No. 1	Clear
X [mm]	150.000		
Y [mm]	200.000		
Z[mm]	0.000		
R[deg]	30.000		
Page Up Pa	nge Dn		
Back		Write	Keyboard

No matter where the cursor is placed, all the values in X, Y, Z and R-axes offset are set to 0. (All of X, Y, Z, Rx, Ry and Rz for the 6-axis cartesian)

To transfer the data to the controller, touch Write button.

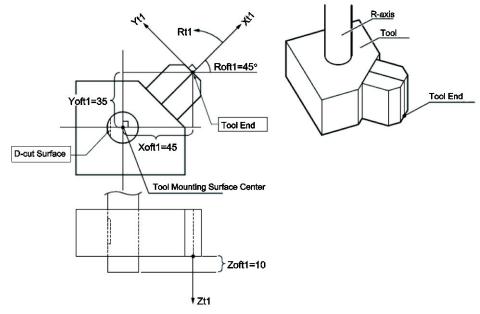
🔶 Coordi	nate System	Data Edit			
Type: Work Co	ordinate Off	set	No.	1	Clear
X [mm]		0.000			
Y [mm]		0.000			
Z [mm]		0.000			
R[deg]		0.000			
Page Up	Page Dn				
Back			Write		Keyboard
Clear	1				

Example of Screen after Touching Clear Button



11.2 Editing of Tool Coordinate System Data

As an input example of the tool coordinate system data, a tool as shown below is set for the tool coordinate system No. 1.



The offset values from the tool coordinate system No. 1 become Xoft1 = 45, Yoft1 = 35, Zoft1 = -10 and Roft1 = 45.

(For 3-axis SCARA type, Roft will not be taken into account)

Coordinate System Data Edit	
Type: Tool Clear X[mm] 0.000 Y[mm] 0.000	————X-axis Offset Input Box
Z [mm] 0.000 R[deg] 0.000 Page Up Page Dn	The cursor is placed at the number. To select the tool coordinate system number, touch Keyboard button to show the touch panel keyboard to input, input on the hardware numeric keys, or use
Back Write Keyboard	Page Up and Page Dn buttons. Touch in an X-axis offset input box.

INTELLIGENT
ACTUATOR ==

Coord	inate System Data Ec	lit		
Type: Tool Co	ordinate Offset	No.	1	Clear
Axis1	0.000	Axis5		0.000
Axis2	0.000	Axis6		0.000
Axis3	0.000	Axis7		0.000
Axis4	0.000	Axis8		0.000
Page Up	Page Dn			
Back		Write	K	eyboard
Clear	1			

For XSEL-RX/SX, RAX/SAX, XSEL2-TX

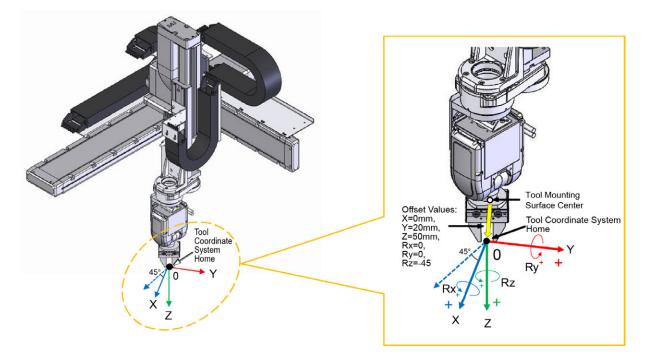
← Coordi	nate System Data Edi	t	
Type: Tool Co	ordinate Offset	No. 1	Clear
X [mm]	0.000		
Y[mm]	0.000		
Z[mm]	0.000		
Rx[deg]	0.000		
Ry[deg]	0.000		
Rz[deg]	0.000		
Page Up	Page Dn		
Back		Write	Keyboard
Clear			10:00

For 6-axis Cartesian

Coordi	nate System Data Ec	it	
Type: Tool Co	ordinate Offset	No. 1	Clear
Axis1	0.000		
Axis2	0.000		
Axis3	0.000		
Axis4	0.000		
Page Up	Page Dn		
Back		Write	Keyboard
Clear	1		

For XSEL-RXD/SXD, RAXD/SAXD

Tool Coordinate System in 6-Axis Cartesian Robot When offset at Xoft1 = 0, oft1 = 20, Zoft1 = 50, Rxoft1 = 0, Ryoft1 = 0 and Rzoft1 = -45.





← Coordi	nate System Data Ed	lit	
Type: Tool Co	ordinate Offset	No. 1	Clear
X [mm]	0.000		
Y [mm]	0.000		
Z[mm]	0.000		
R[deg]	0.000		
Page Up	Page Dn		
Back		Write	Keyboard
Clear			

With the cursor being on the X-axis offset data, touch <u>Keyboard</u> button to show the touch panel keyboard.

	e System Data Ed	_		1	Cle	
Type: Tool Coordi		No.			CIE	ar
X [mm]	45					
Y[mm]	0.000					
Z [mm]	0.000	1				45
R[deg]	0.000	ľ	- 1	0		
D	D		/	8	9	ESC
Page Up Pag	e Dn	[4	5	6	BS
		[1	2	3	CLR
Back		Write	0		+/-	ENT

Input 45 and touch ENT.

← Coordi	nate System Data Edit		
Type: Tool Co	ordinate Offset	No. 1	Clear
X [mm]	45.000		
Y [mm]	0.000		
Z[mm]	0.000		
R[deg]	0.000		
Page Up	Page Dn		
Back		Write	Keyboard
Clear			

The cursor is placed on the Y-axis offset data. Touch Keyboard button to show the touch panel keyboard.

Coordin	ate System Data	a Edit				
Type: Tool Coo	rdinate Offset	No.	1]	Cle	ar
X [mm]	45.0	000				
Y [mm]		35				
Z[mm]	0.0	_				35
R[deg]	0.0	000	7	8	9	ESC
Page Up	Page Dn		4	5	6	BS
			1	2	3	CLR
Back]	Wri	t: 0		+/-	ENT
Clear						

Input 35 and touch ENT.

INTELLIGENT ACTUATOR	
Coordinate System Data Edit Type: Tool Coordinate Offset No. 1 X[mm] 45,000 Y[mm] 35,000 Z[mm] 0.000 R[deg] 0.000 Page Up Page Dn	The cursor is placed on the Z-axis offset data. Touch Keyboard button to show the touch panel keyboard.
Back Write Keyboard	
Coordinate System Data Edit Type: Tool Coordinate Offset No. 1 Clear X[mm] 45,000 Y[mm] 35,000 Z[mm] -10 R[deg] 0.000 7 8 9 ESC 4 5 6 BS 1 2 3 CLR Back Writt 0 +/- ENT <td>Input -10 and touch <u>ENT</u>.</td>	Input -10 and touch <u>ENT</u> .
Coordinate System Data Edit Type: Tool Coordinate Offset No. 1 X[mm] 45.000 Y[mm] 35.000 Z[mm] -10.000 R[deg] 0.000	The cursor is placed on the R-axis offset data. Touch Keyboard button to show the touch panel keyboard.
Back Write Keyboard	
Coordinate System Data Edit Type: Tool Coordinate Offset No. 1 X[mm] 45.000 Y[mm] 35.000 X[mm] -10.000 R[dog] 45 Page Up Page Dn Back Write Clear	Input 45 and touch ENT.

* In 3-axis SCARA type, the offset of R-axis is not taken into account on the controller side.

Yes No

11-13

← Coordina	te System Data Edit		
Type: Tool Coord	dinate Offset	No. 1	Clear
X [mm]	45.000		
Y [mm]	35.000		
Z[mm]	-10.000		
R[deg]	45.000		
Page Up Pa	age Dn		
Back		Write	Keyboard
Clear			

INTELLIGENT UAT

OR =

Touch Write button to transfer the data to the controller. The position moves to Tool Coordinate Offset No. 2.

Coordinat	te System Data Edit		
Type: Tool Coord	linate Offset	No. 2	Clear
X [mm]	0.000		
Y [mm]	0.000		
Z [mm]	0.000		
R[deg]	0.000		
Page Up Pa	age Dn		
Back		Write	Keyboard
Clear			

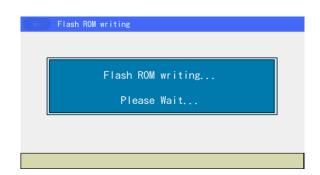
Touch Back button or Cancel button to go to the Flash ROM writing screen.

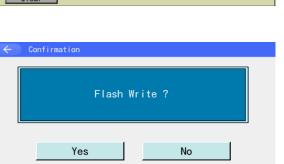
To write the data to the flash ROM, touch Yes button. If writing is not necessary, touch No button.

While in writing process to flash ROM, the screen shown in the left will be displayed.

Never turn off the power to the Controller at this time.

Back	<		Write	Keyboard
Cle	ar			
< ← ⊂	onfirmation			
	-	lash Wri	to 2	
	Yes		No	







INTELLIGENT ACTUATOR	
Confirmation	Flash ROM writing is completed. Touch OK button to return to the edit menu screen.
ОК	

Regarding Clear button in Tool Coordinate System Data Edit screen

pe: Tool Coor	dinate Offset	No. 1	Clear
X [mm]	45.000		
Y [mm]	35.000		
Z [mm]	-10.000		
R[deg]	45.000		
Page Up P	age Dn		
Back		Write	Keyboard

No matter where the cursor is placed, all the values in X, Y, Z and R-axes offset are set to 0. (All of X, Y, Z, Rx, Ry and Rz for the 6-axis cartesian)

To transfer the data to the controller, touch Write button.

← Coordin	nate System Data Edit		
Type: Tool Cod	ordinate Offset	No. 1	Clear
X [mm]	0.000		
Y[mm]	0.000		
Z[mm]	0.000		
R[deg]	0.000		
Page Up	Page Dn		
Back	i 1	Write	Keyboard
Clear]		

Example of Screen after Touching Clear Button



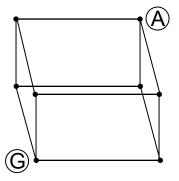


11.3 Editing of Simple Interference Check Zone

It is required to input the following 3 items to set the simple interference check zone:

- 2-point position data to define the zone. (Input the values of the base coordinate system.)
- Output port No. or global flag No. for output during zone invasion.
- Error type at zone invasion time. (0: No error-handling,
 - 1: Message level error,
 - 2: Motion reset level error.)

As an input example of the simple interference check zone, a zone as shown below is set for the simple interference check zone No. 1.



Base coordinate values of A: Xb = 475, Yb = -50, Zb = 150, Rb = 0 Base coordinate values of G: Xb = 400, Yb = 50, Zb = 200, Rb = 180 Output port for output during zone invasion: No. 311 Error type at zone invasion time: 1.

- * In 3-axis SCARA type, the setting of Rb does not have a meaning. (It gets out of account on controller side.)
- * The domain definition should be done only in X, Y and Z for the 6-axis cartesian.

← Coordi	nate System Data E	dit		
Type: Simple	interference check	zone	No.	1 Clear
X[mm][1]		X[mm][2]		
Y[mm][1]		Y[mm][2]		
Z[mm][1]		Z[mm][2]		
R[deg][1]		R[deg][2]		
Port/Flag	0			
ErrorType	0]		
Page Up	Page Dn			
Back		Write		Keyboard
Clear				

This is the simple interference check zone No. selection screen.

The cursor is located at the simple interference check zone No.

To select the simple interference check zone number, input a number on the touch panel numeric keys or by using Page Up and Page Dn buttons in this screen.

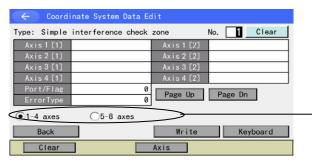
This example indicates the setting of the simple interference check zone No. 1. Touch on the coordinate input position that you want to input.





← Coordinate System Data Edit					
Type: Simple interference check zone No.					
Axis1[1]		Axis1[2]			
Axis2[1]		Axis2[2]			
Axis3[1]		Axis3[2]			
Axis4[1]		Axis4[2]			
Port/Flag	0				
ErrorType	0				
Page Up	Page Dn				
Back		Write		Keyboard	
Clear	1				

For XSEL-RX/SX, RAX/SAX, XSEL2-TX



For XSEL-RXD/SXD, RAXD/SAXD

🧲 Coordinate System Data Edit	
Type: Simple interference check zone	No. 1 Clear
	m][2]
	m][2]
	m][2]
Port/Flag 0	
ErrorType 0	
[Page Up Page Dn
Back	Write Keyboard
Clear	10:00
	!

For 6-axis Cartesian

🧲 Coordinate System Data Edit					
Type: Simple interference check zone No. 1 Clear					
X[mm][1]		X[mm][2]			
Y[mm][1]		Y[mm][2]			
Z[mm][1]	()	Z[mm][2]			
R[deg][1]		R[deg][2]			
Port/Flag	0				
ErrorType	0				
Page Up	Page Dn				
Back		Write	К	eyboard	
Clear					

To switch the axis in XSEL-RXD/SXD and RAXD/SAXD, touch a radio button.

Axis Switchover

Input of base coordinate values of A. The cursor is located at the X-axis data. Touch Keyboard button to show the touch panel keyboard.





← Coord	inate System Data E	dit				
Type: Simple interference check zone No. 1 Clear						
X[mm][1]	475	X[mm][2]				
Y[mm][1]		Y [mm] [2]				
Z[mm][1]		Z[mm][2				475
R[deg][1]		R[deg][2	7	8	9	ESC
Port/Flag	0		/		<u> </u>	
ErrorType	0		4	5	6	BS
Page Up	Page Dn	[1	2	3	CLR
Back		Write	0		+/-	ENT
Clear						

← Coordi	🔶 Coordinate System Data Edit					
Type: Simple	interference check	zone	No.	1	Clear	
X[mm][1]	475.000	X[mm][2]				
Y[mm][1]		Y[mm][2]				
Z[mm][1]		Z[mm][2]				
R[deg][1]		R[deg][2]				
Port/Flag	0					
ErrorType	0					
Page Up	Page Dn					
Back		Write		Key	/board	
Clear						

The cursor is located at the Y-axis data. Touch Keyboard button to show the touch panel

keyboard to input -50 and touch ENT.

Input 475 and touch ENT.

Coordi	🗲 Coordinate System Data Edit				
Type: Simple	interference check	zone	No.	1 Clea	r
X[mm][1]	475.000	X[mm][2]			
Y[mm][1]	-50.000	Y[mm][2]	9		
Z[mm][1]		Z[mm][2]			
R[deg][1]		R[deg][2]			
Port/Flag	0				
ErrorType	0				
Page Up	Page Dn				
Back		Write		Keyboard	
Clear	1				

The cursor is located at the Z-axis data. Touch Keyboard button to show the touch panel keyboard to input 150 and touch ENT.

Coordi	🗲 Coordinate System Data Edit				
Type: Simple	interference check	zone	No. [1	Clear
X[mm][1]	475.000	X[mm][2]			
Y[mm][1]	-50.000	Y[mm][2]			
Z[mm][1]	150.000	Z[mm][2]			
R[deg][1]		R[deg][2]			
Port/Flag	0				
ErrorType	0				
Page Up	Page Dn				
Back		Write		Keyb	ooard
Clear					

	inate System Data Ed		No.	1	Clear
X[mm][1]	475,000	X[mm][2]			-
Y [mm] [1]	-50,000	Y[mm][2]			
Z[mm][1]	150.000	Z[mm][2]			
R[deg][1]	0.000	R[deg][2]			
Port/Flag	0				
ErrorType	0				
Page Up	Page Dn				
Back		Write		Key	board
Clear					

The cursor is located at the R-axis data. Touch Keyboard button to show the touch panel keyboard to input 0 and touch ENT.

The cursor moves to the other X-axis data. Enter the base coordinate values of G in the same way as A.





← Coordi	🗲 Coordinate System Data Edit				
Type: Simple	interference check	zone	No.	1	Clear
X[mm][1]	475.000	X[mm][2]			400.000
Y[mm][1]	-50.000	Y[mm][2]			50.000
Z[mm][1]	150.000	Z[mm][2]			200.000
R[deg][1]	0.000	R[deg][2]			180.000
Port/Flag	0				
ErrorType	0				
Page Up	Page Dn				
Back		Write		Keyb	oard
Clear					

Once the input of coordinate data is finished (the input for R-axis is confirmed), the cursor moves to the input port/flag input box.

🗧 Coordinate System Data Edit					
Type: Simple	interference check	zone	No. 1 Clear		
X[mm][1]	475.000	X[mm][2]	400.000		
Y[mm][1]	-50.000	Y[mm][2]	50.000		
Z[mm][1]	150.000	Z[mm][2]	200.000		
R[deg][1]	0.000	R[deg][2]	180.000		
Port/Flag	311				
ErrorType	0				
Page Up	Page Dn				
Back		Write	Keyboard		
Clear	Clear				

Touch Keyboard button to show the touch panel keyboard to input 311 and touch ENT. The cursor moves to the Error Type input area.

← Coord	inate System Data Ec	lit		
Type: Simple	interference check	zone	No. 1	Clear
X[mm][1]	475.000	X[mm][2]		400.000
Y[mm][1]	-50.000	Y[mm][2]		50.000
Z[mm][1]	150.000	Z[mm][2]		200.000
R[deg][1]	0.000	R[deg][2]		100.000
Port/Flag	311			
ErrorType	1			
Page Up	Page Dn			
Back		Write	Ke	yboard
Clear	1			

Touch Keyboard button to show the touch panel keyboard to input 1 and touch ENT. Touch Write button to transfer the data.

← Coordi	🧲 Coordinate System Data Edit			
Type: Simple	interference check	zone	No. 2	Clear
X[mm][1]		X[mm][2]		
Y[mm][1]		Y[mm][2]		
Z[mm][1]		Z[mm][2]		
R[deg][1]		R[deg][2]		
Port/Flag	0			
ErrorType	0			
Page Up	Page Dn			
Back		Write	Ke	yboard
Clear	1			

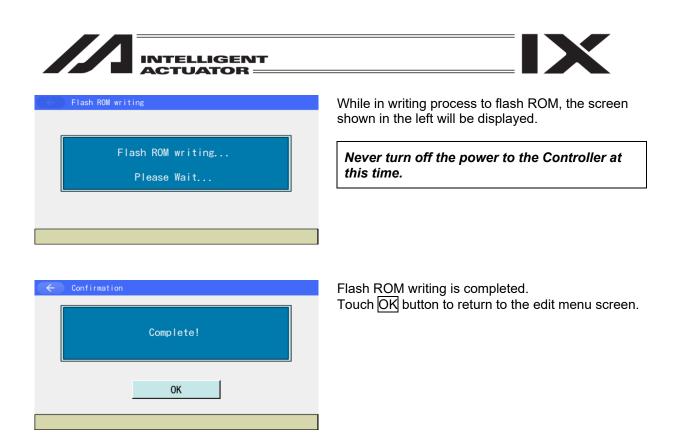
The screen advances to the edit screen for the simple interference check zone No. 2. When the axial pattern of A does not agree with that of G, the "9F0" error ("312" Error in RSEL and XSEL2-TX) occurs.

When the axial pattern of A and G is 0, the "9F1" error occurs if the output port error ("312" Error in RSEL and XSEL2-TX) or error type is specified. Touch Back button to go to Flash ROM writing screen.



To write the data to the flash ROM, touch Yes button.

If writing is not necessary, touch No button.



Regarding Clear button in Simple interference check zone Data Edit screen

← Coord	inate System Data Ed	lit	
Type: Simple	interference check	zone	No. 1 Clear
X[mm][1]	475.000	X[mm][2]	400.000
Y[mm][1]	-50.000	Y[mm][2]	50.000
Z[mm][1]	150.000	Z[mm][2]	200.000
R[deg][1]	0.000	R[deg][2]	180.000
Port/Flag	311		
ErrorType	1		
Page Up	Page Dn		
Back		Write	Keyboard
Clear			

No matter where the cursor is placed, all the coordinate values in X, Y, Z and R-axes are turned invalid and the output port/flag box and error type box are set to 0.

(Set the coordinate values in X, Y and Z-axes invalid and the columns for output port / flag and error type to 0 for the 6-axis Cartesian.)

To transfer the data to the controller, touch Write button.

pe: Simple	interference check	zone	No. 1	Clear
X[mm][1]		X[mm][2]		
Y[mm][1]		Y[mm][2]		
Z[mm][1]		Z[mm][2]		
R[deg][1]		R[deg][2]		
Port/Flag	0			
ErrorType	0			
Page Up	Page Dn			
Back		Write	K	eyboard

Screen after Touching Clear Button







12. Symbol Edit

(Excluding the positioner mode of the SSEL, ASEL and PSEL Controller.) Symbol (Names) can be applied to variables, ports, flags, position, etc.

🧼 Menu			
Edit	File		
Play			
Monitor	Environment Set		
Controller	Next		
Edit Play Monitor Control ->			

Edit
 Position
 Program
 Symbol
 Parameter
 Back

 Position Program Symbol Para

Touch Symbol button in the edit screen.

Touch Edit button in the menu screen.

🔶 Symbol	
Edit	
All Clear	
	Back
Modify	All Cir

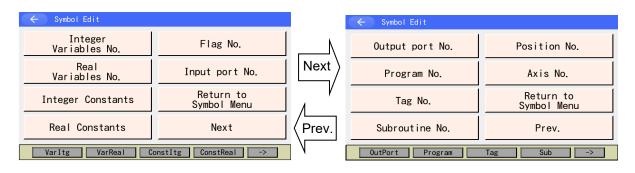
Touch Edit button.

* Touch the Change/New button when it is shown.





12.1 Symbol Edit Items



Symbol Select Menu (some models excluded)

(1) The items object to editing is as stated below;

[•] Editing is available on the input and output port numbers in the input and output port applicable models.

Integer Variables No., Real Variables No., Integer Constants, Real Constants

Flag No., Input port No.

Output port No., Program No., Tag No., Subroutine No.

Program No., Axis No.

(2) Articles for Symbol Descriptions

- 1) The top letter^{*1} needs to be an alphabet or underscore.
- 2) The second letter and after^{*1} should be ASCII Code 0x21 to 0x7e.
- 3) The maximum number of letters^{*2} should be 9 single-byte characters. (String literal should be 8 single-byte characters letters at maximum.)
- 4) It is not accepted to have the same symbol definition name in the same function. (It is allowed to be in different locals in a program.)
- 5) It is not accepted to have the same symbol definition name in the flag number/input port number/output port number/input output port number group. (It is allowed to be in different locals in a program.)
- 6) It is not accepted to have the same symbol definition name in the integer variable number/real variable number group. (It is allowed to be in different locals in a program.)
- 7) It is not accepted to have the same symbol definition name in the integral constant/real constant group.
- *1 In RSEL and XSEL2-T/TX, it is available to use the characters in ASCII code 80h and later (halfwidth katakana and two-byte characters). However, this touch panel teaching pendant is available only for display (not for input).
- *2 RSEL and XSEL2-T/TX are available for use of up to 40 single-byte characters (39 single-byte characters max. for string literal).





12.2 Input Example: Symbolize Local Integer Variable No.

Assuming Variable No. 5 in Program No. 3 is symbolized as 'Cnt5'.

🔶 Symbol Edit		
Integer Variables No.	Flag No.	
Real Variables No.	Input port No.	
Integer Constants	Return to Symbol Menu	
Real Constants Next		
VarItg VarReal ConstItg ConstReal ->		

🗧 Symbol Edit	
	Page Up Page Dn
Type: Integer Variables No. No. Symbol	PrgNo. 0 Rest 1000
200	
Back	Write Keyboard

Touch Integer Variables No. button.

The cursor is located at program No. box Input the local area program No. (To symbolize global area, leave 0.) Touch Keyboard button to show the touch panel numeric keys.

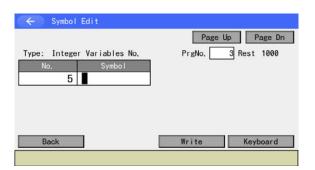
← Symbol Edit					
		Page	Up	Pag	e Dn
Type: Integer Variables No.	PrgNo	o. 🗌	3 Re	st 10	000
No. Symbol		_			
200					3
		7	8	9	ESC
		4	5	6	BS
		1	2	3	CLR
Back	Write	0		+/-	ENT

Input 3 and touch ENT.

← Symbol Edit	
	Page Up Page Dn
Type: Integer Variables No.	PrgNo. 3 Rest 1000
No. Symbol	
Back	Write Keyboard

The cursor moves to the number box. Touch Keyboard button to show the touch panel numeric keys.

	TUATOR		
🗲 Symbol Edit		Input 5 and touch ENT.	
Type: Integer Variables No. No. Symbol 5 Back	Page Up Page Dn PrgNo. 3 Rest 1000 7 8 9 ESC 4 5 6 BS 1 2 3 CLR Write 0 . +/- ENT		



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The cursor moves to the Symbol box.

Touch Keyboard button to show the touch panel numeric keys.

🔶 Symbol Edit	
	Page Up Page Dn
Type: Integer Variables No.	PrgNo. 3 Rest 1000
Cnt5	
ESC 1 2 3 4 5 6 7	890-=BS
TAB q w e r t y	u i o p []
CAP a s d f g h	j k l ; '
SHIFT z x c v b r	n m , . / ENT
Ctrl Alt `¥	$\downarrow \uparrow \leftarrow \rightarrow$

To input 'C', touch SHIFT and then touch \bigcirc . The keyboard automatically returns to small letter input. Continue to type in $\boxed{15}$, and touch $\boxed{\text{ENT}}$.

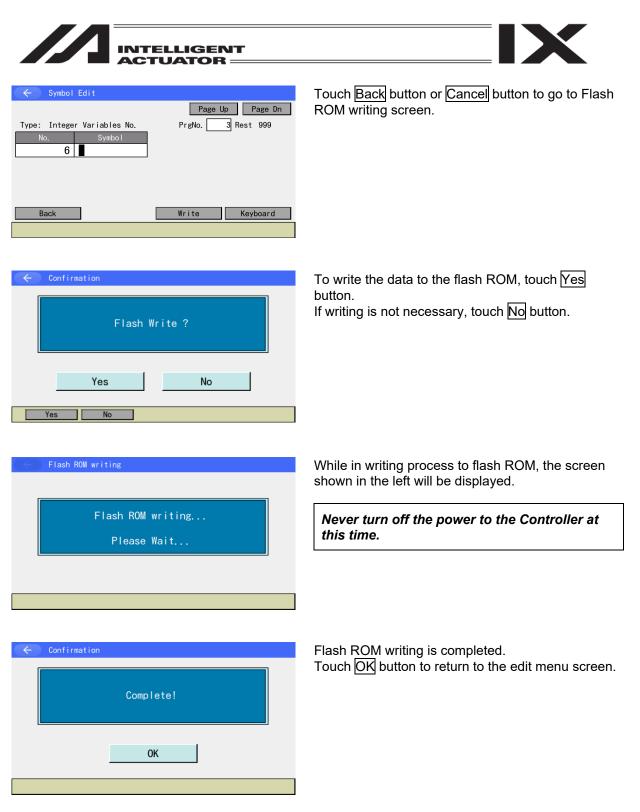
🔶 Symbol Edit	
	Page Up Page Dn
Type: Integer Variables No.	PrgNo. 3 Rest 1000
No. Symbol	
5(Cnt5	
Back	Write Keyboard

Once the input is confirmed, the cursor disappears. If you want to input again, touch in the symbol input box.

Touch Write button to transfer the symbol data to the controller.

When the screen is changed with the Page Up and Page Dn buttons, Back button before data transfer, the input data becomes invalid.

Symbol Input Box



- (Note) There may be a case that C47 "Symbol Search Error" (44C for RSEL and XSEL2-T/TX) occurs when a SEL program is executed after a symbol in use in the SEL program is deleted or changed. In such a case, save all the programs in the file backup to a Secure Digital memory card and then transfer the saved files to the controller by file restoring.
 - * In case the error cannot be solved, it may be necessary to reorganize the SEL program.

12. Symbol Edit

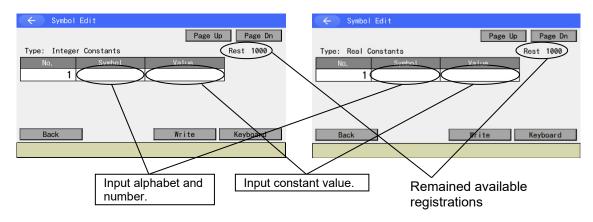




12.3 Symbol Edit Screen of Each Items

(1) Constant Number

Integer Type Constant Number Symbol Edit Screen Real Type Constant Number Symbol Edit Screen



Example for input of integer constants:

Define 1000 to the symbol name 'Const1' using the touch panel keyboard.

🔶 Symbol Edit	
	Page Up Page Dn
Type: Integer Constants	Rest 1000
No. Symbol	Value
1	
Back	Write Keyboard

Touch in the symbol input box to move the cursor there.

Touch Keyboard button to show the touch panel keyboard.





Input Const1 and touch ENT. Input SHIFT Const1. The cursor moves to the Value input box.

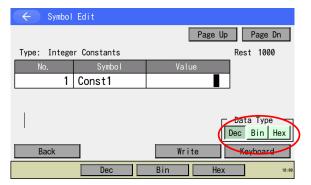
🔶 Symbol Edit
Page Up Page Dn
Type: Integer Constants Rest 1000
Const1
ESC 1 2 3 4 5 6 7 8 9 0 - = BS
TAB q w e r t y u i o p []
CAP a s d f g h j k l ; '
SHIFT Z X C V b n m , . / ENT
$\begin{array}{c c} Ctr I & Alt & \mathbf{Y} & & & \downarrow \uparrow \leftarrow \rightarrow \end{array}$

🔶 Symbol	Edit					
			Page	Up	Pag	e Dn
Type: Intege	er Constants			Re	est 10	000
No.	Symbol	Value				
1	Const1					1000
			7	8	9	ESC
			4	5	6	BS
			1	2	3	CLR
Back		Write	0		+/-	ENT

Touch Keyboard button to show the touch panel numeric keys. Input 1000 and touch ENT.

After input, touch the Write button to transfer the symbol data to the controller. After that, perform the Flash ROM writing referring to [12.2].

In the case of integer constant symbol binary/hexadecimal digit input applicable model, the integer constant symbol defined value can be input using the binary or hexadecimal system.



In the case of an applicable model, the data type selection button appears on the lower right of the screen with the cursor shown in the defined value box.

When the data type is to be changed, touch one of these buttons.

🔶 Symbol	Edit	
		Page Up Page Dn
Type: Intege	r Constants	Rest 1000
No.	Symbol	Value
1	Const1	0 h
		Data Type
Back		Write Keyboard
	Dec	Bin Hex 18:00

The display in the defined value box is changed based on the data type. (The left figure shows the case when the hexadecimal digit (Hex) has been selected). The fundamental number is shown after the defined value (for binary: b, for hexadecimal: h, for decimal: (blank)).

Touch the Keyboard button to input the defined value using the touch panel ten-key pad.

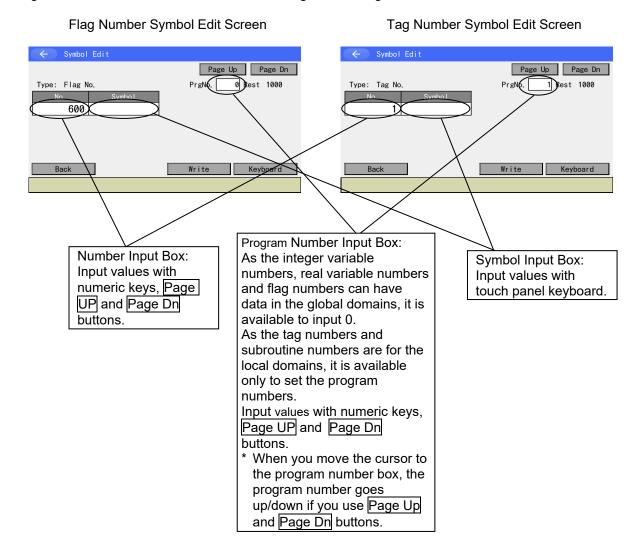
After the value input, touch the Write button to transfer the symbol data to the controller. After that, perform the Flash ROM writing referring to [12.2].





(2) Program Number Indicative Definition Data

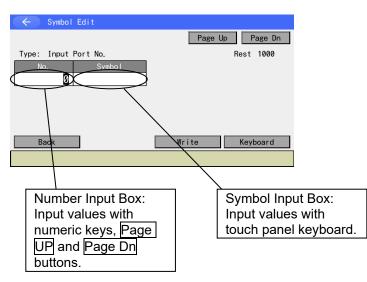
Integer variable number, real variable number, flag number, tag number and subroutine number







(3) Program Number Non-indicative Definition Data Input port No., Output port No., Input/Output port No. (for applicable models only), Program No., Position No. Axis No.











13. Parameter Edit

You can change the parameters corresponding to your system. When you change the parameters by yourself, please note the parameter contents.

The parameter will be effective after flash ROM writing is finished and performing a software reset or power reboot.

Caution: In the case of SSEL, ASEL or PSEL in the positioner mode, parameter transfer cannot be performed when the controller is executing. Stop the controller before changing or transferring parameters. To stop, touch Positioner Mode → Stop in the main menu.

🥢 Menu		
Edit	File	
Play		
Monitor	Environment Set	
Controller	Next	
Edit Play Monitor Control ->		

Touch Edit button in the Menu screen

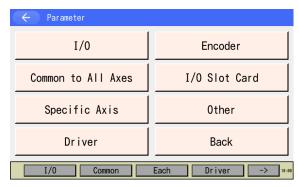
← Edit	
Position	Coordinate System
Program	
Symbol	
Parameter	Back
Position Program	Symbol Para ->

Touch Parameter button in the Edit screen





13.1 Parameter Edit Items



In some controllers, "I/O Slot Card" changes to names of "I/O System Device". Also, the contents to be displayed differ depending on the controllers.

The axis related parameters (axis groups, axes and actuators) of RSEL and axis group parameters of XSEL2-T/TX have setting values for each axis group. Touch an item button and then the select axes group window will appear.

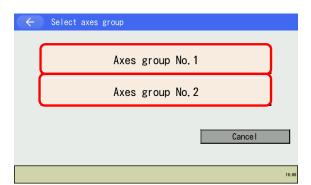
Touch the Axes group No. button to select an axes group number subject to.

(Refer to [15.17.2 Axis Number Assignment Mode Switchover] for axes groups)

← Parameter					
I/0	Actuator				
Common to MC	Other				
Axes group	Return to Edit Menu				
Axis	Next				
I/O MC Common AxesGroup Axis -> 10.00					

Touch the <u>Axes group</u> button when required to display or edit the axes group parameters.

* Example in the figure on the left shows that of RSEL



The select axes group window should appear after you touch the Axes Group button. Touch an Axes group No. button.

Parameter Edit Axes group No. 1 Type: Axes group No. 1 No. 1	 The parameter edit window should appear. * The axes group number that was selected should be shown on the top right of the screen.
🔶 Parameter Edit	Parameter No. Input Area
Parameter No. Display Area Parameter Info. Parameter Info.	
For Device Independent Paramete	rs (figure shows example of I/O parameter)
	Parameter No. Input Area
Parameter No. Display Area Parameter No. Display Area Parameter Parameter Parameter Soft Limit + 46 8 Soft Limit + 46 8 Soft Limit + 46 9 Stitut Postron 10 Homing Method	
For Device Dependent Parameters (f	igure shows example of each axis parameter)
Th Parameter Number Display Column : Di Parameter Name : Sh Definition Value : Di Fo] put a parameter number. ne displayed range differs depending on the input value. splays a parameter number. nows a parameter name. splays a parameter value. or parameters available to change value, inputting of a alue is also available.

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13.2 Input Example: Edit Specific-Axis Parameter

Establish the setting in specific-axis parameter No. 7 soft limit + to axis 1 = 300mm, axis 2 = 200mm.

← P	arameter Edit					
Type:Spec	cific Axis	No.	1 A	xis +	Axis -	
No. Pa	ameter Info.	Axis 1	Axis 2	Axis 3		
1 Axis	Action Typ	0	0	0		
2 ACMX+	ACC1	30	30	30		
3 ACMX-	ACC1	30	30	30		
4 ACMX+	ACC2	30	30	30		
5 ACMX-	ACC2	30	30	30		
6 Selec	t Act Drct	1	1	1		
7 Soft	Limit +	400000	400000	50000		
8 Soft	Limit -	0	0	0		
9 SftLm	t PosMrgn	2000	2000	2000		
10 Homin	g Method	1	1	1		
Back			Write	e K	eyboard	
			Axis+	Axis-		

Have the cursor displayed in the parameter number input column. (If not, touch the parameter number input column so the cursor goes there.)

Touch Keyboard button to show the touch panel numeric keys.

÷	Parameter Edit						
Type	Specific Axis	No.	1 A	xis +	A	xis -	
No.	Parameter Info.	Axis 1	Axis 2	Axis	3		
1	Axis Action Typ	0	0		0		
2	ACMX+ACC1	30	30		30		
3	ACMX-ACC1	30	30				
4	ACMX+ACC2	30	30				U
5	ACMX-ACC2	30	30	7	8	9	ESC
6	Select Act Drct	1	1	/	0	9	ESC
7	Soft Limit +	400000	400000		l r		
8	Soft Limit -	0	0	4	5	6	BS
9	SftLmt PosMrgn	2000	2000	_			
10	Homing Method	1	1	1	2	3	CLR
	Back		Write	<u> </u>		+/-	ENT
			Axis+	A	kis-		

Switch the displayed range so the parameter number that you would like to edit can be displayed.

Input a value for the parameter number and touch the ENT.

🔶 Parameter Edit					
Type:Specific Axis	No.	1 A	xis +	Axis -	
No. Parameter Info.	Axis 1	Axis 2	Axis 3		
1 Axis Action Typ	0	0	0		
2 ACMX+ACC1	30	30	30		
3 ACMX-ACC1	30	30	30		
4 ACMX+ACC2	30	30	30		
5 ACMX-ACC2	30	30	30		
6 Select Act Drct	1	1	1		
7 Soft Limit +	400000	400000	50000		
8 Soft Limit -	0	0	0		
9 SftLmt PosMrgn	2000	2000	2000		
10 Homing Method	1	1	1		Y
Back		Write	e K	Geyboard	
		Axis+	Axis	-	

Switching displayed range can also be conducted with A V A buttons.

Touch A V V buttons so the parameter number that you would like to edit can be displayed.





← Parameter Edit					
Type:Specific Axis	No.	1 A	xis +	Axis -	
No. Parameter Info.	Axis 1	Axis 2	Axis 3		
1 Axis Action Typ	0	0	0		
2 ACMX+ACC1	30	30	30		
3 ACMX-ACC1	30	30	30		
4 ACMX+ACC2	30	30	30		
5 ACMX-ACC2	30	30	30		
6 Select Act Drct	1	1	1		
7 Soft Limit +	40000	400000	50000		
8 Soft Limit -	U	0	0		
9 SftLmt PosMrgn	2000	2000	2000		
10 Homing Method	1	1	1		Ť
Back		Write	e K	leyboard	
		Axis+	Axis-		

Touch the place you would like to edit (1st axis in No. 7) in order to move the cursor.

Touch the keyboard button after the cursor has been moved to show the touch panel numeric keys.

🔶 Parameter Edi	t					
Type:Specific Axis	No.	1 A	xis +	A	(is -	
No. Parameter Info.	Axis 1	Axis 2	Axis	3		
1 Axis Action Typ	0	0		0		
2 ACMX+ACC1	30	30		30		
3 ACMX-ACC1	30	30			,	00000
4 ACMX+ACC2	30	30			3	300000
5 ACMX-ACC2	30	30	7	8	9	ESC
6 Select Act Drct	1	1		0	9	ESC
7 Soft Limit +	30000	400000		l e l	0	
8 Soft Limit -	0	0	4	5	6	BS
9 SftLmt PosMrgn	2000	2000				
10 Homing Method	1	1	<u> </u>	2	3	CLR
Back		Writ	e 0	.	+/-	ENT
Axis+ Axis-						

← Parameter Edit					
Type:Specific Axis	No.	1 A	xis +	Axis -	
No. Parameter Info.	Axis 1	Axis 2	Axis 3		
1 Axis Action Typ	0	0	0		
2 ACMX+ACC1	30	30	30		
3 ACMX-ACC1	30	30	30		
4 ACMX+ACC2	30	30	30		
5 ACMX-ACC2	30	30	30		
6 Select Act Drct	1	1	1		
7 Soft Limit +	300000	40000	50000		
8 Soft Limit -	0	0	0		
9 SftLmt PosMrgn	2000	2000	2000		
10 Homing Method	1	1	1		
Back		Writ	e K	leyboard	
		Axis+	Axis-		

Input 300000 on the touch panel numeric keys and touch $\boxed{\text{ENT}}$. [Unit: 0.001mm]

Once a number gets confirmed, the cursor moves to the input column for the 2nd axis. Also, to show that it is being edited (controller writing not yet done), the background color in the position number display box turns to orange.

If you would like to input again, touch the keyboard button after touching the input column to move the cursor there.

← Parameter Edit						
Type:Specific Axis	No.	1 A	xis +	Ax	(is -	
No. Parameter Info.	Axis 1	Axis 2	Axis 3	3		
1 Axis Action Typ	0	0		0		
2 ACMX+ACC1	30	30	3	0		
3 ACMX-ACC1	30	30				0000
4 ACMX+ACC2	30	30				00000
5 ACMX-ACC2	30	30	7	8	9	ESC
6 Select Act Drct	1	1	/		9	ESC
7 Soft Limit +	300000	20000		E	6	DO
8 Soft Limit -	0	0	4	5	6	BS
9 SftLmt PosMrgn	2000	2000				
10 Homing Method	1	1	_ 1	2	3	CLR
Back		Write	e 0		+/-	ENT
		Axis+	Ax	is-		

Perform in the same manner as the 1st axis for the 2nd axis.

After touching the keyboard button to show the touch panel numeric keys, input 200000 and touch the ENT.





No.	1 A	xis +	Axis -	
Axis 1	Axis 2	Axis 3		
0	0	0		
30	30	30		
30	30	30		
30	30	30		
30	30	30		
1	1	1		
300000	200000	5000 <mark>0</mark>		
0	0	0		
2000	2000	2000		
1	1	1		Ť
	Write	e K	leyboard	
	Axis 1 0 30 30 30 30 30 30 0000 0	Axis 1 Axis 2 0 0 0 0 0 30 30 30 30 30 30 30 30 1 1 1 300000 20000 0 0 0 2000 1 1 1 1 1 1	Axis 1 Axis 2 Axis 3 0 0 0 0 0 0 30 30 30 30 30 30 30 30 30 30 30 30 30 1 1 1 1 1 1 1 20000 20000 20000 20000 1	Axis 1 Axis 2 Axis 3 0 0 0 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 1 1 1 300000 20000 50000 0 0 0 2000 2000 2000 1 1 1

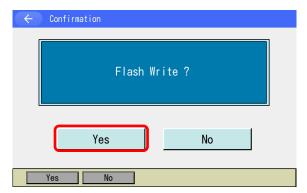
Touch $\overline{\text{Write}}$ button to transfer the parameter data to the controller.

Caution: In the teaching pendant, only the data in the displayed range is to be retained in the memory. Therefore, writing (transfer to a controller) is necessary to be conducted one by one for each displayed screen. Without writing, the edited data will be ineffective at the time the screen is switched over.

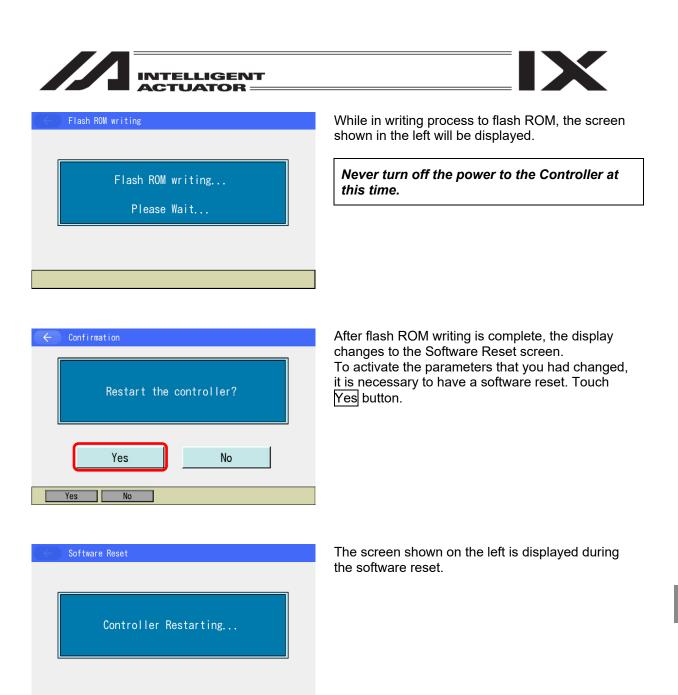
e Parameter Edit					
Type:Specific Axis	No.	1 4	xis +	Axis -	
No. Parameter Info.	Axis 1	Axis 2	Axis 3		
1 Axis Action Typ	0	0	0		
2 ACMX+ACC1	30	30	30		
3 ACMX-ACC1	30	30	30		
4 ACMX+ACC2	30	30	30		
5 ACMX-ACC2	30	30	30		
6 Select Act Drct	1	1	1		
7 Soft Limit +	300000	200000	50000		
8 Soft Limit -	0	0	0		
9 SftLmt PosMrgn	2000	2000	2000		
10 Homing Method	1	1	1		Ý
Back		Writ	e K	leyboard	
		Axis+	Axis-		

Once the transfer to the controller is complete, the background color in the parameter number display column will turn to the normal condition.

If you wish to continue editing each axis parameter, do it in the same manner. To finish editing each axis parameter, return to the flash ROM writing window by using the Back button.



Conduct the flash ROM writing. Touch the Yes button.



Menu	
Edit	File
Play	
Monitor	Environment Set
Controller	Next
Edit Play N	Ionitor Control ->

Once the software reset is complete, the display returns to the main menu screen.





13.3 Example for Input) Edit Driver Unit Parameters

Edit Driver Unit Parameter No. 3 Soft Limit Positive Side.

← Parameter	
I/0	Actuator
Common to MC	Other
Axes group	Return to Edit Menu
Axis	Next
I/O MC Common Ax	esGroup Axis -> 10:00

Touch the Next button.

Touch the Driver Unit button.

* Example in the figure on the left shows that of RSEL

← Parameter	
Driver unit	
Option board	
	Return to Edit Menu
	Prev.
DriverUnit Opt. board	-> 10:00

Unit No.	AXIS 0	NO. T	ield and select the axis.	
Unit type	AC	DC	AC	
AxisNo. (Drv. Ø)	1	2	3	
AxisNo. (Drv. 1)			4	
			UnitO Unit1 Unit7	

The select axis window should appear after you touch the Driver Unit button. Touch an axis number that you would like to edit the parameters.





Parameter Edit(Driver Unit) 632. 00 mm 1 Reserve -0.30 mm 2 Reserve 3Soft limit + side 600.30 mm 4Soft limit - side -0.30 mm 5 Homing direction (0:Opposite 1:Default) 6 Pushing stop recognition time 255 msec 7 Servo gain number 8 Velocity initial value 540 mm/sec Ţ 1 No. sel. 11: The parameter edit window should appear.

Touch the \uparrow or \downarrow button and the range of displayed parameter numbers should be switched over. Touch Indicate Number and input a parameter number, and the window of parameter to establish the setting can be displayed.

Set the soft limit positive side as an example.

← Parameter	Edit(Driver Unit)	
1 Reserve		632, 00 mm
2 Reserve		-0, 30 mm
3Soft limit +	side	600. 30 mm
4Soft limit -	side	-0. 30 mm
5Homing direc	tion (0:Opposite 1:Default)	1
6Pushing stop	recognition time	255 msec
7Servo gain n	umber	5
8Velocity ini	tial value	540 mm/sec
1	No. sel.	\downarrow
		11:28

Touch the soft limit positive side, and the numeric key touch panel should come out. Input a number on the touch panel numeric keys and then touch the ENT button.

When required to cancel the change while the numeric key touch panel is out, touch the ESC button.

← Confin	rmation		
	Restart the c	ontroller?	
C	Yes	No	
Yes	No		

Use the *c* button to move to the software reset window.

It is necessary to conduct the software reset in order to activate the change made to the parameters. Touch the Yes button.

If you touch the No button, the controller will not be rebooted and the screen will go back to the parameter edit window without any change reflected to the parameters. In order to reflect the parameters to the controller, have the controller rebooted.

Caution: With no reboot of the controller, the parameters should be overwritten, but operation will not be performed with the revised parameters. The parameters should be valid after the controller reboot or the power being turned on.





Software Reset

The screen shown on the left is displayed during the software reset.

Controller Restarting...

Menu	
Edit	File
Play	
Monitor	Environment Set
Controller	Next
Edit Play M	Aonitor Control ->

Once the software reset is complete, the display returns to the main menu screen.





14. Monitor

Monitor each status, global variable, port status, etc.

Menu	
Edit	File
Play	
Monitor	Environment Set
Controller	Next
Edit Play	Monitor Control ->

14.1 Monitor Items

- Monitor			- Monitor	
Input Port	Axis Status	Next	Error List	
Output Port	System Status		Version	
Global Flag	Menu	Λ	Control Const Tbl Management Info.	Menu
Global Variable	Next	<prev.< pre=""></prev.<>	Maintenance info.	Prev.
InPort OutPort	GFlag GVar ->	`	ErrList Version C	onstTbl MaintInfo ->

* The types and the positions of the buttons shown on the screen differ depending on the model types.

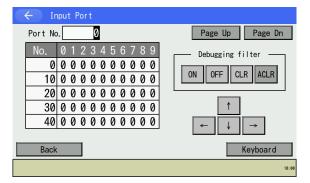
Input Port Output Port	: Displays the input port monitor screen : Displays the output port monitor screen
Input/Output port	: Displays the input/output port monitor screen (for applicable models only)
Global Flag	: Displays the global flag monitor screen
Global Variable	: Displays the select screen in the global variable monitor
Axis Status	: Displays the screen in the axis status monitor
System Status	: Displays the screen in the system status monitor
Error List	: Displays the error list screen
Version	: Displays the version display screen
	(Some models show this information in Main Menu 2 \rightarrow Information \rightarrow
	Version Information)
Control Const Tbl	: Displays the control constant table administration
Management Info.	Information screen (for applicable models only)
Maintenance info.	: Displays the maintenance information screen (for applicable models only)
Servo Additional Data	a : The servo additional data monitoring window should be displayed (only for applicable models and when the feature is activated).
Monitor Data	: The monitoring values of the monitor contents set in the monitor data output setting should be displayed (for applicable models only). Refer to [15.19.1 Monitor Data Output Setting] for how to set it up.

Touch Monitor button in the menu screen.





14.2 Input Port



1: ON, 0: OFF

Input the port number that you want to show in the port number input box by using the touch panel numeric keys, and then touch ENT. Every touch of Page Up and Page Dn buttons scrolls up/down the input port numbers by 50 items.

In the input port monitor screen, it is available to set up the input port debug filter. The input port debug filter is a feature to make any physical input port being identified as being on or being off regardless of the actual input condition of the physical input port. (Valid in Manual Mode only)

ON Button:	Set ON filter to the input port at the position of the cursor. The port being set
	gets identified as being turned on.
OFF Button:	Set OFF filter to the input port at the position of the cursor. The port being set
	gets identified as being turned off.
CLR Button:	The debug filter set to the input port at the position of the cursor should be
	cancelled.
ACLR Button:	All the debug filters set to all of the physical input ports should be cancelled.
	The position of the cursor can be anywhere when touching ACLR button.





* While the debug filter is activated, the status of the ports ("0", "1") that ON filter or OFF filter is set should be displayed in red. (Other ports should be displayed in black.)

← Input Port		Port with ON Filter Set
Port No. 0 No. 0123456789 000000000000000000000000000000000000	Page Up Page Dn Debugging filter	Port with OFF Filter Set
10 0 0 1 0 0 0 0 0 0 0 0 20 0 0 0 0 0 0 0 0 0 0		—— Cursor to Select Port Number (Port No. 37 is selected in this
Back	Keyboard	figure)

A warning message appears when you touch CLR button and ACLR button. Check what is written in the message and touch the Yes (Execute Filter Release) button or select the No (Cancel) button.

(()	onfirmation		
	t changes to a real input ebugging filter release, when there is a functi Be fully careful of a st Are you sure t	The process is performed on assigned to them. Cart of operation etc.	
	Yes	No	
Ye	s No		10:00

Touch CLR button or ACLR button and a confirmation window appears.

When required to release the filter, touch the Yes button. When not required to release the filter, touch the No button.





/ Warning:

As soon as the debug filter is released and the controller operation mode (MANUAL / AUTO) is switched over, the status (ON / OFF) of the input port that the controller recognizes changes.

(1) At Filter Release

Actual Input Status Filter Type	ON	OFF
ON		$ON \rightarrow OFF$
OFF	$OFF \to ON$	

(2) At Switchover MANUAL Mode \rightarrow AUTO Mode

Actual Input Status Filter Type	ON	OFF
ON		$ON \rightarrow OFF$
OFF	$OFF \to ON$	

(3) At Switchover (MANUAL Mode \rightarrow) AUTO Mode \rightarrow MANUAL Mode

Actual Input Status Filter Type	ON	OFF
ON		$OFF \rightarrow ON$
OFF	$ON \rightarrow OFF$	

* In the switchover of the mode (MANUAL / AUTO), the setting of the debug filter should not be cleared. By switching from AUTO to MANUAL, the debug filter with setting already established should be reactivated.

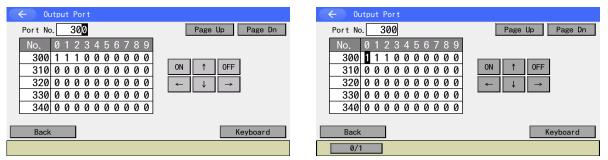
In case there is a feature assigned to the input port, the process of it should be executed. Pay attention at the start of operation and so on.

- Feature assigned to input port such as program startup and all activated axes home-return operation
- SEL program that branches off with input conditions
- SEL program that uses commands to monitor status of input port (WTON, WTOF, IN, INB, HOLD, CANC, JBWF, JBWN, JFWF, JFWN, etc.)
- Other processes executed with input port status being monitored





14.3 Output Port



As shown in the figure in the top right, it is available to switch ON/OFF the output port that the cursor is placed on when the cursor is in the output port data box. 1: ON, 0: OFF

To move the cursor from a port number box to an output port data box, touch the output port data box. To switch ON/OFF at the cursor place, touch ON or OFF button in the touch panel.

To operate the cursor, touch \leftarrow \uparrow \downarrow \rightarrow in the touch panel.

Every touch of Page Up and Page Dn buttons scrolls up/down the output port numbers by 50 items.

14.4 Input/Output Port

(for applicable models only)

No. 7000 No. 0 1 2 3 4 5 6 7 8 9 7000 1 0 <td< th=""><th>Page Up Page Dn ON ↑ OFF ← ↓ →</th><th>InOut Port Port No. 7000 No. 0 1 2 3 4 5 6 7 8 9 70000 0 1 0<!--</th--><th>Page Up Page Dn ON ↑ OFF ← ↓ →</th></th></td<>	Page Up Page Dn ON ↑ OFF ← ↓ →	InOut Port Port No. 7000 No. 0 1 2 3 4 5 6 7 8 9 70000 0 1 0 </th <th>Page Up Page Dn ON ↑ OFF ← ↓ →</th>	Page Up Page Dn ON ↑ OFF ← ↓ →
Back	Keyboard	Back 0/1	Keyboard

It is available to display and operate the input and output ports for those models applicable for input and output ports.

The way how to operate is the same as [14.3 Output Port].





14.5 Global Flag

Displays the ON/OFF status of global flag. Also, it can switch the ON/OFF status of the global flags. 1: ON, 0: OFF

🔶 Global Flag		Global Flag	
Flag No. 600	Page Up Page Dn	Flag No. 600	Page Up Page Dn
No. 0 1 2 3 4 5 6 7 8 9 600 0 <th>0N ↑ 0FF ← ↓ →</th> <th>$\begin{array}{c ccccccccccccccccccccccccccccccccccc$</th> <th>0N ↑ 0FF ← ↓ →</th>	0N ↑ 0FF ← ↓ →	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0N ↑ 0FF ← ↓ →
Back	Keyboard	Back	Keyboard
		0/1	

To move the cursor from a flag number box to a flag data box, touch a flag data box. To switch ON/OFF at the cursor place, touch \boxed{ON} or \boxed{OFF} button in the touch panel. To operate the cursor, touch $\boxed{\cap}$ $\boxed{\uparrow}$ $\boxed{\downarrow}$ $\boxed{\rightarrow}$ in the touch panel.

Every touch of Page Up and Page Dn buttons scrolls up/down the flag numbers by 50 items.





14.6 Global Variable

Displays the contents of global variable and global string. Also, a numerical value can be substituted for a global variable and letter string can be substituted for a global string.

🧲 Global Variable Monitor	
Integer Variable	
Real Variable	
String Variable	
	Back
Itg Real	String

There are three types of global variables. Touch each button to show each monitor screen.

1) Global Integer variables

🧲 Global Integer Variable	Global Integer Variable
No. 200 Page Up Page Dn	No. 200 Page Up Page Dn
No. Value	No. Value
200 1	200 1
201 0	201 0
202 0	202 0
203 0	203 0
204 0	204 0
Back Keyboard	Back Keyboard

When the global Integer variables screen is opened, the cursor should be placed in a number box. Make the number to be monitored shown by using Page Up and Page Dn buttons.

Inputting a number on the touch panel numeric keys is also available. The cursor moves to the data box.

The data with the cursor placed on can be substituted by inputting on the touch panel numeric keys and touching ENT.

To move the cursor, touch in the value input box.

2) Global Real Variables

🔶 Global Real V	/ariable		← Global R	eal Variable	
No. 300		Page Up Page Dn	No. 300		Page Up Page Dn
No.	Value		No.	Value	
300	0.000000		300	0.00000	
301	0.000000		301	0. 000000	
302	0.000000		302	0. 000000	
303	0.000000		303	0. 000000	
304	0.000000		304	0. 000000	
Back		Keyboard	Back		Keyboard

When the global real variables screen is opened, the cursor should be placed in a number box. Make the number to be monitored shown by using Page Up and Page Dn buttons.

Inputting a number on the touch panel numeric keys is also available. The cursor moves to the data box.

The data with the cursor placed on can be substituted by inputting on the touch panel numeric keys and touching ENT.

To move the cursor, touch in the value input box.

14. Monitor





3) Global String Variables

Global String	Global String
No. 300 Page Up Page Dn	No. 300 Page Up Page Dn
No. 00 01 02 03 04 05 06 07 08 09	No. 00 01 02 03 04 05 06 07 08 09
300 00 00 00 00 00 00 00 00 00 00	300 00 00 00 00 00 00 00 00 00 00
310 00 00 00 00 00 00 00 00 00 00	310 00 00 00 00 00 00 00 00 00 00
320 00 00 00 00 00 00 00 00 00 00	320 00 00 00 00 00 00 00 00 00 00
330 00 00 00 00 00 00 00 00 00 00	330 00 00 00 00 00 00 00 00 00 00
340 00 00 00 00 00 00 00 00 00 00	340 00 00 00 00 00 00 00 00 00 00
Back Keyboard	Back Keyboard

When the global string variables screen is opened, the cursor should be placed in a number box. Make the number to be monitored shown by using Page Up and Page Dn buttons.

Inputting a number on the touch panel numeric keys is also available. The cursor moves to the data box.

The data with the cursor placed on can be substituted by inputting ASCII code using the touch panel numeric keys and touching \overline{ENT} .

← G	loba	Sti	ing										
No.	3	00							Pa	ige l	Jp	Page	Dn
No.	00	01	02	03	04	05	06	07	08	09			
300	00	00	00	00	00	00	00	00	00	00			
310	00	00	00	00	00	00	00	00	00	00			
320	00	00	00	00	00	00	00	00	00	00			
330	00	00	00	00	00	00	00	00	00	00			
340	00	00	00	00	00	00	00	00	00	00			
		_											
Back	<										K	eyboa	rd

Touch in a character strings display and input box to show the cursor in it, and input of character strings is available.

Touch Keyboard button to show the touch panel keyboard to input.

In order to move the cursor among the character string displays, input columns and data columns, touch a place where you would like to show the cursor.

In the character display column, only alphabetical and numerical letters and half-size font Kana characters can be displayed. Input is available only with the alphabetical and numerical letters.





14.7 Axis Status

Displays the current position of each axis, servo status, sensor status, etc. The status items may vary depending on the model. Select the item to be displayed on the monitor using the buttons on the right side of the monitor screen.

Position	: Displays the current position
Servo	: Displays the servo status
	(Display should be either Status 1 or Status 2 depending on models)
Sensor	: Displays the status of the sensor input
Encoder	: Displays the encoder status
	(for applicable models only)
Axis Err	: Displays the errors related to axis
Crd#	: Displays the work coordinate system number and tool coordinate system number
	for the work piece currently being selected
	(Valid only for applicable models and when the feature is activated)

When an axis number assignment to activate several axes groups is performed in the axis number assignment feature (Refer to [15.17 Axis Number Assignment]), the select axes group screen should appear after you touch the Axis Status button. Touch an axes group number button to select the axes group number that is to be subject to.

\leftarrow	Select axes group	
	Axes group No.1	
	Axes group No.2	
	Cance I	
		10:00

The select axes group window should appear after you touch the <u>Axis Status</u> button. Touch an <u>Axes group No.</u> button.

← C	urrent Position		Axes	group No. 1
AxisNo.	1 - 4	Page	e Up	Page Dn
Axis	Current Pos.			Position
1	0.000			Status1
2	0.000			Status2
3	0.000			Sensor
4	0.000			AxisErr
				Back
				10:00

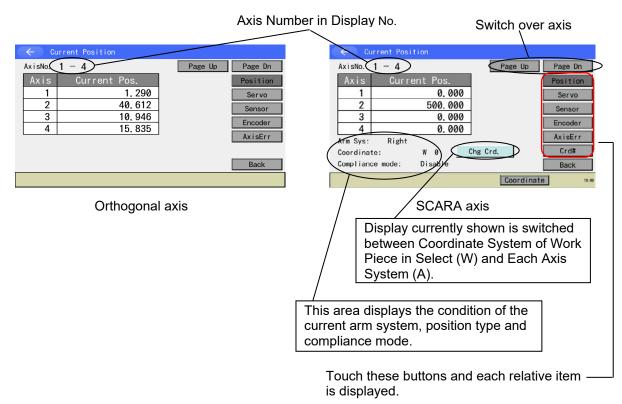
The axis status current position window opens.

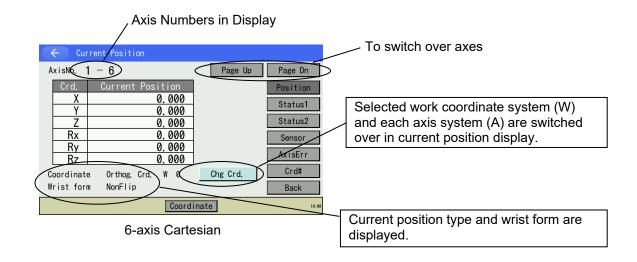
* The axes group number that was selected should be shown on the top right of the screen.





(1) Current position









(2) Servo status

AxisNo. 1 — 4	Page Up Page Dn
Servo Status	1 2 3 4 Position
Servo ON axis in use	
Homing	
Servo	Sensor
Moving Command Normal End	Encoder
Over Push Limit Error	AxisErr
(System Reservation)	
(System Reservation)	Crd#
	Back

It is available to switch the axis number with Page Up and Page Dn buttons.

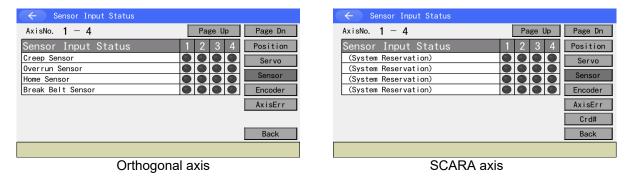
The status of ON/OFF is displayed with \bigcirc (ON) and \bigcirc (OFF).

Display should be either Status 1 or Status 2 depending on models

🔶 Axis Status 1		
AxisNo. 1 — 4	Page Up	Page Dn
Indication	1 2 3 4	Position
Servo ON axis in use		Status1
Homing	$\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$	
Servo		Status2
Moving Command Normal End		Sensor
Over Push Limit Error		AxisErr
(System Reservation)		ANISLII
(System Reservation)		
		Back
		10:0

Page Up	Page Dn
1 2 3 4	Position
	Status1
	Status2
	Sensor
	AxisErr
	AXISEII
	Back

(3) Sensor Input Status







(4) Encoder Status (for applicable models only)

A	
AxisNo. 1 – 4	Page Up Page Dn
Encoder Status	1 2 3 4 Position
Over Speed	Servo
Full Absolute Status	
Count Error	Sensor
Counter Overflow	Encoder
(System Reservation)	
Multi-rotation Error	
Battery Error	Crd#
Battery Alarm	Back

- * The items displayed on each status screen differ depending on the models.
- (5) Axis Related Error

Axis Related Error		
LieNe (1)		
	Page Up	Page Dn
Error Code	000	Position
Program No.	0	Servo
Step No.	0	
Position No.	0	Sensor
Information 1	0000000h	Encoder
Information 2	0000000h	AvieErr
Information 3	0000000h	AxisErr
Information 4	0000000h	Crd#
ſime	00000:00:00	Back

The contents of display differ depending on models.

AxisNo. 1	Page Up	Page Dn
Error No.	000	Position
Program No.	0	
Step No.	0	Status1
Position No.	0	Status2
Axis No.	0	
Driver unit No Drv.No.	0 - 0	Sensor
Detail code	000h	AxisErr
	00000000h 0000000h	
	00000000h 00000000h	Crd#
Time	0000/00/00 00:00:00	Back
		10:

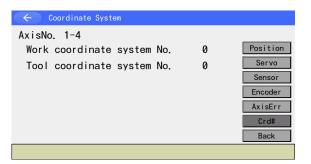






(6) Selected Coordinate System (Valid only for applicable models and when the feature is activated)

The coordinate system number currently selected in displayed.



XSEL-JX/KX, PX/QX, RX/SX, RAX/SAX MSEL-PCX/PGX, XSEL2-TX (Shown as Axis No. 1-3 in 3-aixs SCARA type)

AxisNo. 1-4 Work coordinate system No. (Tool coordinate system No. (Position
Tool coordinate system No	
	Servo Sensor
AxisNo. 5-8 Work coordinate system No. (AxisErr
Tool coordinate system No. (Crd# Back

XSEL-RXD/SXD, RAXD/SAXD

Coordinate System		
Orthog.6axes Work coordinate system No. Tool coordinate system No.	0 0	Position Status1 Status2 Sensor AxisErr Crd# Back
		10:00

6-axis Cartesian





14.8 System Status

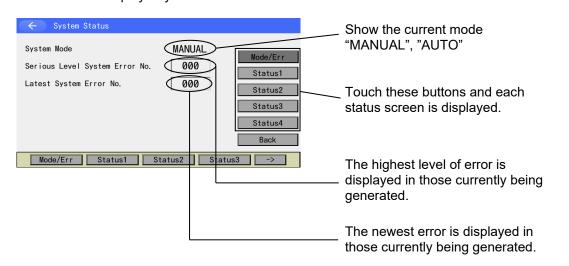
Display system status.

The status items may vary depending on the model. Select the item to be displayed on the monitor using the buttons on the right side of the monitor screen.

Mode/Error : Displays the current operation mode and error number

Status1	: Displays System Status 1
Status2	: Displays System Status 2

- Status3 : Displays System Status 3
- Status4 : Displays System Status 4



← System Status 1		
Indication	Status	
Operation Mode SW Status	MANUAL	Mode/Err
TP Enable SW Status	ON	
Safety Gate Status	CLOSE	Status1
Emergency Stop SW Status	NON	Status2
Power Abnormality Status	NORMAL	otataoz
Battery Voltage Down Warning Sts.	NON	Status3
Battery Voltage Error Status	NORMAL	Status4
(System Reservation)	0FF	Status4
		Back
Mode/Err Status1 Status2	Statu	s3 ->
System Status	s (1)	

← System Status 2		
Indication	Status	
Application Data FROM Write Sts.	NON	Mode/Err
Slave Parameter Write Status	NON	
Servo Interlock Status	NON	Status1
I/O Interlock Status	NON	Status2
Wait for Reset Status	NON	Otataoz
Program Execution Status	NON	Status3
Vel Cmd/Pos Pulse Mon(Main) Sts.	NON	Status4
Driver Monitor Status	NON	5181054
		Back
Mode/Err Status1 Status2	Status	:3 ->
System Status	(2)	

System Status S		
Indication	Status	
Power Down Status	NON	Mode/Err
System Drive Status	NON	1
System Ready Status	READY	Status1
Function select flag request sts.	0FF	Status2
Status of Positioner Mode	PRG	otatusz
Request Selective Function 2	0FF	Status3
(System Reservation)	0FF	Status4
(System Reservation)	0FF	Status4
		Back
Mode/Err Status1 Status2	Status	3 ->

System Status (3)





14.9 Error List

14.9.1 Error List

Select Error List in the monitor items.

The younger the number is, the newer the error.

	— E	Error Code
Er 'o	r list	t
		All Clear Page Up Page Dn
No. Code	е	Message Time
1 E6D	Dri	ve-source cutoff Relay Error 00000:00:01
2 E6D	Dri	ve-source cutoff Relay Error 00000:00:01
3 E6D	Dri	ve-source cutoff Relay Error 00000:00:01
4 E6D	Dri	ve-source cutoff Relay Error 00000:00:01
5 E6D	Dr i	ve-source cutoff Relay Error 00000:00:01
% Touch	No	then go to the detail
Back		
Васк		
		All Cir
	ι	Error Message

 Generated Time shows the time after the power started to be supplied to the controller or after the software reset.

No.	Code	Message	Time					
1	914	ABS Data Backup BtryVoltage Low	10/27 18:35:46					
2	914	ABS Data Backup BtryVoltage Low	10/27 18:35:46					
3	914	ABS Data Backup BtryVoltage Low	10/27 18:35:46					
4	914	ABS Data Backup BtryVoltage Low	10/27 18:35:46					
5	914	ABS Data Backup BtryVoltage Low	10/27 18:35:46					
WTouch No., then go to the detail								

For XSEL-R/S, RX/SX, RXD/SXD, RA/SA, RAX/SAX, RAXD/SAXD TTA and MSEL-PCX/PGX/PC/PG/PCF/PGF, the content of generated time is the time of generation.

Error d	lisplay	Error list Check model num. Inquiry	
Error	list		
Touch	the No.	to check the error description and perform troubl	eshooting.
No.	Error No.	Name	Time (yy/mm/dd hh:mm:ss)
1	402	Absolute encoder error detection 2	23/06/01 18:17:20
2	402	Absolute encoder error detection 2	23/06/01 18:17:20
3	101	Controller power-on log	23/06/01 18:17:20
4	402	Absolute encoder error detection 2	23/06/01 16:30:37
5	402	Absolute encoder error detection 2	23/06/01 16:30:37
6	101	Controller power-on log	23/06/01 16:30:37
7	402	Absolute encoder error detection 2	23/06/01 09:14:36
8	402	Absolute encoder error detection 2	23/06/01 09:14:36
	1	Prpg Nxpg↓	Clear

For RSEL and XSEL2-T/TX, the window shown in the figure on the left should be displayed.





(1) Error Detail Information

Error Detail Information	Error M
List No. 1 / 200 All Clear Page Up Page Dn	
Drive-source cutoff Relay Error	Time a
Error Code E6D	· · · · · · P ·
Time 00000:00:01	supplie
Program No. 0	softwa
Step No. 0	SUILWA
Axis No. 🛛 0	
Position No. 0	Informa
Information 1 8d0580h	IIIOIIIa
(Information 2) 51180014h	informa
Information 3	
Information 4 Oh Back	the cau
All Cir	(The co

lessage

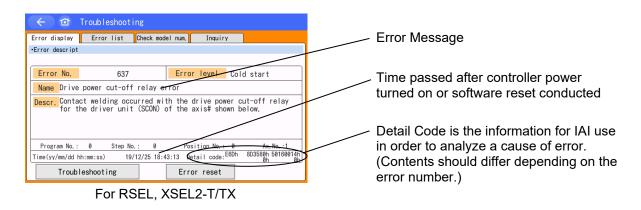
after power started to be ed to controller or after are reset

ation 1 to 4 are the nation for IAI to analyze use of an error. content differs depending on the error number.)

Touch Back button to return to the error list display screen.

	ail Information / 400 All Clear	Page Up Page Dn	
ABS	Data Backup BtryVoltage Lo	ow Error	
Error Code	914		
Time	2015/10/27 18:35:46		
Program No.	0		
Step No.	0		Time of generation
Axis No.	4		
Position No.	0		(Year/month/day hour: minute
Information 1	400000ffh		
Information 2	33818100h		second)
Information 3	210a0a00h		
Information 4	0h	Back	
	[All Cir	

For XSEL-R/S, RX/SX, RXD/SXD, RA/SA, RAX/SAX, RAXD/SAXD, TTA, MSEL-PCX/PGX/PC/PG/PCF/PGF



Touch the (1) button and the screen goes back to the main menu. Touch the *c* button and the screen goes back to the error list display screen.





(2) Delete Error List Touch All Clr button (Clear button for RSEL and XSEL2-T/TX) to show the confirmation screen to clear the error list. Touch Yes button when you want to clear the error list. If you do not want to clear, touch No button.

$\left(\leftarrow \right)$	Confirmation
	Error List will be cleared. Are you sure to continue?
	Yes No
	Yes No

900 2 000 3 000	
3 000	
4 000	
000	

Image after Completing to Clear





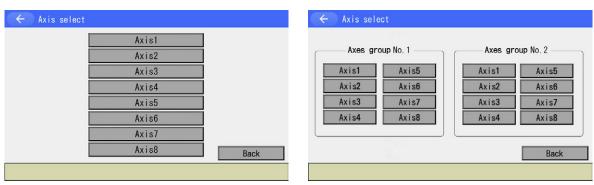
14.9.2 Driver Alarm List (for applicable models only)

(1) Display of Driver Alarm List

rror d	display	Error list Check model num. Inquiry	
Error	list		
Touch	the No.	to check the error description and perform troubl	eshooting.
No.	Error No.	Name	Time (yy/mm/dd hh:mm:ss)
1	402	Absolute encoder error detection 2	23/06/01 18:17:20
2	402	Absolute encoder error detection 2	23/06/01 18:17:20
3	101	Controller power-on log	23/06/01 18:17:20
4	402	Absolute encoder error detection 2	23/06/01 16:30:37
5	402	23/06/01 16:30:37	
6	101	Controller power-on log	23/06/01 16:30:37
7	402	Absolute encoder error detection 2	23/06/01 09:14:36
8	402	Absolute encoder error detection 2	23/06/01 09:14:36
	1	Prpg Nxpg↓	Clear

Touch Driver alarm list button in the error list screen.

Select an axis to be displayed in the list in the axis select screen.



When Axes Group Disabled

When Axes Group Enabled

The driver alarm list of the axis selected in the axis select screen should be displayed.

\leftarrow		Driver alarm list			Axi	s No. 1	\leftarrow		Driver alarm list			Axi	s No
No.	Code	Name	Address	Detai I	Tinne (yy/mm/dd hh:mn:ss)		No.	Code	Name	Address	Detai I	Time (yy/mm/dd hh:mn:ss)	
0	FFF	PowerUP No Error	****	****	//::		0	FFF	PowerUP No Error	****	****	//::	
1	0D9	Software Stroke limit exceeded	****	0002	23/06/07 18:45:57		1	0D9	Software Stroke limit exceeded	****	0002	23/06/07 18:45:57	
2	FFF	PowerUP No Error	****	****	//::		2	FFF	PowerUP No Error	****	****	//::	
3	09F	Synchronous turning error	****	0002	23/06/07 17:29:53		3	09F	Synchronous turning error	****	0002	23/06/07 17:29:53	
4	FFF	PowerUP No Error	****	****	//::		4	FFF	PowerUP No Error	****	****	//::	
5	0EE	Absolute Encoder Error Detection	****	0023	//::		5	0EE	Absolute Encoder Error Detection	1000	0023	//::	
6	0EE	Absolute Encoder Error Detection	****	0021	//::		6	0EE	Absolute Encoder Error Detection	****	0021	//::	
7	0EE	Absolute Encoder Error Detection	****	0021	//::		7	0EE	Absolute Encoder Error Detection	****	0021	//::	
		↑Pr pg Nx pg↓			Clear				↑Pr pg Nx pg↓			Clear	
						20:00							20



When Applicable for Alarm Generation Information

When the driver unit is applicable for the alarm generation information, there should be buttons appeared on the right of the alarms. Touch a button and the alarm generation information should be shown.





Current command position	0.000	mm
Current position	-0.376	mm
Operation plan speed	0.00	mm/s
Current velocity	-13.55	mm/s
Feedback current	1.5	%
Current load	0.00	Ν
Overload level	0	%
DC bus voltage	294.0	٧
Est. regenerated discharge	0	W
PCB temperature	36	°C

The information at the moment of a controller alarm being generated should be shown.

(2) Deleting Driver Alarm List

Touch the <u>Clear</u> button in the driver alarm list screen and the clear confirmation screen for the driver alarm list should appear. If you desire to clear the driver alarm list, touch the <u>Yes</u> button. If not to clear it, touch the <u>No</u> button.

Driver alarm list Are you sure		
Yes	No	1

	Code	Address	Detai I		Ti /mm/dd		
0				1	/	:	:
1				1	1	:	:
2				1	1	:	:
3				/	/		:
4				/	1	:	:
5				1	1	:	:
6				1	1	:	:
7				1	1		:

Image after Completing to Clear





14.10 Version Information

Displays version information.

- * Items available to select from and the content of display in each screen should differ depending on models.
- * Some models show this information in Main Menu 2 \rightarrow Information \rightarrow Version Information

← Version Information	
Main	I/0
Driver	
Teaching Pendant	Encoder
	Back
Main Driver	TP 10:00

(1) Main

Versio	n Informatic	n(Main)	
FROM32M			
ROMType	Version	UnitCode	Date
Main MainCore	1.18 1.01	72 62	14/07/18 17:00:00 12/07/24 17:25:00
StdSI0(1)	3. 04	CF	11/10/27 10:40:00
StdSIO(2) Board ID	3. 04 0020h	CF	11/10/27 10:40:00
FPGA	0407h		
Back			

Main	: Controller application version
MainCore	: Controller core version
StdSIO (1)	: Channel 1 version *1
StdSIO (2)	: Channel 2 version ^{*1}
Board ID	: Board ID (HEX)
FPGA	: FPGA version (HEX)
FAN_SVP	: FAN_SVP version
AXIO_SVP	: AXIO_SVP version
BRK_SVP	: BRK_SVP version
*1. 'Nouse'	is shown in channel's set as "Not t

Depending on the controller, the IO button may be changed to the Field Bus button.

*1: 'Nouse' is shown in channel's set as "Not to Use" in I/O Parameter No. 201 and 213.

← Versio	n Informatic	n(Main)		
FROM128M				
ROMType	Version	UnitCode	Date	
Main Board ID FPGA	9. 99 0000h 0005h	74	16/03/18 20:00:59	
FAN_SVP	1.00	DF	16/04/24 16:25:00	
AXIO_SVP	1.00	DB	16/04/24 16:29:00	
BRK_SVP	0.00	00	00/00/00 00:00:00	
Back				
			1	0:00

For XSEL-RA/SA/RAX/SAX/RAXD/SAXD





(2) Driver

🔶 Versi	on Informati	on(Driver)	
ROMType Axis 1 Axis 2 Axis 3 Axis 4	Version 0.25 0.25 0.25 0.25 0.25	Un i tCode 00 00 00 00	Date 00/00/00 00:00:00 00/00/00 00:00:00 00/00/00 00:00:00 00/00/00 00:00:00
Back			

(3) Teaching Pendant

🔶 Versio	n Info. (TP)
ROMType TP-Ver TPCore	Version 1.00 1.00
Back]

The version of this product is shown. TP-Ver : (Application version) TPCore: Core version

The driver CPU version is displayed.

(4) I/O

(5) Encoder

ROMType

Axis 1 Axis 2 Axis 3 Axis 4

Back

Version

0000h 0000h 0000h 0000h 0000h

← Version 3	lnfo. (I/O)		
ROMType I/O2 I/O3	Version 00000000h 00000000h		
Back			

UnitCode

Date 00/00/00 00:00:00 00/00/00 00:00:00 00/00/00 00:00:00 00/00/00 00:00:00

Version of extension I/O module is displayed

Version of encoder CPU is displayed





(6) Option Unit

← Version In	formation(Option	unit)	
Unit No. 0 1	Unit Type PlO RCON-EC	Version 0000h 0000h	
Back			

Version of option unit is displayed.





14.11 Control Constant Table Management Information

(for applicable models only)

\leftarrow	Control	Const Table M	lanagement Info.			
Page Up Page Dn						
ID	Data	Format	Date			
0	0.20	0.05	2014/01/30 18:10:00			
1	0.25	0.01	2014/01/30 18:10:00			
2						
3						
4						
5						
6						
7				Back		

It is available to check the version of the control constant table for the encoder and monitor.





14.12 Maintenance Information

(for applicable models only)

Displays the number of actuator movement and distance.

Some models show also the overload warning level, FAN total drive time, actuator replaced time, grease supplied time and drive distance after grease supply (only when features are supported). Also, some models are available to show the controller related maintenance information (only when the feature is supported).

When the controller related maintenance information is supported, touch the Maintenance Information button and the maintenance information menu should appear. Touch the Controller maintenance info. button to open the maintenance information (controller) screen and the Actuator maintenance info. button to open the maintenance information (actuator) screen.

← Maintenance information	
Controller maintenance info.	
Actuator maintenance info.	
	Back
MntI-Ctl MntI-Axis	18:80

When the controller related maintenance information is supported, touch the Maintenance Information button and the maintenance information menu should appear.

Touch the Controller maintenance info. button to open the maintenance information (controller) window and the Actuator maintenance info. button to open the maintenance information (actuator) window.

When an axis number assignment to activate several axes groups is performed in the axis number assignment feature (Refer to [15.17 Axis Number Assignment]), the select axes group screen should appear after you touch the Maintenance Information button (or the Actuator maintenance info.] button in the maintenance information menu when the maintenance information menu is in display). Touch an axes group number button to select the axes group number that is to be subject to.

$\left(\leftarrow \right)$	Select axes group	
C		
ļ	Axes group No.1	
	Axes group No.2	
	Cance I	
		10:00

you touch the Maintenance information button (or
the Actuator maintenance info. button in the
maintenance information menu when the
maintenance information menu is in display).
Touch an Axes group No. button.

The select axes group window should appear after

🔶 Maintenance Info. (Actuat	or) Axes group No. 1
Axis No. 1 Distance unit switch m ⇔ km Page Up Page Dn	
Total travel count	13
Total travel count threshold	0 Edit
Total travel distance	0 km
Total travel distance threshold	0 kmEdit
Overload warning level	100 %Edit
FAN total drive time	0:00:00 d:h:m
Actuator replacement time	2019/01/01 00:00:00
Last time lubricated	2019/01/01 00:00:00
Travel distance after Lubrication	0 km
Actuator replacem. Pairing ID clear	FAN replacem. Lubrication
	10:00

The maintenance information (actuator) window opens.

* The axes group number that was selected should be shown on the top right of the screen.





14.12.1 Maintenance Information Screen

One of the following maintenance information screen should be shown in response to the controller type.

14.12.1.1 Maintenance Information (Controller) Screen

This screen will show up when you touch the Controller maintenance info. button in the maintenance information menu.

[Displayed Items in Maintenance Information (Controller) Screen]

← Maintenance Info.	(Controller)	
FAN total drive time	0:00:00 d:h:m	1) FAN total drive time
	FAN replacem.	
	1	0:00

1) FAN total drive time

The fan total drive time (day : hour : minute) of the controller should be displayed.

Touch the FAN replacem button and the fan total drive time can be initialized (zero-cleared). Refer to [14.12.4 Fan Replacement] for detail.

Touch the \leftarrow button on the top left and the screen goes back to the previous.





14.12.1.2 Maintenance Information (Actuator) Screen

This screen will show up when you touch the <u>Maintenance Information</u> button (or the <u>Actuator</u> <u>maintenance info.</u> button in the maintenance information menu when the maintenance information menu is in display) when connection is established to RSEL or XSEL2-T/TX.

[Displayed Items in Maintenance Information (Actuator) Screen]

1) Axis No.	
🗧 🖌 Maintenance Info. (Actuator)	2) Total travel count
Axis No. 1 Distance unit switch ■ ↔ km Page Up Page Dn	3) Total travel count threshold
Total travel count threshold 0 Edit	4) Total travel distance
Total travel distance 0 km Total travel distance threshold 0 km	5) Total travel distance threshold
Overload warning level 100 % Edit FAN total drive time 0:00:00 d:h:m 0:00:00 d:h:m 0:00:00 d:h:m	6) Over load warning level
Actuator replacement time 2019/01/01 00:00 Last time lubricated 2019/01/01 00:00:00	7) FAN total drive time
Travel distance after Lubrication	8) Actuator replacement time
Actuator replacem. Pairing ID clear FAN replacem. Lubrication	9) Last time lubricated
	10) Travel distance after Lubrication

- 1) Axis No. It shows the axis number.
- 2) Total travel count Displays the total No. of actuator movement times.
- Total travel count threshold An alarm will warn you when the total number of drive has exceeded this setting. Touch the Edit button on the right side of the display box to change the setting value.
- 4) Total travel distance The total of the travel distance of the actuator is shown.
- 5) Total travel distance threshold An alarm will warn you when the total travel distance has exceeded this setting. Touch the Edit button on the right side of the display box to change the setting value.
- 6) Over load warning level This shows the threshold for the output of the overload warning. Touch the Edit button on the right side of the display box to change the threshold setting.
- 7) FAN total drive time ^{*1} This shows the total drive time (day : hour : minute) of the fan on the driver unit that the axis in display is connected to.
- 8) Actuator replacement time This shows the date that the actuator was replaced.
- Last time lubricated ^{*2} This shows the date of grease supply.
- Travel distance after Lubrication ^{*2}
 This shows the travel distance after grease supply.





Every time Page Up or Page Dn button is touched, the axis number is switched in the screen.

Touch the Actuator replacem button and the total number of drives and the total drive distance can be initialized (zero-cleared) and the actuator replaced time can be updated. Refer to [14.12.2 Actuator Replacement] for detail.

Touch the Pairing ID clear button and the ID that was paired can be cleared. For details, refer to [14.12.3 Pairing ID Clear].

Touch the FAN replacem button^{*1} and the fan total drive time can be initialized (zero-cleared). Refer to [14.12.4 Fan Replacement] for detail.

Touch the Lubrication button^{*2} and the grease supplied time can be updated and the total drive distance after grease supply can be initialized (zero-cleared). Refer to [14.12.5 Grease Supply] for detail.

Touch the distance display unit switchover button ($\underline{m \Leftrightarrow km}$ button) and the unit for display of total drive distance, total drive distance setting and drive distance after grease supply can be switched over.

Touch the \leftarrow button on the top left and the screen goes back to the previous.

The items and buttons to be displayed should differ depending on the controller type and supported features.

- *1 It should be displayed only when the driver unit that is connected to the axis in display is equipped with a fan.
- *2 It should be displayed only when the controller and actuators are applicable for the information management feature.





14.12.1.3 Maintenance Information Screen

This screen should appear when you touch the Maintenance Information button in the monitor menu when connection is established to models other than RSEL and XSEL2-T/TX.

[Items Shown in Maintenance Information Screen]

Axis No. 1 Page Up Page Dn	——— 1) Axis No.
Total Moved Count 11	2) Total moved count
Total Run Dist.[km]	3) Total run distance [km]
Total Run Dist. Unit ()[km] ()[m] Replace Act Clear PairID Back Threshold	* Clear PairID button is displayed only when the battery-less absolute encoder is connected and the pairing I.D. clear feature is activated.
ReplaceAct Cir PairID Unit Threshold	

- 1) Axis No. It shows the axis number.
- 2) Total moved count Displays the total No. of actuator movement times.
- 3) Total run distance [km]

Displays the total distance of the actuator movement. Display in [km] or [m] is available. (Numbers are shown in an integer with the nearest decimal rounded down.)

By touching each button in the total operation distance display unit box, the unit of the total operation distance display can be switched over.

Every time Page Up or Page Dn button is touched, the axis number is switched in the screen.

By touching Replace Act button, the total operation times and total operation distance can be initialized (cleared).

Refer to [14.12.2 Actuator Replacement] for detail.

By touching Clear PairID button, the paired I.D. can be cleared. For details, refer to [14.12.3 Pairing ID Clear].

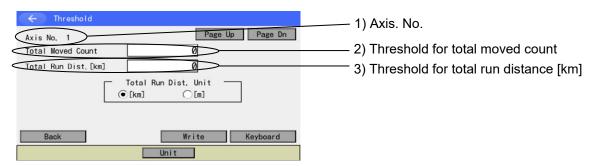
Touch Threshold button, and the display changes to the Threshold screen.

Touch Back button to return to Monitor Menu screen.





[Output Timing (Threshold) Setting of Signals]



1) Axis No.

It shows the axis number.

- 2) Threshold for total moved count
 - It shows the threshold for the total moved count.
- Threshold for total run distance [km] It shows the threshold for the threshold for total run distance. Display in [km] or [m] is available. (Numbers are shown in an integer with the nearest decimal rounded down.)

By touching each button in the threshold for total run distance display unit box, the unit of the threshold for threshold for total run distance can be switched over.

The threshold for the total moved count and the threshold for threshold for total run distance are available for edit.

- (1) Touch the item you want to edit and the cursor is shown on the item.
- (2) Touch Keyboard button to show the touch panel keyboard, input a value and then touch ENT.
- (3) After inputting data, touch Write button to transfer the data to the controller.

In case writing was conducted, when you return to the menu screen with Back button, confirmation screen for flash ROM writing and software reset appears. In order to apply the written data, import the data on the flash ROM and reset the software.

(Note) In the case that the Axis No. or Maintenance Information screen is changed without importing the data, the input data is erased.

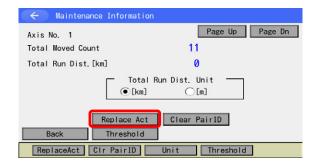
Every time Page Up or Page Dn button is touched, the axis number is switched in the screen.

Touch Back button to return to Maintenance Information screen.



14.12.2 Actuator Replacement

When the actuator is replaced, the total operation times and total operation distance can be initialized (cleared). In [14.12.1.2 Maintenance Information (Actuator) Screen], actuator replaced time also gets updated.



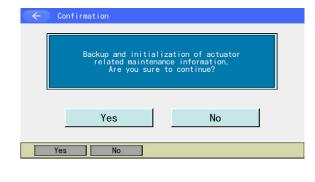
Touch Replace Act button.

* The figure on the left shows a case of [14.12.1.3 Maintenance Information Screen] as an example

System Password The Please input a password. Back Keyboard

The password input window appears. Input 5119 on the keyboard.

* Once the password is input, it is effective until getting out of the maintenance information window.



Touch Yes button when initializing of the total operation times and total operation distance is required.

Touch <u>No</u> button when initializing of the total operation times and total operation distance is not required.

← Confirmation		
	Complete!	
	ОК	

Once the process is completed, the screen changes to the figure shown in the left. Touch OK button.

When the battery-less absolute encoder is connected and the pairing I.D. clear feature is activated, the pairing I.D. clear execution confirmation window appears continually. Refer to [14.12.3 Pairing ID Clear] to conduct the pairing I.D. clear if necessary.

In any cases other than above, back to maintenance information screen (or to the maintenance information (actuator) screen).





14.12.3 Pairing ID Clear

The controller possesses a feature to output an absolute error when it checks the encoder I.D. and detects it is wrong. In case replacement is conducted with an actuator which the absolute reset has been executed, it is necessary to clear the existing I.D. (pairing I.D.).

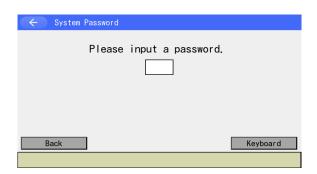
This feature is available only when the battery-less absolute encoder is connected and the pairing I.D. clear feature is activated.

* This feature is the same as the pairing ID clear feature in the controller menu.

🤆 Maintenance Information	
Axis No. 1	Page Up Page Dn
Total Moved Count	11
Total Run Dist.[km]	0
⊤ Total R ●[km]	un Dist. Unit — [m]
Replace Act	Clear PairID
Back Threshold	
ReplaceAct Cir PairID	Unit Threshold

Touch Clear PairID button.

* The figure on the left shows a case of [14.12.1.3 Maintenance Information Window] as an example



The password input window appears. Input 5119 on the keyboard.

* Once the password is input, it is effective until getting out of the maintenance information screen.



Touch Yes button when the paired I.D. is to be cleared.

Touch No button when the paired I.D. is not to be cleared.



Once the process is completed, the screen changes to the figure shown in the left. Touch OK button to go back to maintenance information screen.





14.12.4 FAN Replacement

After the FAN gets replaced, the FAN total drive time can be initialized.

This feature is valid only when the controller is equipped with a FAN.

🔶 Maintenance Info. (Actuat	or)	
Axis No. 1 Distance unit switch m ⇔ km Page Up Page Dn		
Total travel count	13	
Total travel count threshold	0 Edit	
Total travel distance	0 km	
Total travel distance threshold	0 kmEdit	
Overload warning level	100 % Edit	
FAN total drive time	0:00:00 d:h:m	
Actuator replacement time	2019/01/01 00:00:00	
Last time lubricated	2019/01/01 00:00:00	
Travel distance after Lubrication	0 km	
Actuator replacem. Pairing ID clear	FAN replacem. Lubrication	
	10:00	

Touch the FAN replacem. button.

* The figure on the left shows a case of [14.12.1.2 Maintenance Information (Actuator) Screen] as an example

🔶 System I	Password	
	Please input a passwor	d.
Back		Keyboard

The password input screen appears. Input 5119 on the keyboard.

* Once the password is input, it is effective until getting out of the maintenance information screen.



Touch the Yes button when required to clear the fan total drive time. Touch the No button when not required to clear the fan total drive time.



Once the process is completed, the screen changes to the figure shown in the left. Touch OK button to go back to maintenance information screen.





14.12.5 Grease Supply

After grease supply, update can be held on the maintenance information regarding grease supply (update of grease supplied time and initializing of drive distance after grease supply).

This feature is valid only when the controller and actuators are applicable for the information management feature.

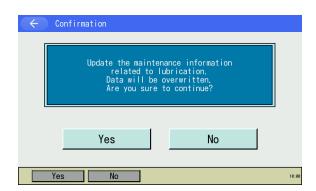
← Maintenance Info. (Actuat	or)	
Axis No. 1 Distance unit switch _ m ⇔ km _ Page Up _ Page Dn		
Total travel count	13	
Total travel count threshold	0 Edit	
Total travel distance	0 km	
Total travel distance threshold	0 kmEdit	
Overload warning level	100 % Edit	
FAN total drive time	0:00:00 d:h:m	
Actuator replacement time	2019/01/01 00:00:00	
Last time lubricated	2019/01/01 00:00:00	
Travel distance after Lubrication	0 km	
Actuator replacem. Pairing ID clear	FAN replacem. Lubrication	
	10:0	

Touch the Lubrication button.

← System Password		
Pleas	e input a password.	
Back		Keyboard

The password input window appears. Input 5119 on the keyboard.

* Once the password is input, it is effective until getting out of the maintenance information window.



Touch the Yes button when required to update the maintenance information regarding grease supply. Touch the No button when not required to update the maintenance information regarding grease supply.



Once the process is completed, the screen changes to the figure shown in the left. Touch OK button to go back to maintenance information screen.





14.13 Servo Additional Data Monitor

(for applicable models only)

The servo additional data should be monitored in the display. The contents available to monitor differ depending on the model.

When an axis number assignment to activate several axes groups is performed in the axis number assignment feature (Refer to [15.17 Axis Number Assignment]), the select axes group screen should appear after you touch the Servo Additional Data button. Touch an axes group number button to select the axes group number that is to be subject to.

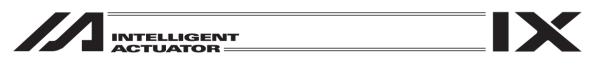
\leftarrow	Select axes group	
	Axes group No.1	
	Axes group No.2	
	Cance I	
		10:00

The select axes group window should appear after you touch the Servo Additional Data button. Touch an Axes group No. button.

← Ser	rvo Addit	tional Da	ata Moni	tor	A	es group	o No. T	1
MonitorT	ype1 Mo	otor lo	ad fact	or		▼		
							Back	
Axis1		Axis3						
1 0.0	0.0	0.0	0.0	0.0	0.0			
	_							
Chg. Mo	Chg. Mon1 10:00							

The servo additional data monitor window opens.

* The axes group number that was selected should be shown on the top right of the screen.



[Displayed Items in Servo Additional Data Monitor Screen]

	🗧 🗧 Servo Additional Data Monitor		
	MonitorType1 Motor load factor	ŀ	 1) Monitor Type Box
<	Axis1 Axis2 Axis3 Axis4 Axis5 Axis6 Axis7 Axis8 1 0.0	>_	 2) Data Display Area
	Chg. Non1	8	

1) Monitor Type Box

Show and select the monitoring type to be displayed in the data display area.

2) Data Display Area

The servo additional data selected in the monitor type box should be displayed for monitoring.

Touch **▼** button in the monitor type box, and the items available for monitoring will get listed down. Touch an item that you would like to monitor so it gets selected.

Four types of data can be monitored at the same time at the maximum. (Display will be adjusted automatically for the number of items to monitor.)

Monitoring is available only on valid axes. <u>Servo Additional Data</u> button in the monitoring menu will be hidden when there is no valid axis existed.





14.14 Monitor Data Output Display

(for applicable models only)

The monitor value in the monitor item set in the monitor data output setting screen should be displayed.

(Refer to [15.19.1 Monitor Data Output Setting] for how to set it up.)

← Monitor Data Select	
Power Supply Unit Status	
Axis Data	
	Back
	10:00

When both of the power supply unit status and axis status are set was the monitor items, touch the monitor data button and the select monitor data window should open.

Touch the power supply unit status button to open the monitor data (power supply unit status) window or touch the axis status button to open the monitor data (axis status).

* When there is only one of the power supply unit status and the axis status is set as the monitor item, the screen will directly go to the applicable window.





14.14.1 Monitor Data (Power Supply Unit Status) Screen

This shows the monitor values in the power supply unit status. This window is available to go only when the power supply unit status is set as a monitor item.

[Displayed Items in Monitor Data (Power Supply Unit Status) screen]

\leftarrow	Monitor Data	(Power Supply Uni	it Status)		- 1) Monitor Item Select Box
	Monitor Data: (Output voltage(Pw.	sply_upit)[V](5W)	~	
			Byte swap:Disable		- 2) Byte Swap Setting Display Box
	Power Supply Fi Bewer Supply 0	irst Output Port No. 348	Output		
	Power Supply 1	364	0 V		
	Power Supply 2	380			- 3) Monitor Data Display Box
	Power Supply 3	396	0 V		
	Power Supply 4	412	<u>0 V</u>		
	Back	(Bin Dec Hex	-	4) Display Format Select Buttons
			10	: 00	

1) Monitor Item Select Box

A monitor item to show in Monitor Data Display Box should be shown and selected. Touch the ▼ button and the power supply unit status monitor items set in the monitor data output setting screen are shown in a list. Touch the item that you require to monitor to select it.

2) Byte Swap Setting Display Box

The byte swap status of the signal output from the output ports should be shown. The value set in the monitor data output setting screen should be shown.

3) Monitor Data Display Box

The motor value of an item selected in Monitor Item Select Box should be shown.

Power Supply	: Power supply unit number is shown
Top Output Port Number	: The top port number of the output ports assigned as the
	destination of the monitor data output for each power supply unit is
	shown.
Output	: Monitor values of each power supply unit are shown. There are displays in binary/decimal/hexadecimal numbers in response to
	the condition of the display format select buttons.

In Monitor Data Display Box, display of five units is available no matter the number of units connected to the power supply unit (setting value in Other Parameter No. 61).

4) Display Format Select Buttons

The format to display output in Monitor Data Display Box should be shown and selected. The display should be switched to the display format of a button that you touched.

Binary System	: The outputs (monitor values) are shown in decimal numbers.
	It shows the display in four digits * 4 followed by 'b' as a representative of binary system.
Decimal System	: The outputs (monitor values) are shown in decimal numbers.
	It shows the display of monitor values in real numbers or integral numbers followed by a unit.
Hexadecimal System	: The outputs (monitor values) are shown in hexadecimal numbers.
	It shows the display in four digits followed by 'h' as a
	representative of hexadecimal system.

Touch the Back button and the screen goes back to the previous.





14.14.2 Monitor Data (Axis Status) Window

This shows the monitor values in the axis status. This window is available to go only when the axis status is set as a monitor item.

[Displayed Items in Monitor Data (Axis Status) Window]

Hon i	itor Data(Axis Data)				1) Swap Setting Display Box
		(Word :	swap in Do	Byte swap: Disable uble word data: Disable	
No. Axis No.	Monitor item	1stOutput		Output	
1 1	Current position[0.001mm](2W)	316	Dec	0. 000 mm	
2	-				
3 2	Current position[0.001mm](2W)	428	Dec	0. 000 mm	
4 3	Current position[0.001mm](2W)	460	Hex	00000000 h	2) Manitar Data Dianlay Pay
5					—— 2) Monitor Data Display Box
6					
7					
8	\sim				
9			-		
Back					
				10:00	

1) Swap Setting Display Box

The swap status of the signal output from the output ports (byte swap and double-word data word swap) should be shown. The value set in the monitor data output setting window should be shown.

2) Monitor Data Display Box

The monitor values in the axis status monitor item should be shown.

No.	: Monitor numbers are shown (1 ~ 9).
Axis Number	: Axis numbers are shown.
	When an axis number assignment to activate several axes groups is performed in the axis number assignment feature (Refer to
	[15.17 Axis Number Assignment]), it should be displayed in axes group number - axis number.
Monitor Item	: The monitor item set in the monitor data output setting window is displayed.
Top Output Port Number	: The top port number of the output ports assigned as the destination of the monitor data output is shown.
Display Format	: The output display format is shown and can be selected. Touch a button and the display switches between decimal/hexadecimal numbers.
Output	: The axis status monitor values are shown. There are displays in decimal/hexadecimal numbers in response to the condition of the display format select buttons.

When the display format is in the decimal system, it shows the display in real numbers or integral numbers followed by a unit. When the display format is in the hexadecimal system, it shows the display in hexadecimal numbers followed by 'h' as a representative of hexadecimal system.

The items with grey in the background are those for the power supply unit status. They should be displayed in the monitor data (power supply unit status) window.

Touch the Back button and the screen goes back to the previous.





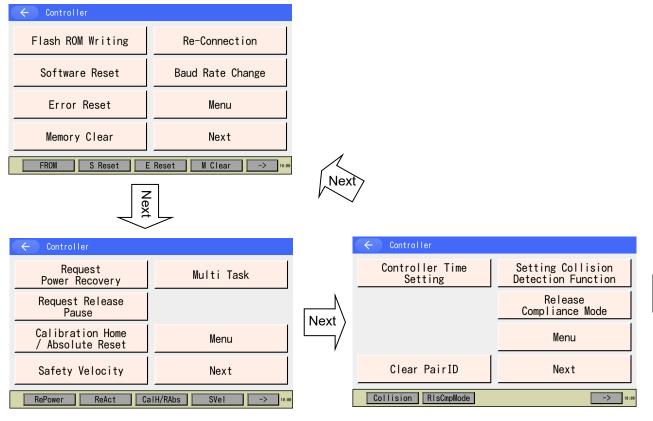
Touch Controller button in the menu screen.

15. Controller

How to execute operation related to the controller such as a software reset and an error reset.

🤇 🤆 🖉 Menu		
Edit	File	
Play		
Monitor	Environment Set	
Controller	Next	
Edit Play Monitor Control ->		

15.1 Controller Items



* The types and the positions of the buttons shown on the screen differ depending on the model types.

15. Controller





Flash ROM Writing Software Reset Error Reset Memory Clear	:	Conducts flash ROM writing Conducts software reset on controller Resets the controller error Clears each memory on controller
Re-Connection Baud Rare Change	-	Conducts reconnection of the controller Changes the baud rate for communication with the controller
Request Power Recovery Request Release Pause Absolute Reset	:	Demands the drive source recovery to the controller Demands the cancellation of pause to the controller Resets the absolute data. (In some models, it may be displayed as Home Position Adjustment / Absolute Reset. In such a case, adjust the home position and reset the absolute data.)
Safety Velocity	:	Switches valid/invalid of safety speed limit at Manual Mode
Multi Task	:	Allows simultaneous operation of multiple programs at Manual Mode. (for applicable models only)
Time Setting	:	Time setting should be established in the controller. (for applicable models only)
Clear PairID	:	The battery-less absolute encoder identification (Pairing ID) should be cleared (only for applicable models and when the feature is activated).
·	e :	Collision detection function should be switched valid/invalid (only for applicable models and the feature is enabled). Compliance mode can should be release (only for applicable models and the feature is enabled).
Axis Number Assignment	:	Axis number assignment that is necessary after change of unit construction should be conducted (for applicable models only).
Input/Output Port Assignment	:	Assignment of the input and output ports should be conducted on the fieldbus and option unit (for applicable models only).
Input/Output Port Data Assignment	:	Assignment of the monitor data output, output feature select and input feature select and also port assignment should be conducted (for applicable models only).
Option Unit	:	The setting for the option unit should be performed (only for applicable models and the feature is enabled).
EC Operation Mode	:	ELECYLINDER operation mode should be switched over (only for applicable models and the feature is enabled).
Brake Control	:	Switch over brake compulsory release and lock (for applicable models only)



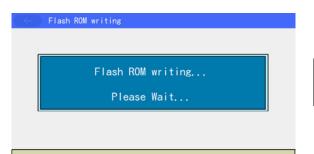


15.2 Flash ROM Writing

After clearing the data from Flash ROM, write data which is saved in controller memory to Flash ROM.

← Co	nfirmation		
	Flash	Write ?	
	Yes	No	þ
Yes	s No		

To write the data to the flash ROM, touch Yes button. If writing is not necessary, touch No button.



While in writing process to flash ROM, the screen shown in the left will be displayed.

Never turn off the power to the Controller at this time.

← Confi	nation
	Complete!
	ОК

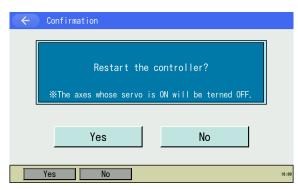
Flash ROM writing is completed. Touch OK button to return to the Controller menu screen.





15.3 Software Reset

Executes software reset of the controller. The data which is not written to Flash ROM will be cleared.



Touch Yes button when you want to have a software reset.

When the software reset is not necessary, touch No button . The display returns to Controller Menu.



The screen shown on the left is displayed during the software reset.

🤇 🤆 🔪 Menu	
Edit	File
Play	
Monitor	Environment Set
Controller	Next
Edit Play M	Nonitor Control ->

Once the software reset is complete, the display returns to the main menu screen.





15.4 Error Reset

Executes error reset of the controller. Reset the message-level and action-release-level errors. If the cause of an error is already removed, the background color is changed from orange to white which shows in normal condition.

Controller			
Flash ROM Writing	Re-Connection		
Software Reset	Baud Rate Change		
Error Reset	Menu		
Memory Clear Next			
FROM S Reset E Reset M Clear ->			

The background color is orange when an error is being generated. Touch Error Reset button.

Confirmation

 Error reset will be executed.

 Are you sure to continue?

 Yes
 No

Touch Yes button when you want to have an error reset.

When the error reset is not necessary, touch No button.

← Controller			
Flash ROM Writing	Re-Connection		
Software Reset	Baud Rate Change		
Error Reset	Menu		
Memory Clear Next			
FROM S Reset E Reset M Clear ->			

As shown in the figure on the left, if the cause of an error is already removed, the background color is changed from orange to white which shows in normal condition.





15.5 Memory Clear

15.5.1 Memory Initialization Items

Kemory Clear		
Global Variable	Parameter of Shipping	
User Data Hold Memory		
Position Data		
Coordinate system definition data	Back	
GVar UBM Position Coordinate ->		

Example for Memory Initializing Menu Screen (XSEL-RXD/SXD)

← Memory Clear			← Memory Clear	
Global Variable	Parameter of Shipping			Parameter Data (restore prev data)
			Program Data (restore prev data)	
Position Data	Controller Menu		Symbol Data (restore prev data)	Controller Menu
	Next		Position Data (restore prev data)	Prev.
GVar	osition -> 10:00		Prg rstr S	ym rstr 🛛 Pos rstr 🛛 ->
Example for Mamory Ini	tializing Manu Saraan (T	ΤΛ\	(2nd nage in th	a come costion)

Example for Memory Initializing Menu Screen (TTA)

(2nd page in the same section)

* The types of buttons to be displayed will differ depending on models.

Global Variable User Data Hold Memory	 Conducts Zero-Clear to global variables Initializes the user data hold memory (for XSEL-P/Q, PX/QX, R/S, RX/SX, RXD/SXD, RA/SA, RAX/SAX and RAXD/SAXD equipped with gateway function)
Position Data	: Clears all the position data (XSEL- R/S, RX/SX, RXD/SXD, RA/SA, RAX/SAX, RAXD/SAXD TTA and MSEL- PCX/PGX/PC/PG/PCF/PGF, RSEL and XSEL2-T/TX only)
Coordinate system definition data	: Clears all the coordinate system definition data (XSEL-RX/SX, RXD/SXD RA/SA, RAX/SAX, RAXD/SAXD, MSEL-PCX/PGX, RSEL and XSEL2-TX only)
Parameter of Shipping	 Set the parameters back to the condition of delivery from the production plant. (For SSEL, ASEL, PSEL, XSEL-R/S, RX/SX, RXD/SXD, RA/SA, RAX/SAX and RAXD/SAXD, TTA AC Servo Type / High-Resolution Type, MSEL High-Resolution Type, RSEL and XSEL2-T/TX)





Program Data (restore prev data)	 Recover the flash ROM writing data for the program data to the writing data of one generation before. (TTA and MSEL- PCX/PGX/PC/PG/PCF/PGF only)
Symbol Data (restore prev data)	: Recover the flash ROM writing data for the symbol data to the writing data of one generation before. (TTA and MSEL- PCX/PGX/PC/PG/PCF/PGF only)
Position Data (restore prev data)	: Recover the flash ROM writing data for the position data to the writing data of one generation before. (TTA and MSEL- PCX/PGX/PC/PG/PCF/PGF only) (Note) No. 1 to 10000 cannot be recovered.
Parameter Data (restore prev data)	 Recover the flash ROM writing data for the parameter data to the writing data of one generation before. (TTA and MSEL- PCX/PGX/PC/PG/PCF/PGF only)

15.5.2 Global Variable

Conducts Zero-Clear (initialization) to global variables

← Conf	irmation		
	Global Variables Are you sure		
	Yes	No	
Yes	No		

Touch Yes button when you want to initialize the global variables. When the initialization of the global variables is not

When the initialization of the global variables is not necessary, touch \boxed{No} button.

← Confirma	tion	
	Complete!	
	ОК	

If the initialization of the global variables is finished, the display changes to the screen shown on the left.

Touch OK button to return to Memory Initialization Menu screen.





15.5.3 User Data Hold Memory

Refer to [17.3 User Data Hold Memory Initialization].

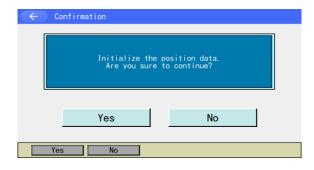
15.5.4 Position Data

(XSEL-R/S/RX/SX/RXD/SXD/RA/SA/RAX/SAX/RAXD/SAXD, TTA, MSEL-PC/PG/PCF/PGF/PCX/PGX, RSEL and XSEL2-T/TX Only)

Position data is cleared.

Initialize the position data by using this function in case 6BD "Position Data Construction Change Error" or 6BF "Position Data Sum Check Error" (20B "Position Error" for RSEL and XSEL2-T/TX) is occurred.

Note) 22B "Position Data Comment Loss Error" (409 "Position Data Comment Error" for RSEL and XSEL2-T/TX) will be generated if a software reset is conducted or the power is turned off without writing the position data to the flash ROM after this function is used.



Touch Yes button when you want to initialize the position data.

When the initialization of the position data is not necessary, touch No button.



If the initialization of the position data is finished, the display changes to the screen shown on the left.

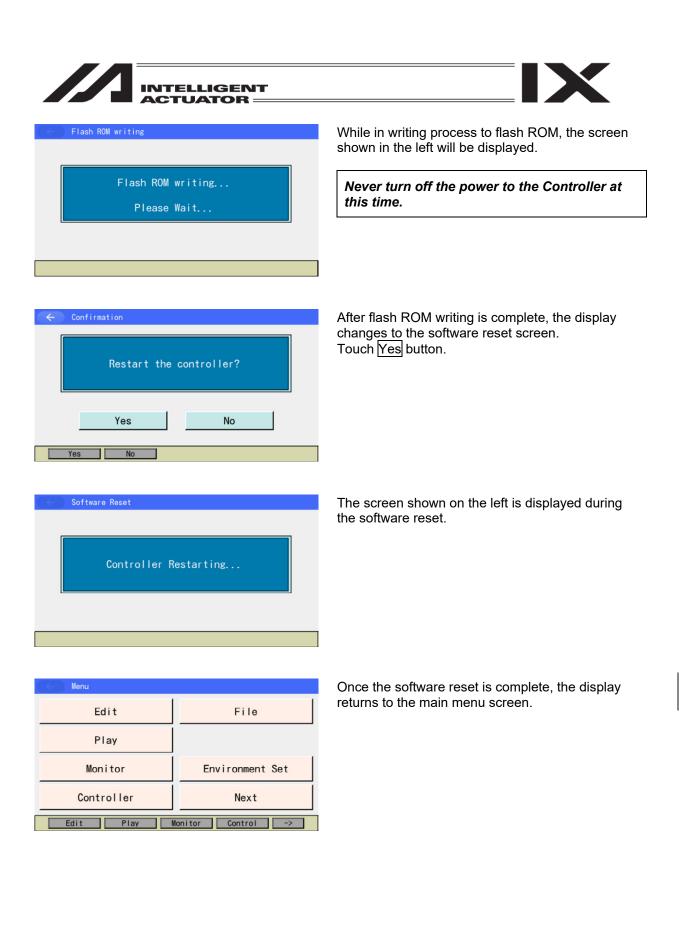
Touch OK button to return to Memory Initialization Menu screen.

Touch Back button to return to Flash ROM writing screen.

- Confirmation
Flash Write ?
Yes No
Yes No

To write the data to the flash ROM, touch Yes button.

If writing is not necessary, touch No button.







When an axis number assignment to activate several axes groups is performed in the axis number assignment feature (Refer to [15.17 Axis Number Assignment]), the select axes group screen should appear after you touch the Position button. Touch (an) axes group number button or all axes groups at once button to select the axes group number(s) that is/are to be subject to.

$\left(\leftarrow \right)$	Initialize position data	
	Axes group No. 1	
	Axes group no. 1	
	Axes group No.2	
	All axes groups	
		Cancel
		10:

Touch a button to select (an) axes group number(s) that you require to have the position data initialized.

If you touch the All axes groups button, all the axes groups fall into that to be subject to.

$\left(\leftarrow \right)$	Confirmation		
	Initialize the position dat axes group No.1. Are you sure to continue?	a of the	
	Yes	No	
	Yes No		10:00

Touch the Yes button when required to initialize the position data. Touch the No button when not required to initialize the position data.

* The figure on the left shows a case of selecting Axis Group No. 1 as an example





15.5.5 Coordinate System Data (XSEL-RX/SX/RXD/SXD/RAX/SAX/RAXD/SAXD, MSEL-PCX/PGX, RSEL and XSEL2-TX Only)

All the coordinate system definition data is cleared.

Initialize the coordinate system definition data by using this function in case D40 "Coordinate System Data Control Area Sum Check Error", D41 "Coordinate System Control Area ID Error" or D42 "Coordinate System Data Sum Check Error" (623 "Coordinate System Error" for RSEL and XSEL2-TX) is occurred.

Conf	irmation			
Coordinate system definition data will be initialized, Are you sure to continue?				
	Yes	No		
Yes	No			

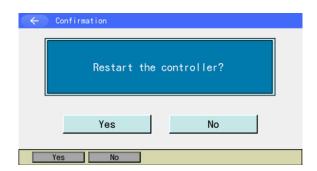
Touch Yes button when you want to initialize the coordinate system data. When the initialization of the coordinate system data is not necessary, touch No button.



If the initialization of the coordinate system data is finished, the display changes to the screen shown on the <u>left.</u>

Touch OK button to return to Memory Initialization Menu screen.

Touch Back button to return to the controller reset screen.



Touch Yes button.



The screen shown on the left is displayed during the software reset.





(Menu	
Edit	File
Play	
Monitor	Environment Set
Controller	Next
Edit Play	Monitor Control ->

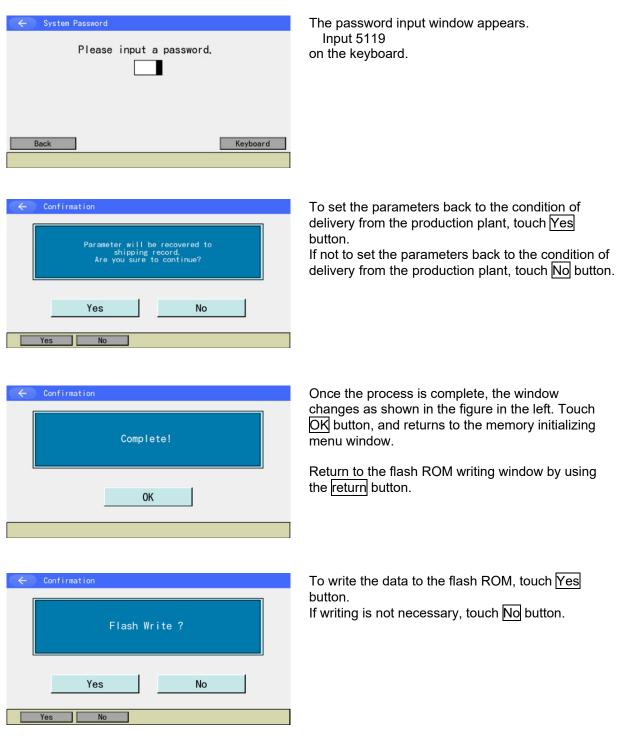
Once the software reset is complete, the display returns to the main menu screen.

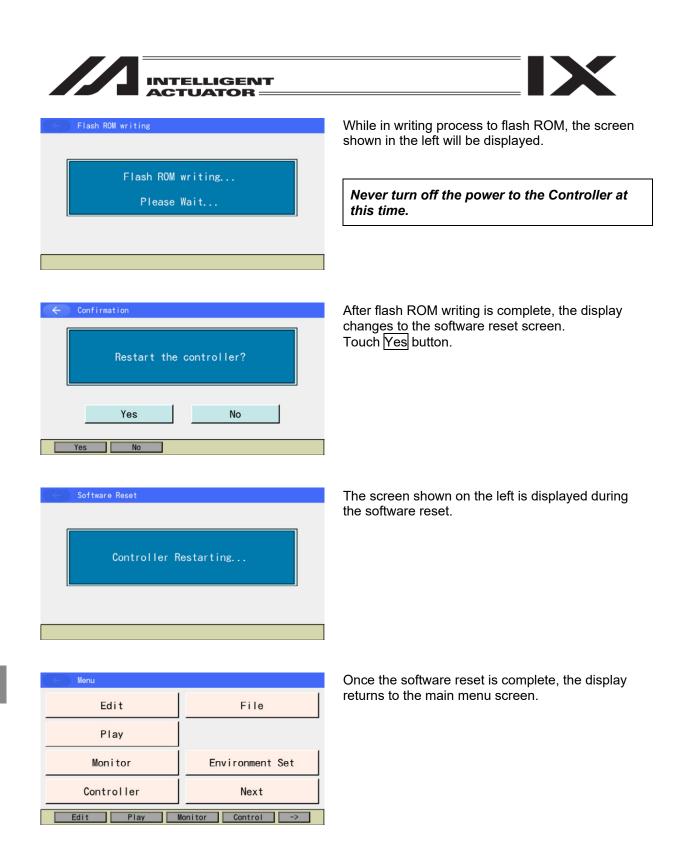




15.5.6 The value of this parameter at the factory (SSEL, ASEL, PSEL, XSEL-R/S/RX/SX/RXD/SXD/RA/SA/RAX/SAX/ RAXD/SAXD, TTA AC Servo Type / High-Resolution Type, MSEL High-Resolution Type, RSEL and XSEL2-T/TX)

Set the parameters back to the condition of delivery from the production plant.









15.5.7 Program Data (Previous Value Restore)

The flash ROM writing data in the program data is recovered to the writing data of one generation before.

Cont	firmation SEL Programs will b previous c All the present pro Are you sure	ondition. gram data is lost.	
	Yes	No	
Yes	No		

Touch Yes button when you want to set the program data one generation before. When it is not necessary to set the program data one generation before, touch No button.

Confirmation		
	Complete!	
	ОК	

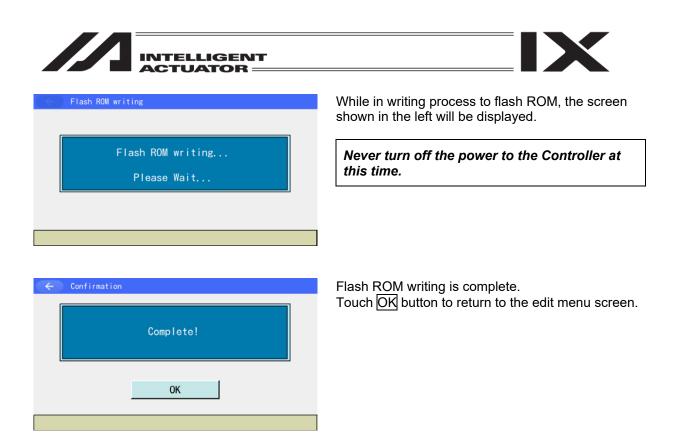
If the recovery of the program data is finished, the display changes to the screen shown on the left. Touch OK button to return to Memory Initialization Menu screen.

Touch Back button to return to Flash ROM writing screen.

Cent	irmation Flas	h Write ?	,	
Yes	Yes		No	

To write the data to the flash ROM, touch \underline{Yes} button. If writing is not necessary, touch No button.

15. Controller







15.5.8 Symbol Data (Previous Value Restore)

The flash ROM writing data in the symbol data is recovered to the writing data of one generation before.

← Conf	irmation		
	Symbol data will be previous con All the present symbu Are you sure to	dition. ol data is lost.	
	Yes	No	
Yes	No		

Touch Yes button when you want to set the symbol data one generation before. When it is not necessary to set the symbol data one generation before, touch No button.

ition	
Complete!	
ОК	

If the recovery of the symbol data is finished, the display changes to the screen shown on the left. Touch OK button to return to Memory Initialization Menu screen.

Touch Back button to return to Flash ROM writing screen.

The way to write to the flash ROM is the same as [15.5.7 Program Data (Previous Value Restore)].





15.5.9 Position Data (Previous Value Restore)

The flash ROM writing data in the position data is recovered to the writing data of one generation before.

Also, Position Data No. 1 to 10000 cannot be recovered.

← Co	nfirmation		
	Position data will be restored in the previous condition, All the present position data is lost, Are you sure to continue?		
	Yes	No	
Yes	No		

OK

Complete! If the recovery of display changes Touch OK butto Menu screen. Touch Back but

one generation before, touch No button.

When it is not necessary to set the position data

Touch Yes button when you want to set the

position data one generation before.

If the recovery of the position data is finished, the display changes to the screen shown on the left. Touch OK button to return to Memory Initialization Menu screen.

Touch Back button to return to Flash ROM writing screen.

The way to write to the flash ROM is the same as [15.5.7 Program Data (Previous Value Restore)].





15.5.10 Parameter Data (Previous Value Restore)

The flash ROM writing data in the Parameter data is recovered to the writing data of one generation before.

Con	firmation Parameter data will b previous cor All the present parame Are you sure to	dition. eter data is lost.	
	Yes	No]
Yes	No		

Touch Yes button when you want to set the parameter data one generation before. When it is not necessary to set the parameter data one generation before, touch No button.

← Confirm	tion	
	Complete!	
	ОК	

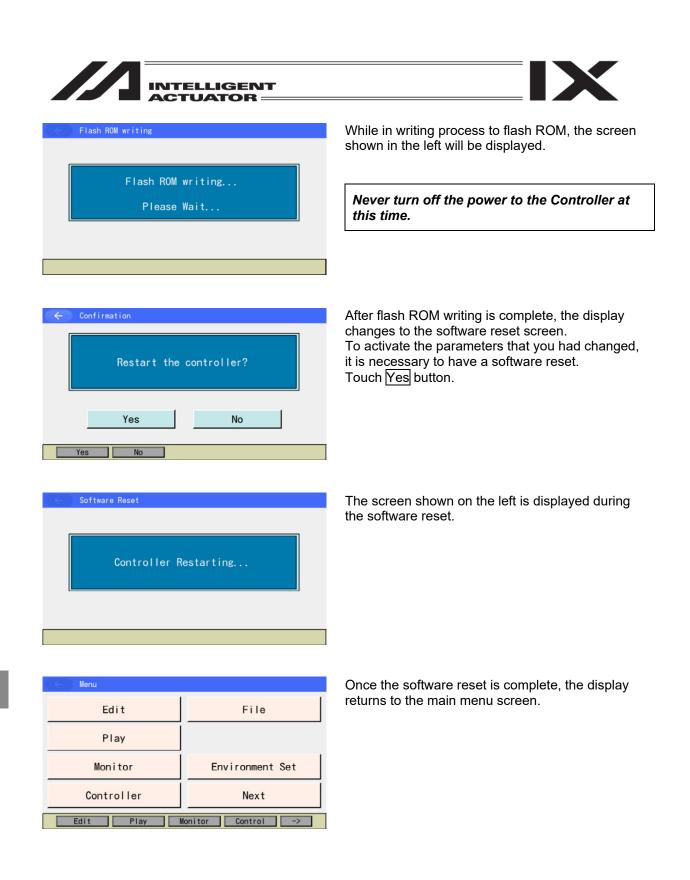
If the recovery of the parameter data is finished, the display changes to the screen shown on the left.

Touch OK button to return to Memory Initialization Menu screen.

Touch Back button to return to Flash ROM writing screen.

← Cont	irmation Flash W	rite ?	
Yes	Yes	No	

To write the data to Flash ROM, touch Yes button. If writing is not necessary, touch No button.







15.6 Re-Connection

Re-connect to the controller.

$\left(\leftarrow \right)$	Confirmat	ion				
	Do	you wan	t to	re-connect	?	
		Yes		No		
Y	es	No]			

Touch Yes button when you want to reconnect the controller.

When it is not necessary to reconnect the controller, touch No button. Once you touch Yes button, the reboot of this teaching pendant starts.



The screen shown on the left is displayed after IAI logo mark is shown. "Confirming Connection ..." flashes during reconnection process. The display returns to the menu screen after reboot.

Confirming Connection...





15.7 Baud Rate Change

Changes the communication baud rate between the controller and the teaching pendant.

🔶 Baud Rate Change	
Baud Rate (kbps)	
9.6 19.2 38.4	57.6 115.2 230.4
ОК	CANCEL
OK Cancel	10:00

Touch a button for the baud rate of change. Touch OK button when you change the baud rate. When change of the baud rate is not necessary, touch CANCEL button.

If the baud rate is changed, the connection will be established with the changed baud rate from the next connection.

- * The button for the baud rate unsupported by the connected controller, is displayed in gray. Selection is not available.
- * When the unsupported baud rate has been set due to the connection to the other controller, the baud rate is changed to the connection available baud rate automatically and the controller is connected.

"Baud Rate Changing ..." flashes during the baud rate change.

The display returns to Controller Menu screen after the baud rate change.







15.8 Safety Velocity

Switches the safety velocity limit status at manual mode.



Safety Velocity Limit does not Effect
There is no safety speed limitation
Safety Velocity Limit Effect
There is safety speed limitation

(No matter what the settings are for the programs and parameters, the maximum velocity for orthogonal axis is 250mm/s or less, CP operation 250mm/s or less for SCARA and PTP operation at 3% or below.) Touch a radio button and select. Touch OK button when you switch the valid/invalid of the safety speed limitation. When the valid/invalid of the safety speed limitation is not necessary to be changed, touch CANCEL button.

15.9 Driver Power Recovery Request

Requests to recover driver power to the controller.

Confirmation	ar will be recovered.
	sure to continue?
Yes	No
Yes No	

To demand the driver power recovery request, touch $\underline{\text{Yes}}$ button. The display returns to the previous screen.

When it is not necessary to demand the driver power recovery request, touch N_0 button. The display returns to the previous screen.

15.10 Action Pause Release Request

Requests to release action pause to the controller.

← Confi	rmation		
		till be released. to continue?	
	Yes	No	
Yes	No		

To demand the cancellation of the operation pause, touch Yes button. The display returns to the previous screen. When it is not necessary to demand the cancellation of the operation pause, touch No button. The display returns to the previous screen.

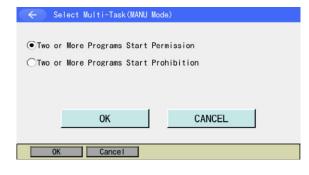




15.11 Simultaneous Operation of Multiple Programs

Set whether to allow simultaneous operation of multiple programs or not at Manual Mode. When it is set to forbid, multiple programs cannot be executed at the same time. (Error No. 913 Multiple Program Simultaneous Operation Forbidden Error (No. 21D for RSEL and XSEL2-T/TX)

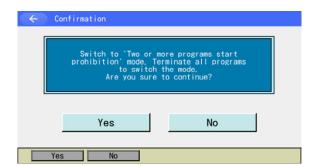
- * This function is valid only for the following models :
- XSEL-P/Q (MAIN Application from Version 0.36)
- XSEL-PX/QX (MAIN Application from Version 0.17)
- · XSEL-R/S, RX/SX, RXD/SXD (MAIN Application from Version 0.01)
- XSEL-RA/SA, RAX/SAX, RAXD/SAXD (MAIN Application from Version 0.01)
- SSEL, ASEL, PSEL (MAIN Application from Version 0.01) (* only in the program mode.)
- MSEL-PCX/PGX/PC/PG/PCF/PGF (MAIN Application from Version 0.01)
- RSEL (MAIN Application from Version 0.01)
- XSEL2-T/TX (MAIN Application from Version 1.00)



Two or More Programs Start Permission Simultaneous operation of multiple programs is allowed.

Two or More Programs Start Prohibition Simultaneous operation of multiple programs is forbidden.

Touch a radio button and select. When you want to change the condition of allowance for the simultaneous operation of multiple programs, touch OK button. When it is not necessary to change the condition of allowance for the simultaneous operation of multiple programs, touch CANCEL button.



When you select to forbid the simultaneous operation of multiple programs, the confirmation screen will be displayed. To establish the setting, touch Yes button. When it is not necessary to establish the setting, touch No button.

Confirmation
Switch to 'Two or more programs start
permission' mode,
Are you sure to continue?
Yes No
Yes No

When you select to allow the simultaneous operation of multiple programs, the confirmation screen will be displayed. To establish the setting, touch Yes button. When it is not necessary to establish the setting, touch No button.





15.12 Driver Power Recovery Request and Action Pause Release Request

15.12.1 In the Case of Controller Other Than SSEL, ASEL and PSEL Controllers

(1) Driver Power Recovery Request

- 1) Case which requires executing Driver Power Recovery Request
 - Only the following case requires executing Driver Power Recovery Request:
 - When you set 1 in I/O parameter No. 44, Driver Power Cut-off cause occurs → Recovery after the main cause of cut-off is solved.
- How to execute Driver Power Recovery Request Select Controller → Next → Request Power Recovery from the menu to execute.

(2) Action Pause Release Request

- 1) Case which requires Action Pause Release Request
 - Each of the following cases requires executing Action Pause Release Request:
 - When you set 2 on other parameter No. 9 (Deadman SW recovery type = action continuation recovery [during automatic operation only]), stop according to deadman SW during automatic operation → recovery after releasing stop (action pause release).
 - When you set 2 on other parameter No. 10 (emergency stop recovery type = action continuation recovery [during automatic operation only]), emergency stop during automatic operation → recovery after emergency stop release (action pause release).
 - When you set 2 on other parameter No. 11 (safety gate OPEN time recovery type = action continuation recovery [during automatic operation only]), safety gate OPEN during automatic operation → recovery after safety gate CLOSE (action pause release).
 - When you set 1 on I/O parameter No. 36 (input selection function 006 = pausing action signal), OFF level input on input port No. 6 during automatic operation (pausing action) → recovery after ON level input on input port No. 6 (action pause release).
- How to execute Action Pause Release Request Select Controller → Next → Request Release Pause from the menu to execute.
- * If case (1) 1) and (2) 1) occur at the same time, you need to first execute Driver Power Recovery Request. After completing it, execute the Action Pause Release Request.





15.12.2 In the Case of SSEL, ASEL or PSEL Controller

(1) Driver Power Recovery Request

- 1) Case which requires executing Driver Power Recovery Request
 - Only the following case requires executing Driver Power Recovery Request:
- When you specify any input port for the driver power cut-off release input signal (dedicated function), driver power cut-off occurs → recovery after the main cause of cut-off is solved.
 How to execute Driver Power Recovery Request
- Select Controller \rightarrow Next \rightarrow Request Power Recovery from the menu to execute.

(2) Action Pause Release Request

- 1) Action Pause Release Request
 - Each of the following cases requires executing Action Pause Release Request:
 - When you set 2 on other parameter No. 10 (emergency stop recovery type = action continuation recovery [during automatic operation only]), emergency stop during automatic operation → recovery after emergency stop release (action pause release).
 - When you set 2 on other parameter No. 11 (deadman SW/enable SW recovery type = action continuation recovery [during automatic operation only]), stop according to deadman SW or enable SW during automatic operation → recovery after releasing stop (action pause release).
 - Specify any input port for the action pause input signal (dedicated function). Set "8" (specified input function value) in the I/O parameter (No. 30 No. 45, No. 251 No. 258) corresponding to the input port No. (Refer to the [List of I/O functions and I/O parameters].) OFF level input in the input port No. specified during automatic operation (action pause) → recovery after ON level input on the input port No. (action pause release)
- How to execute Action Pause Release Request Select Controller → Next → Request Release Pause from the menu to execute.
- If case (1) 1) and (2) 1) occur at the same time, you need to first execute Driver Power Recovery Request. After completing it, execute the Action Pause Release Request.





15.13 Time Setting

← Controller Time

Time setting should be established in the controller.

The time displayed in the Error Detailed Data screen is the error occurrence time.

- * This function is valid only for the following models :
 - XSEL-R/S, RX/SX, RXD/SXD (MAIN Application from Version 0.01)
 - XSEL-RA/SA, RAX/SAX, RAXD/SAXD (MAIN Application from Version 0.01)
 - TTA (MAIN Application from Version 0.01)
 - MSEL-PCX/PGX/PC/PG/PCF/PGF (MAIN Application from Version 0.01)
 - RSEL (MAIN Application from Version 0.01)
 - XSEL2-T/TX (MAIN Application from Version 1.00)

Controller	
Time Setting	
	Menu
	Next
Set Time	

Touch Time Setting button in Controller Menu screen.

- * The position of the button may differ depending on the model to connect.
 When the button is not displayed, touch Next button to switch the screen.
- * The button would not be displayed when the connection is established to a model that does not support the controller clock.

Controller clock is displayed.

Touch Time Edit button to move to the edit screen.

	00110
Time Mon	Touc
yy/mm/dd hh:mm:ss	
00 / 01 / 01 00 : 00 : 02	
Time Edit	
Back Keyboard	
Edit	
Touch Time Edi	_
← Controller Time	The o
Time Edit yy/mm/dd hh:mm:ss 00 / 01 / 01 00 : 00 : 00	1. Inp 2. To
Time Mon Set Back Keyboard	
Disp Set	

The controller clock can be edited.

- 1. Input the time on Keyboard.
- 2. Touch Set button.

INTELLIGENT ACTUATOR	
Complete!	The display turns to the confirmation screen when the controller clock setting is finished. Touch OK button to return to the clock display screen.
← Controller Time Time Mon yy/mm/dd hh:mm:ss 00 / 01 / 01 00 : 00 : 02 Time Edit	The display returns to this screen. Touch <u>Back</u> button to return to Controller Menu screen.
Back Keyboard	





15.14 Pairing ID Clear

The controller possesses a feature to output an absolute error when it checks the encoder I.D. and detects it is wrong. In case replacement is conducted with an actuator which the absolute reset has been executed, it is necessary to clear the existing I.D. (pairing I.D.).

This feature is available only when the battery-less absolute encoder is connected and the pairing I.D. clear feature is activated.

* This feature is the same as the pairing ID clear feature in the maintenance information.

← Controller	
Time Setting	
	Menu
Clear PairID	Next
Set Time	Clr PairID -> 10:00

System Password
Please input a password.
Back
Keyboard

Touch Clear PairID button in Controller Menu screen.

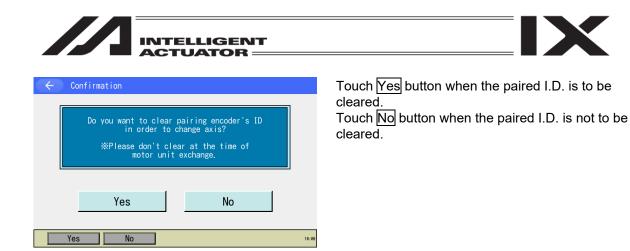
- The position of the button may differ depending on the model to connect.
 When the button is not displayed, touch Next button to switch the screen.
- * The button will not be shown when the pairing ID clear feature is not activated.

The password input window appears. Input 5119 on the software numeric keys.

* Password will be kept valid once it has been set up until the connection gets established again or the power gets rebooted.

🗧 ← Select Clear PairID Axis No.	
Select Axis	
Axis No.	
Back	Keyboard
	10:00

Input the axis number that you would like to have pairing ID clear conducted in Axis No. box using the software numeric keys.





Once the process is completed, the screen changes to the figure shown in the left. Touch OK button to go back to axis number select screen.

When an axis number assignment to activate several axes groups is performed in the axis number assignment feature (Refer to [15.17 Axis Number Assignment]), the select axes group screen should appear after you enter the password. Touch an axes group number button to select the axes group number that is to be subject to.

\leftarrow	Select axes group	
	Axes group No.1	
	Axes group No.2	
	Cance I	
		10:00

The select axes group window should appear after you enter the password. Touch an Axes group No. button.

Select Clear Pair ID Axis No. window appears.
 * The exce group number that use colored distance

* The axes group number that was selected should be shown on the top right of the screen.

🧲 🛛 Select Clear PairID Axis No.	Axes group No. 1
Select Axis	
Axis No. 🛛 🛛	
Back	Keyboard
	10:00

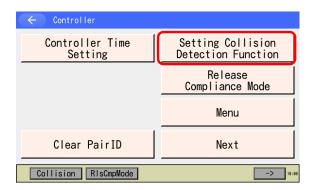




15.15 Setting Collision Detection Function

Collision detection function should be switched Enable/Disable. If the collision detection function is valid, there is a case that an axis cannot move after getting into a condition of collision detected when the servo gets turned while the axis is in contact with a peripheral. Use this feature to disable the collision detection function temporarily.

This feature is valid only when the controller and robot support the collision detection function and also the collision detection function is enabled.



← Setting Collision Detection Function	
J1 Axis ON OFF J2 Axis ON OFF Vert.Axis ON OFF Rot.Axis ON OFF Enable all Disable all	
OK CANCEL	
OK Cance I	:00

Touch Setting Collision Detection Function button in Controller Menu screen.

- * The position of the button may differ depending on the model to connect.
 When the button is not displayed, touch Next button to switch the screen.
- * The button will not be shown when the pairing collision detection function is not activated.

The setting collision detection function window should be displayed. (Initial display should be the current setting condition)

ON •••• Collision detection function enable OFF •••• Collision detection function disable

Touch a radio button and select. Touch OK button if you would like to change the setting. Touch CANCEL button if you would not change the setting.

- * Touch Enable all / Disable all buttons and radio button select can be switched over in SCARA unit.
- * Rotary axis should not be displayed for three-axis SCARA.





15.16 Release Compliance Mode

Compliance mode should be release. When a SEL program using the compliance control gets interrupted due to such an occasion as an error occurrence, there may be a case that the compliance mode is kept valid. If it is required to switch back to the normal control, cancel the compliance mode using this feature.

This feature is valid only when the controller and robot support the compliance control feature and also the compliance control function is enabled.

← Controller		Touch Release Compliance Mode button in
Controller Time Setting	Setting Collision Detection Function	Controller Menu screen.
	Release Compliance Mode	* The position of the button may differ depending on the model to connect.
	Menu	When the button is not displayed, touch <u>Next</u> button to switch the screen.
Clear PairID	Next	* The button will not be shown when the pairing compliance control function is not activated.
Collision RIsCmpMode	-> 10:0	



Turn on the check boxes for those you would like to have the compliance mode release, and then touch OK button.

Touch CANCEL button if you would not release the compliance mode.

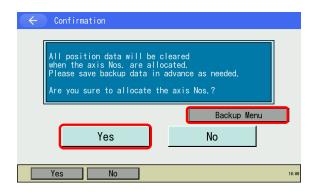




15.17 Axis Number Assignment

It is necessary to have an assignment of the axis numbers after a change to the unit construction for RSEL and XSEL2-T/TX. Assign the axis numbers using this feature.

Controller	
Allocate Axis No.	
Allocate Input/Output Port Data	
	Menu
	Next
AllocAxNo AllocPort	-> 10:00



Touch the Allocate Axis No. button in the controller menu window.

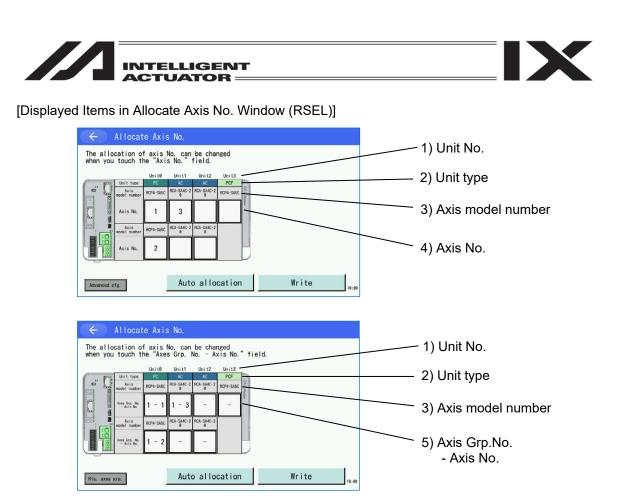
- * The position of the buttons may differ depending on the connected models. In case of this button not displayed, touch the <u>Next</u> button to switch the window.
- * The button should not appear if the axis number assignment feature is not activated.

Once touching the Allocate Axis No. button, a confirmation window should come up. Conduct a data backup if necessary.

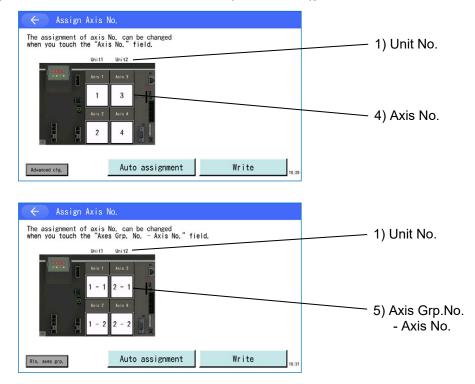
(Touch the Backup Menu button and it goes to the backup menu window.)

Touch the Yes button when required to assign the axis numbers.

Once the axis number assignment is carried out, the current position data will be all cleared.



[Displayed Items in Allocate Axis No. Window (XSEL2-T/TX)]



* The figure on the top shows a case of normal setting (axis number assignment without using axis groups). The one on the bottom shows the advanced setting (axis number assignment with using axis groups).





- Unit Number Display It shows the unit number of the driver unit.
- 2) Unit Type Display It shows the unit type of the driver unit.
- Axis Model Code Display
 It shows the axis model code information acquired from the driver unit or the actuator unit.
 It should show "Unknown" in case no axis model code information is acquired.
- 4) Axis Number Input Box
 In the figure shows the position of the connectors to connect actuators.
 The one on the top is for the 1st axis and bottom for the 2nd axis.
 Input the axis number to assign to an actuator.
 The axis number setting range is 1 to 8. Enter a not duplicated value for the axis number.
- 5) Axes Group Number Axis Number Input Box
 In the figure shows the position of the connectors to connect actuators.
 The one on the top is for the 1st axis and bottom for the 2nd axis.
 Input the axes group number axis number to assign to an actuator.
 The axis group number setting range is 1 to 2.
 The axis number setting range is 1 to 8.
 Make sure the axis group number you input axis number are not duplicated.
 - Note: Make sure that there is a limit to the input values for RSEL combined axes. (Refer to [15.17.3 Axis Number Assignment for Combined Axes])





15.17.1 Basic Operation

[Assignment Change by Direct Input of Axis Number]

When it is preferred to indicate an axis number to assign to an actuator expressly, follow the procedures below to assign an axis number.

C Allocate The allocation of a when you touch the	xis No. can be changed	
Axis No.	hit0 Unit1 Unit2 Unit3 PC AC AC PC A4-546C RCH-546-2 RCH-546-2 RCH-546-2 44-546C RCH-546-2 RCH-546-2	
Advanced cfg.	Auto allocation	Write 10:00

Touch in an input box for an axis number that you require to have an assignment change. A keyboard appears.

← Allocate Axis No.										
The allocation of axis No. can be changed when you touch the "Axis No." field.										
		Unit0	Unit1	Unit2	Unit3					
- D	Unit type	PC	AC	AC	PCF					
	Axis model number	RCP4-SA5C	RCA-SA4C-2	RCA-SA4C-2	RCP4-SA5C					1
2 P							<u> </u>			
	Axis No.	0					7	8	9	ESC
	Axis		RCA-SA4C-2	RCA-SAAC-2		1			_	
	model number	RCP4-SA5C	0	0		ł.	4	5	6	BS
	Axis No.									
	AXIS NO.						1	2	3	CLR
										CALT.
						- 1	0	•	+/-	ENT
Advanced c	fg.		Auto	o allo	cation			Writ	е	10:00

Input an axis number and touch the $\boxed{\mathsf{ENT}}$ button. The keyboard closes.

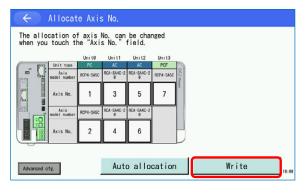
If it is required to cancel the assignment, touch $\overline{\text{CLR}}$ and $\overline{\text{ENT}}$.

← The allo when you	Allocat cation o touch t	faxis	No. can	be cha field.	nged			
		Unit0	Unit1	Unit2	Unit3			
6 61	Unit type	PC	AC	AC	PCF	1		
	Axis model number	RCP4-SA5C	RCA-SA4C-2 0	RCA-SA4C-2 Ø	RCP4-SA5C	NAI me		
	Axis No.	1						
	Axis model number	RCP4-SA5C	RCA-SA4C-2	RCA-SA4C-2				
	Axis No.							
_						-1		_
Advanced c	fg.		Aut	o allo	cation		Write	10:00

The value you input shows up in the axis number input box.







Have an input to all the points that you require to make assignment changes, and then touch the Write button. A confirmation window shows up.

	write the modifications to the controller. Are you sure to continue?	
	Yes No	
Yes	s No	10:00

Touch the Yes button. The contents that you edited should be written to the controller.

Note that the process cannot be cancelled once touching the Yes button.

Allocate Axis No. writing Allocate Axis No. writing	
Please Wait	
	10:00

While in the process of axis number assignment writing, "Allocate Axis No. Writing..." flashes.

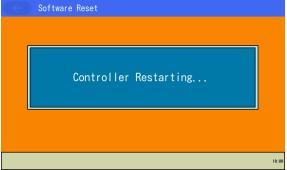
Never turn off the power to the Controller at this time.



Once the axis number assignment writing is complete, a confirmation window for controller reboot shows up. Touch the OK button. The software reset will be executed.







While in the process of controller reboot, "Controller Restarting..." flashes.

Menu					
Edit	File				
Play					
Monitor	Environment Set				
Controller	Next				
Edit Play	Nonitor Control -> 10:00				

Once the reboot is complete, the main menu will appear.

When the axis number assignment mode is the advanced setting (axis number assignment with using axes groups), it is necessary to input an axes group number and axis number in a row in the axis number input.

(Refer to [15.17.2 Axis Number Assignment Mode Switchover] for how to switch over the axis number assignment mode.)

÷	Allocat	e Axis	s No.				
The allo when you	cation o touch t	faxis I ne "Axe	No. can s Grp. I	be cha No A	nged kis No."fie	eld.	
		Un it0	Unit1	Unit2	Unit3		
(F1.	Unit type	PC	AC	AC	PCF		
	Axis model number	RCP4-SA5C	RCA-SA4C-2 0	RCA-SA4C-2 Ø	RCP4-SA5C		
	Axes Grp. No. - Axis No.	-	-	-	-		
	Axis model number	RCP4-SA5C	RCA-SA4C-2	RCA-SA4C-2			
	Axes Grp. No. - Axis No.	-	-	-			
Ris. axes a	grp.		Auto	o allo	cation	Wri	te 10:00

Touch an input box for <u>Axes Grp. No. - Axis No.</u> that you require to have an assignment change. A keyboard appears.





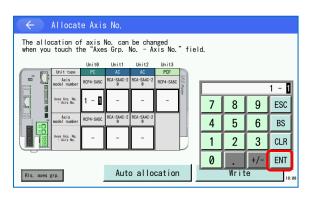
← Allocate Axis No.

The allo when you	cation o touch t	faxis M ne "Axes	No. can s Grp. 1	be cha No A:	nged kis No.	"fiel	d.			
13-		Unit0	Unit1	Unit2	Unit3	18.				
	Unit type Axis model number	PC RCP4-SA5C	AC RCA-SA4C-2 0	AC RCA-SA4C-2 0	PCF RCP4-SA5C	LAL Dec				1 -
	Axes Grp. No. - Axis No.	0 -	-	-	-	OW	7	8	9	ESC
	Axis model number	RCP4-SA5C	RCA-SA4C-2	RCA-SA4C-2			4	5	6	BS
	Axes Grp. No. - Axis No.	-	-	-		B	1	2	3	CLR
						_	0		+/-	ENT
Ris, axes g	grp.		Auto	o allo	cation	ı I		Writ	е	10:00

Input an axes group number and touch the ENT button.

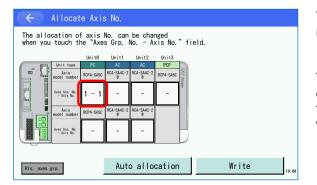
The cursor moves to the axis number input position.

If it is required to cancel the assignment, touch $\overline{\text{CLR}}$ and $\overline{\text{ENT}}$.



Input an axis number and touch the ENT button. The keyboard closes.

Touch the ESC button and the input can be redone from the axes group number input.



The value you input shows up in the axes group number - axis number input box.

The process for writing in to the controller and other processes should be the same as those in the normal setting (axis number assignment without using axes group numbers).



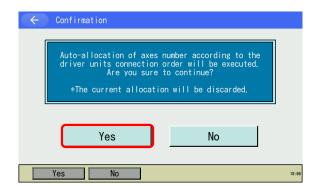


[Axis Number Assignment Change by Axis Number Auto Assignment]

If you require to have an automatic input of an axis number to be assigned to an actuator, follow the procedures below to assign axis numbers.

÷	Allocat	e Axis	s No.					
The allo when you	cation of touch th	faxis f ne "Axis	No. can s No."	be cha field.	nged			
		Unit0	Unit1	Unit2	Unit3			
. P1	Unit type	PC	AC	AC	PCF	÷		
	Axis model number	RCP4-SA5C	RCA-SA4C-2 0	RCA-SA4C-2	RCP4-SA5C	0.40 J Jay		
	Axis No.							
	Axis model number	RCP4-SA5C	RCA-SA4C-2 Ø	RCA-SA4C-2 Ø				
	Axis No.							
_								
Advanced c	fg.		Auto	o allo	cation		Write	10:00

Touch the Auto allocation button. A confirmation window shows up.



Allocate Axis No. The allocation of axis No. can be changed when you touch the "Axis No." field. RCP4-SA5C CA-SA4C-2 RCA-SA4C-: Axis No 1 3 5 7 ICP4-SA -SA4C 2 6 4 Auto allocation Write Advanced cfg.

Axis numbers should be assigned automatically in the order of the driver unit connection.

Touch the Yes button. It should go back to the axis number assignment window.

Touch the Yes button and the current assignment information will be discarded.

Axis numbers automatically assigned are shown in the axis number input boxes.

The further procedures are the same as those stated in [Assignment Change by Direct Input of Axis Number]. Touch the write button to transfer the edited contents to the controller.

* Touch in an input box for axis number and correction can be made to an axis number.

Axis number automatic assignment should be conducted considering the followings.

- Limit to the input values of axis numbers for combined axes (Refer to [15.17.3 Axis Number Assignment])
- Exclusion of combination axes that are short of constructed axe

Axis numbers are assigned in the order of the driver unit numbers (order of the driver unit connectors in the same driver unit) considering the conditions above.





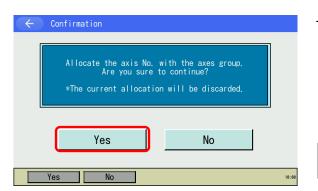
15.17.2 Axis Number Assignment Mode Switchover

There is the advanced setting (axis number assignment with using axes groups) as well as the normal setting (axis number assignment without using axes groups) in the axis number assignment. Follow the procedures below to switch over between the normal setting and advanced setting.

Advanced Setting : System to manage several axes as a "axes group"

nen you	cation o u touch th	ne "Axi _{Unit} e	s No." Unit1	field. Unit2	Unit3		
	Unit type	PC	AC	AC	PCF	3	
- D	Axis model number	RCP4-SA5C	RCA-SA4C-2	RCA-SA4C-2	RCP4-SA5C	10.0 3000	
	Axis No.	1	3			8	
	Axis model number	RCP4-SA5C	RCA-SA4C-2 8	RCA-SA4C-2			
00	Axis No.	2					

If the axis number assignment mode is in the normal setting, touch the Advanced cfg. button. A confirmation window shows up.



Touch the Yes button.

Touch the Yes button and the current assignment information will be discarded.

The allo	Allocat cation o touch t	faxis I	No. can	be cha No A	nged xis No."	field.		
		Unit0	Unit1	Unit2	Unit3			
E E	Unit type	PC	AC	AC	PCF			
	Axis model number	RCP4-SA5C	RCA-SA4C-2	RCA-SA4C-2	RCP4-SA5C			
	Axes Grp. No. - Axis No.	-	-	-	-			
	Axis model number	RCP4-SA5C	RCA-SA4C-2	RCA-SA4C-2 Ø				
	Axes Grp. No. - Axis No.	-	-	-		J		
RIs, axes §	grp.		Auto	o allo	cation		Write	10:00

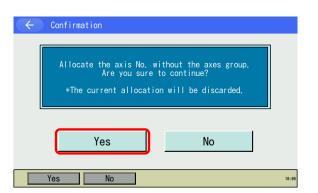
The axis number assignment mode switches over to the advanced setting (axis number assignment with using axes groups)



In order to switch the axis number assignment mode back to the normal setting from the advanced setting, follow the procedures below.

	u touch t	Unit0	Unit1	Unit2	Unit3			
. [Unit type	PC -	AC	AC	PCF	2		
	Axis model number	ROP4-SASC	RCA-SA4C-2	RCA-SA4C-2	ROP4-SA5C	00 me		
	Axes Grp. No. - Axis No.	1 - 1	1 - 3	-	-	OW.		
	Axis model number	RCP4-SASC	RCA-SA4C-2	RCA-SA4C-2		1		
	Axes Grp. No. - Axis No.	1 - 2	-	-				

Touch the RIs. axes grp. button. A confirmation window shows up.



Touch the Yes button.

Touch the Yes button and the current assignment information will be discarded.

🔶 Allocate Axis	s No.	
The allocation of axis when you touch the "Axi	No. can be changed s No." field.	
Unit0	Unit1 Unit2 Unit3	
Unit type PC	AC AC PCF	
Axis model number RCP4-SA5C	RCA-SA4C-2 RCA-SA4C-2 RCP4-SA5C	
Axis model number RCP4-SASC	Cov	
Axis model number RCP4-SA5C	RCA-SA4C-2 RCA-SA4C-2	
Axis No.		
Advanced cfg.	Auto allocation	Write 10:00

The axis number assignment mode switches over to the normal setting (axis number assignment without using axes groups)





15.17.3 Axis Number Assignment for Combined Axes

For RSEL, there is a limit to the assigned axis numbers for the combined axes. Make sure to consider the limit of the axis number input when inputting an axis number.

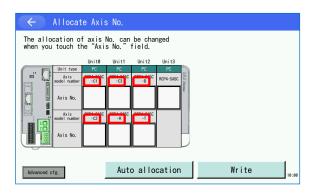
(Automatic assignment of axis numbers considering the limit should be performed when the automatic assignment is executed.)

- * When activating the combined axes, have all the axis numbers that construct combined axes being assigned. It will cause an error when only some axis numbers are assigned.
- * It is necessary to have all the axes that construct combined axes assigned in the same axes group when having the advanced setting (axis number assignment with using axes groups).

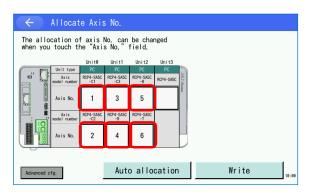
15.17.3.1 6-axis Cartesian

Axis number assignment for 6-axis cartesian should be performed following the procedures below.

* It is necessary to have C1-axis, C2-axis, C3-axis, R-axis, B-axis and T-axis existed.



For the driver unit of 6-axis cartesian, the constructing axes information (C1, C2, C3, R, B, T) should be displayed after the axis model code.



Assign C1 = 1, C2 = 2, C3 = 3, R = 4, B = 5, T = 6.

- * For 6-axis cartesian, the axis numbers available for assignment are fixed.
- * In the advanced setting, assign 6-axis cartesian to Group No. 1.





15.17.3.2 Wrist Unit

Axis number assignment for the wrist unit should be performed following the procedures below.

* It is necessary to have B-axis and T-axis existed.

Allocat The allocation o when you touch t			be cha field.	nged		
	Unit0	Unit1	Unit2	Unit3		
Unit type	PC	PC	PC	PC		
Axis model number	(B)	RCP4-SA5C	RCP4-SA5C	RCP4-SA5C		
Axis No.				DM .		
Axis model number	(T)	RCP4-SA5C	RCP4-SA5C			
Axis No.						
			_			
Advanced cfg.		Auto	o allo	cation	Write	10:00

For the driver unit of the wrist unit, the constructing axes information ((B) and (T)) should be displayed after the axis model code.

← The allo when you	Allocat cation of touch th			be cha field.	nged			
		Unit0	Unit1	Unit2	Unit3			
(F1.	Unit type	PC	PC	PC	PC	3		
	Axis model number	RCP4-SA5C (B)	RCP4-SA5C	RCP4-SA5C	RCP4-SA5C	All me		
	Axis No.	1						
	Axis model number	RCP4-SA5C (T)	RCP4-SA5C	RCP4-SA5C				
	Axis No.	2						
0								
Advanced c	fg.		Auto	o allo	cation		Write	10:00

Assign the axis numbers so they came in order of axis number for B-axis < axis number for T-axis.

In case there are several wrist units, there should be an identification number displayed after the constructing axes information ((B) and (T)). (The same identification number shows the same serial number.) In all identification numbers, make sure to assign the axis numbers so they come in order of axis number for B-axis < axis number for T-axis.

when you touch	Un it0	Unit1	Unit2	Unit3			
11 Unit type Axis model number	Bent outs	PC (B)-2	PC RCP4-SA5C	PC RCP4-SA5C)		
Axis No.				licow			
Axis model numbe	er (T)-1	(T)-2	RCP4-SA5C				
Axis No.				-	ļ		

* Shown in the figure on the left is a case that there are two wrist units as an example





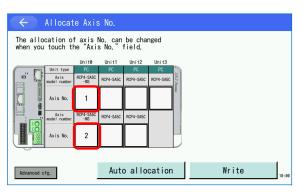
15.17.3.3 Multi-Slider

Axis number assignment for the multi-slider should be performed following the procedures below.

* It is necessary to have axes for all multi-slider units existed.

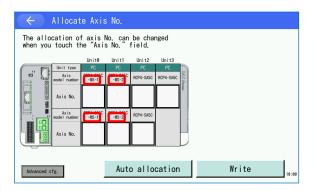
Allocate Axi The allocation of axis when you touch the "Axi		
Unit type Axis Axis No. Axis No. Axis No. Axis No.	Unit1 Unit2 Unit3 PC PC PC R0P4-SASC R0P4-SASC R0P4-SASC R0P4-SASC R0P4-SASC R0P4-SASC R0P4-SASC R0P4-SASC	
Advanced cfg.	Auto allocation	Write 10:00

For the driver unit of the multi-slider, the constructing axes information (MS) should be displayed after the axis model code.



It is not necessary to consider the order of axis numbers for the multi-slider. Make sure that all the axis numbers constructing the multi-slider units are assigned.

In case there are several multi-slider units, there should be an identification number displayed after the constructing axes information (MS). (The same identification number shows the same serial number.)



* Shown in the figure on the left is a case that there are two multi-slider units as an example





15.17.3.4 Synchronized Axes

Axis number assignment for the synchronized axes should be performed following the procedures below.

* It is necessary to have both synchronized master axis and synchronized slave axes existed.

← Allocate Axis No.					
The allocation of axis No. can be changed when you touch the "Axis No." field.					
Unit0 Unit1 Unit2 Unit3					
Unit type PC PC PC PC Axis model number Action RCP4-SA5C RCP4-SA5C RCP4-SA5C					
Axis No.					
Axis model number C-S RCP4-SA5C RCP4-SA5C					
Axis No.					
<u> </u>					
Advanced cfg. Auto allocation	Write 10:00				

For the driver unit of the synchronized axes, the constructing axes information (M (= master axis) and S (= slave axes)) should be displayed after the axis model code.

Input the axis numbers so they come in order of the axis number of the master axis < axis numbers of slave axes.

← Allocate Axis No.								
The allocation of axis No. can be changed when you touch the "Axis No." field.								
		Un i t0	Unit1	Unit2	Unit3			
(F1.	Unit type	PC	PC	PC	PC	3		
	Axis model number	-11?	RCP4-SA5C	RCP4-SA5C	RCP4-SA5C	All me		
	Axis No.	1				ow .		
	Axis model number	RCP4-SA5C -S	RCP4-SA5C	RCP4-SA5C				
	Axis No.							
9								
Advanced o	fg.		Aut	o allo	cation		Write	10:0

Allocate Axis No. The allocation of axis No. can be changed when you touch the "Axis No." field. UnitØ llni+1 llni+2 Ľ, RCP4-SA5C RCP4-SA50 RCP4-SA -W1 1 Axis No. CP4-SAE -S1 2 Write Auto allocation Advanced cfg.

Synchronized axes should be constructed combinations at the input of axis numbers. There should be ? mark displayed after the constructing axes information (M and S) while the combination axes are unestablished after axis number input is done.

* Shown in the figure on the left is a condition that only the axis number for the synchronized master axis is input.

Once a combination gets established, the ? mark displayed after the constructing axes information (M and S) turns into an identification number.

* Shown in the figure on the left is a condition that the combination is established after inputting axis numbers for the synchronized master axis and synchronized slave axes

In the axis number input, a synchronized axis searches a mating axis that the axis number is already input but combination is unestablished (an axis with its identification number shown as ?), and constructs a combination with the lowest axis number in the found ones. If a combination comes to what is not expected, clear up the axis number once and input an axis number again.





The allo when you	Allocat cation o touch t	faxis I	Vo. can	be cha field.	nged			
		Unit0	Unit1	Unit2	Unit3			
(P1	Unit type	PC .	PC	PC	PC	8		
	Axis model number	RCP4-SA5C -M1	RCP4-SA5C -M2	RCP4-SA5C	RCP4-SA5C			
	Axis No.	1	3		COW			
	Axis model number	RCP4-SA5C -S1	RCP4-SA5C -S2	RCP4-SA5C				
	Axis No.	2	4					
Advanced c	fg.		Aut	o allo	cation		Write	10:00

* Shown in the figure on the left is a condition that two combinations of synchronized axes are established.

(It is the combination that the same identification number is constructed)

* If it is an unexpected combination, clear the axis number at once and input a number again.





15.18 Input/Output Port Assignment

(for applicable models only)

Assignment of the input and output ports should be conducted on the fieldbus and option unit.

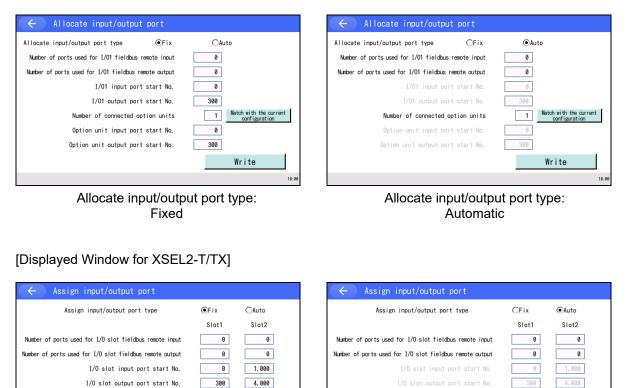
← Controller			
Assign Axis No.	EC operation mode		
Assign Input/Output Port			
Assign Input/Output Port Data	Menu		
Option unit	Next		
AllocAxNo AllocPort AllocPDat OptionUnit -> 13:29			

Touch the Assign Input/Output Port button in the controller menu window to show the input and output port assignment window.

* The position of the button may differ depending on the model to connect. When the button is not displayed, touch Next button to switch the window.

The contents to be displayed should differ depending on connected controllers.

[Displayed Window for RSEL]

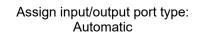






Write

15:



Write

15-





Allocate input/output port type :

The assignment type can be selected from "Fix" and "Auto".

- Number of ports used for fieldbus remote input : Setting can be established for the number of the remote input ports used in I/O Fieldbus.
- Number of ports used for fieldbus remote output : Setting can be established for the number of the remote output ports used in I/O Fieldbus.
- Input port start No. : I/O Input Port Start Number should be set for when the assignment type is "Fix".
- Output port start No. :
 - I/O Output Port Start Number should be set for when the assignment type is "Fix".
- Number of connected option units (RSEL only) : Setting should be established for the number of connected units of the option units.
- Option unit input port start No. (RSEL only) : Option Unit Input Port Start Number should be set for when the assignment type is "Fix".
- Option unit output port start No. (RSEL only) : Option Unit output Port Start Number should be set for when the assignment type is "Fix".





← Allocate input/output port

Allocate input/output port type	CAuto
Number of ports used for I/01 fieldbus remote input	0
Number of ports used for I/01 fieldbus remote output	0
I/O1 input port start No.	0
I/01 output port start No.	300
Number of connected option units	1 Match with the current configuration
Option unit input port start No.	0
Option unit output port start No.	300
	Write
	10:00

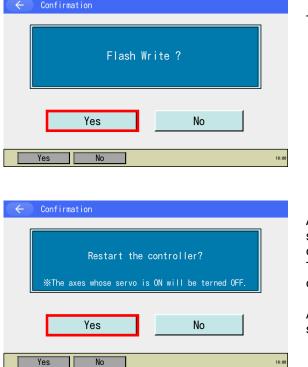
For the number of connected option units, touch the Match with the current configuration button and the number of unit currently connected should automatically get input.

Allocate input/output port

uto	OAuto	Allocate input/output port type • Fix
	0	Number of ports used for $\mathrm{I}/\mathrm{O1}$ fieldbus remote input
	0	Number of ports used for $\mathrm{I}/\mathrm{O1}$ fieldbus remote output
	0	I/01 input port start No.
	300	I/O1 output port start No.
Match with the current configuration	1	Number of connected option units
	0	Option unit input port start No.
	300	Option unit output port start No.
Write		
10:00		

Touch the Write button after all the settings inputs are done, and the data should get transferred to the controller.

Return to the flash ROM writing window by using such as the \leftarrow button.



Touch Yes button to start flash ROM writing.

After finishing the flash ROM writing, the screen should switch to the controller rebooting confirmation window. Touch the Yes button in order to activate the changed settings to allow the reboot.

Any axis with the servo being on should get the servo turned off.



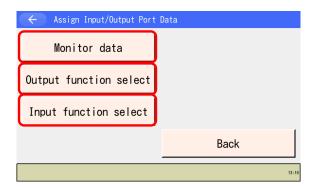


15.19 Input/Output Port Data Assignment

(for applicable models only)

Conduct the feature assignment and port assignment for monitor data output, output feature select and input feature select.

Controller				
Assign Axis No.	EC operation mode			
Assign Input/Output Port				
Assign Input/Output Port Data	Menu			
Option unit	Next			
AllocAxNo AllocPort AllocPDat OptionUnit -> 13:20				



Touch the Assign Input/Output Port Data button in the controller menu window. The input/output port data assignment menu should appear.

- * The position of the buttons may differ depending on the connected models. In case of this button not displayed, touch the <u>Next</u> button to switch the window.
- * The position of the buttons may differ depending on connected models.

Touch a button that you require to activate.





15.19.1 Monitor Data Output Setting

Set the monitor data output from the output port. The output value of the monitor data can be monitored on the output port and also can be checked in the monitor data output display screen. (Refer to [14.14 Monitor Data Output Display] for how to display on the monitor data output display window.)

[Displayed Items in Monitor Data Output Setting Screen]

1) Fieldbus Domain Display Bo	X
🗧 🔶 Moniter Data Output Setting	
Fielder Anne 200 FOF 4 000 4 707 Byte swap: Disable	2) Swap Setting Box
Fieldbus Area: 300 - 595, 4,000 - 4,727 Word swap in Double word data: Disable	, , ,
No. Power/EC/AxisNo. Monitoritem 1st Output Auto	
1 1 Current position[0.001mm](2W) 💙 316 🗌	
2 Power Output voltage(Pw. sply. unit)[V] ▼ 348 □	
3 2 Current position[0.001mm](2W) ▼ 428 □	
4 3 Current position[0.001mm](2W) ▼ 460 \	
5 (Unselection)	—— 3) Monitor Data Setting Box
6 (Unselection)	c)
7 (Unselection)	
8 (Unselection)	
9 (Unselection)	
Back Clear all cfg. Write	
*BackColor indicates some error is occurring.	•

1) Fieldbus Domain Display Box

The output port range to be assigned as the fieldbus domain should be displayed. Monitor data is available for output only in this range.

2) Swap Setting Box

Set the swap status of the signal output from the output ports (byte swap and double-word data word swap). Enable/disable can be switched over on the button. Byte swap : Output should be made with the top 8 bits and bottom 8 bits in the word

: Output should be made with the top 8 bits and bottom 8 bits in the word data (16 bits) swapped with each other. For the double-word data (32 bits), the top 8 bits and bottom 8 bits in both of the top word (16 bits) and bottom word (16 bits) should be swapped and output.

Word swap in Double word data

: Output should be made with the top word (16 bits) and bottom word (19 bits) swapped with each other.

This setting is valid for all the monitor data output setting items. The monitor items in the power supply unit status give an influence to every (1W = 1 word data) in every power supply unit. The monitor items in the EC status and axis status give an influence to the byte swap when 1W = 1 word data and both byte swap and double-word data word swap when 2W = 2 word data.





3) Monitor Data Setting Bo	
	lata output from the output ports.
No.	:Monitor numbers are shown (1 to 9)
Power / EC / AxisNo.	: Types of monitor items are shown. When the monitor item is the power supply unit status (RSEL only), it shows "Power Supply", when EC status (RSEL, XSEL2-T/TX), it shows "EC", and when axis status, shows the axis number that is subject to monitoring. When an axis number assignment to activate several axes groups is performed in the axis number assignment feature (Refer to [15.17 Axis Number Assignment]), display should be shown in axes group number - axis number. When it is displayed in the axis number (axes group number - axis number), changed can be made in the axis number (axes group number - axis number) by touching it.
Monitor item	: Select/set t <u>he</u> items for monitor output.
	Touch the ▼ button and the items available for monitor setting are shown in a list. Touch the item that you require to monitor to select it. The power supply unit status monitor items (RSEL only) appear when the number of the connected power supply units (setting value in Other Parameter No. 61) is something other than 0. The monitoring items of the EC status (RSEL, XSEL2-T/TX) should be displayed when EC Interface (RCON-EC or ELECYLINDER connection module board) is connected. The axis status monitor items appear when axis numbers are assigned with the axis number assignment feature.
1st Output port No.	: Set the top port number of the output ports range to be used as the destination of the monitor data output. Make sure to set it so the range of the used ports (with the top output port number as the start, number of ports in respond to the monitor items) suits in the fieldbus domain range. Also, make sure the range does not duplicate with any other monitor items or port range in use for other feature. If there is an error in the setting, the background of the top output port number will turn into pink.
Auto	: A port number available for setting should be automatically searched from the start of the train as the top output port number. The status can be switched between enable/disable by touching the checkbox. The search should be conducted in the port range next to a port range in use for the monitor number one before. If a domain not in use with number of necessary ports in found in the word boundary, the top port number in it should be set as the top output port number. In case the monitor number one before is in error or monitor item not being selected, the search should be conducted in the port range next to a port range in use for the monitor number another one before. In case there is no valid monitor setting, the search should be conducted from the start of the fieldbus domain.

Touch the All setting clear button and all the monitor numbers should go unselected.

After setting input is complete, touch the <u>Write</u> button to transfer the settings to the controller. Once the writing is started, when going back to the menu window with the <u>Back</u> button, a confirmation of flash ROM writing and software reset should come up. In order to reflect the written data, write to the flash ROM and conduct the software reset.

Touch the Back button and the screen goes back to the previous.



15.19.2 Output Feature Select Setting

Select a feature to to be assigned to the output port. Also, set an output port number to assign the feature.

[Displayed Items in Output Feature Select Setting Screen]

1) Output Port Domain Display E	Box
Output Function Selection Setting Output Port Area: 300 - 599, 4,000 - 6,999 Page Up Page Dn	
Output Func No. Output Function Selection Output Port No. Auto 901 2:Operation-cancel LvI, or Hi. Err. (OFF) 380 380 301 3:RDV(PIO-triggerAnc cold LvI or Hi) 301 302 302 2:Emergency stop output (OFF) 302 303 303 0:General purpose output 303 304 305 0:General purpose output 305 305 307 0:Omescal purpose output 307 307 Back Write *BackColor indicates some error is occurring. 10:0000	—— 2) Output Feature Select Setting Box

1) Output Port Domain Display Box

This shows the range of output ports. The output port number to assign a feature should be selected in this range.

2) Output Feature Select Setting Box

Select/set the feature to be assigned to the output port.

Output Func No.	: Output feature number is shown. (300 to 315, 300 (Area 2) to 315 (Area 2))
Function Selection	 Select/set the feature to be assigned to the output port. Touch the ▼ button and the features available for setting are shown in a list. Touch the feature that you require to assign to select it.
	The features available for setting may differ depending on output feature numbers.
Output Port No.	: Set an output port number to assign a feature. Make sure not to have the output port numbers duplicated with another output feature number or an output in use for another feature.
	If there is an error in the setting, the background of the output port number will turn into pink.
Auto	: Port numbers available for setting as a destination to assign a feature should be searched from the start automatically.
	The status can be switched between enable/disable by touching the checkbox.
	The search should be conducted from the port after a port in use for the an output port number one before. If an output port number not in use is found, this port number should be set as the output port number. In case the output feature number one before is in error or feature assignment not being done, the search should be conducted from the port number next to a port number in use for the output feature number
	another one before. In case there is no valid output feature select setting, the search should be conducted from the start of the output port domain.





Touch the Page Up or Page Dn button and the range of the displayed output feature numbers will switch.

Touch the Back button and the screen goes back to the previous.

After setting input is complete, touch the <u>Write</u> button to transfer the settings to the controller. Once the writing is started, when going back to the menu window with the <u>Back</u> button, a confirmation of flash ROM writing and software reset should come up. In order to reflect the written data, write to the flash ROM and conduct the software reset.





15.19.3 Input Feature Select Setting

Select a feature to to be assigned to the input port. Also, set an input port number to assign the feature.

[Displayed Items in Input Feature Select Setting Screen]

1) Input Port Domain Display Bo	хс
Input Function Selection Setting Input Port Area: 0 - 299, 1,000 - 3,999 Page Up Page Dn	
Input Func No. Function Selection Input Port No. Auto 080 1:Program start(Input port=7 to 14 BCD) ▼ □ □ 001 0:General purpose input ▼ 1 □ □ 002 0:General purpose input ▼ 2 □	—— 2) Input Feature Select Setting Box
Back Write Write	

1) Input Port Domain Display Box

This shows the range of input ports. The input port number to assign a feature should be selected in this range.

2) Input Feature Select Setting Box Input feature number is shown. (000 to 015)

iput leature number i	s shown. (000 to 015)
Input Func No.	:Input feature number is shown. (000 to 015)
Function Selection	: Select/set the feature to be assigned to the input port.
	Touch the v button and the features available for setting are shown in a
	list. Touch the feature that you require to assign to select it.
	The features available for setting may differ depending on input feature
	numbers.
Input Port No.	: Set an input port number to assign a feature. Make sure not to have the
	input port numbers duplicated with another input feature number or an input in use for another feature.
	If there is an error in the setting, the background of the input port number will turn into pink.
Auto	Port numbers available for setting as a destination to assign a feature should be searched from the start automatically.
	The status can be switched between enable/disable by touching the checkbox.
	The search should be conducted from the port after a port in use for the an output port number one before. If an output port number not in use is
	found, this port number should be set as the output port number.
	In case the output feature number one before is in error or feature
	assignment not being done, the search should be conducted from the
	port number next to a port number in use for the output feature number
	another one before. In case there is no valid output feature select setting,
	the search should be conducted from the start of the output port domain.





Touch the Page Up or Page Dn button and the range of the displayed output feature numbers will switch.

Touch the Back button and the screen goes back to the previous.

After setting input is complete, touch the <u>Write</u> button to transfer the settings to the controller. Once the writing is started, when going back to the menu window with the <u>Back</u> button, a confirmation of flash ROM writing and software reset should come up. In order to reflect the written data, write to the flash ROM and conduct the software reset.





15.20 Option Unit Setting

(only for applicable models and the feature is enabled)

The setting for the option unit (e.g. switching enable/disable of JOG Switch on RCON-EC) should be performed.

Controller	
Assign Axis No.	EC operation mode
Assign Input/Output Port	
Assign Input/Output Port Data	Menu
Option unit	Next
AllocAxNo AllocPort A	IlocPDat OptionUnit -> 13:20

← Option unit setting	
EC Jog setting	
Allocate I/O	
	Back
	10:00

Touch the Option unit button in the controller menu window to show the option unit setting window.

- * The position of the button may differ depending on the model to connect. When the button is not displayed, touch Next button to switch the window.
- * The button should not be displayed unless the option unit is connected.

If RCON-EC is connected, the option unit setting menu window should be displayed. Touch a button of the feature that you would establish the settings.

This menu window should not be displayed unless RCON-EC is connected, and the screen would go to the option unit I/O assignment window.

15.20.1 EC Jog Setting

Enable/Disable of the jog switch on RCON-EC should be selected if RCON-EC is connected.



Touch the radio buttons of Enable or Disable for the jog switch, and touch the Write button to transfer the contents of the setting to the controller.

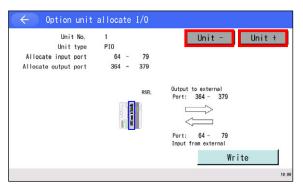
Once the writing is started, when going back to the menu window with the Back button, a confirmation of flash ROM writing and software reset should come up. In order to reflect the written data, write to the flash ROM and conduct the software reset.

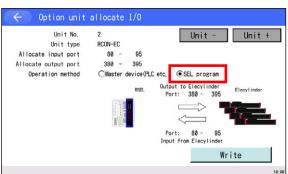




15.20.2 Option Unit Allocate I/O

Display and setting of the option unit I/O assignment should be conducted.

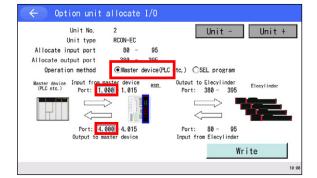




Touch either the Unit + or Unit - button and the unit number should change.

When the unit type is RCON-EC, the control system should be set in a host device (such as PLC) or in the SEL program.

If it is set in the SEL program, the input and output port assignment with ELECYLINDER should be displayed.



When the control system is set in a host device (such as PLC), the input and output port assignment with the host device and ELECYLINDER should be displayed.

Touch the input box for the top port number to input from the host device or to output to the host device, and the numeric keys should appear and inputing of a port number should become available.

← Option unit allocate I/O	
Unit No. 2 Unit type RCON-EC Allocate input port 80 - 95 Allocate output port 380 - 395	Unit - Unit +
	LC etc.) CSEL program Output to Elecylinder Port: 380 - 395
Port: 4.000 - 4.015	Port: 80 - 95
Output to master device	Input from Elecylinder Write

Touch the Write button to transfer the contents of the setting to the controller.

Once the writing is started, when going back to the menu window with the <u>Back</u> button, a confirmation of flash ROM writing and software reset should come up. In order to reflect the written data, write to the flash ROM and conduct the software reset.





15.21 ELECYLINDER Connection Module Board I/O Assignment

(for applicable models only)

I/O assignment and setting of the ELECYLINDER connection module board should be performed in this feature.

Controller		
Assign Axis No.		
Assign Input/Output Port		
Assign Input/Output Port Data	Menu	
Assign I/O Elecylinder connect module board		
AssignAxNo AssignPort AssignPDat OptionUnit -> 10:00		

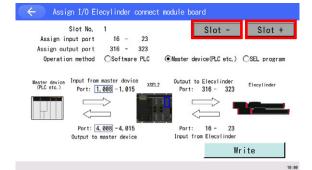


Touch the

Assign I/O Elecylinder connect module board button in the controller menu window.

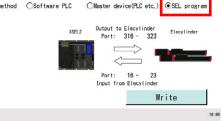
- The position of the button may differ depending on connected models.
 In case it is not shown, touch the [Next] button
- to switch over the window.
 * The button should not be displayed if the ELECYLINDER connection module board is not effective.

When there is a parameter already edited, a confirmation window should come out. Touch the OK button to return to the controller menu and execute a reboot.



Touch the Slot + or Slot - button, and the slot number should change.

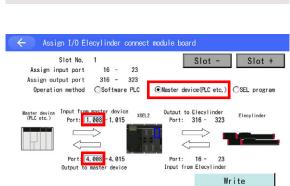
Assign I/O Elecylinder connect module board



INTELLIGENT ACTUATOR =

Slot -

Slot +



Set up the control system to the software PLC, host device (such as PLC) or SEL program.

If it is set to a SEL program, ELECYLINDER and the input and output port assignment should be displayed.

If the control system is set to the host device (such as PLC), the host device, ELECYLINDER and input and output port assignment should be displayed.

Touch the top port number input box for input from the host device or output to the host device, and the numeric keys should be displayed and a port number can be input.

Slot No. Slot -Slot + Assign input port 16 -23 Assign output port 316 -323 Operation method
Software PLC CMaster device(PLC etc.) CSEL program Input from Software PLC Output to Elecylinder Port: 316 - 323 XSEL2 Elecylin Port: 2,952 - 2,959 -> > Software < \leq 16 -Port: 5,952 - 5,959 Port: 23 Input from Elecvlin Output to Software PLC Write PLC Bridge Top Offset 🛛 🔘

Slot No. Slot -1 Slot + Assign input port 16 - 23 316 - 323 Assign output port Operation method
Software PLC CMaster device(PLC etc.) CSEL program Output to Elecylinder Port: 316 - 323 Input from Software PLC YSEL 2 Elecylinder Port: 2,952 -2,959 Software PLC < _ < _ Port: 5,952 -5,959 16 -23 Port: Output to Software PLC Input from Elecylinde Write PLC Bridge Top Offset 🛛 🔘

If the control system is set to the software PLC, the software PLC, ELECYLINDER and the input and output port assignment should be displayed.

Touch the PLC bridge top offset input box, and the numeric keys should be displayed and the PLC bridge top offset can be input.

Touch the Write button to transfer the settings to the controller.

If writing is conducted, there should be a confirmation of flash ROM writing and a confirmation of software reset displayed when returning to the menu window with the Back button. In order to reflect the written data, write into the flash ROM and conduct the software reset.





15.22 EC Operation Mode

(only for applicable models and the feature is enabled)

The ELECYLINDER operation mode setting in the manual mode (MANU) should be established.

Controller		
Assign Axis No.	EC operation mode	
Assign Input/Output Port		
Assign Input/Output Port Data	Menu	
Option unit	Next	
AllocAxNo AllocPort AllocPDat OptionUnit -> 13.20		

← EC operation mode		
Teach1	PIO movement prohibition, Safety velocity valid	
	PIO movement prohibition, Safety velocity invalid	
Monitor	PIO movement permission, Safety velocity invalid	
	OK	
	10:00	

Touch the EC operation mode button in the controller menu window to show the EC operation mode change window.

- * The position of the button may differ depending on the model to connect. When the button is not displayed, touch Next button to switch the window.
- * The button should not be displayed unless the EC Interface is connected.

The EC operation mode should be selected from the three types of menus as described below.

 Teach1 (PIO movement prohibition / Safety velocity valid) PIO movement prohibition : Data writing to ELECYLINDER (for such as simple data settings and

available.

- parameters) and indications in the actuator operation system are available. Safety velocity valid : The maximum velocity should be the safety velocity (100m/s) regardless of the velocity indication in the simple data setting window. • Teach2 (PIO movement prohibition / Safety velocity invalid) PIO movement prohibition : Data writing to ELECYLINDER (for such as simple data settings and parameters) and indications in the actuator operation system are available. Safety velocity invalid : Operation in the velocity set in the simple data setting window (higher than the safety velocity) becomes available. Monitor (PIO movement permission / Safety velocity invalid) PIO movement permission : Control should be made with I/O commands. Data writing to ELECYLINDER (for such as simple data settings and parameters) and indications in the actuator operation system are not available. Operation commands (jog, home return, etc.) cannot be issued from the touch panel teaching pendant. Operation in the velocity (higher than the safety velocity) commanded Safety velocity invalid
- from a host device (such as PLC) or the SEL program should be





* Set it to either Teach 1 or Teach 2 when operating the jog switch on EC Interface.

← EC operation	mode
Teach1	PIO movement prohibition, Safety velocity valid
Teach2	PIO movement prohibition, Safety velocity invalid
Monitor	PIO movement permission, Safety velocity invalid
	ОК
	10:00

Touch a button of a mode to be selected and touch the OK button.

← Confi	rmation		
	Change EC ope	ration mode?	
C	Yes	No	
Yes	No		10:00

Touch Yes button in the confirmation window.

Touch the <u>No</u> button and the screen returns to the EC operation mode change window.



Once the change is complete, the confirmation window should show up.

Touch the OK button and the screen returns to the controller menu.





15.23 Brake Control

(for applicable models only)

When connected to a brake control applicable model, the Brake control button should be displayed in the controller menu window. Touch it and the screen shifts to the brake control window.

Centroller		
Assign Axis No.		
Assign Input/Output Port	Brake control	
Assign Input/Output Port Data	Menu	
Next		
AllocAxNo AllocPort AllocPDat -> 18.00		

Brake will	be locked/	released by	touching the "Bra	ake operat	ion" buttons.
Axis No.	Brake o	operation	Brake Status	Servo	Axes group No. 1
Axis1	Lock	Release	Lock	0	Axes group No.2
Axis2	Lock	Release	Lock	0	
Axis3	Lock	Release	Release	0	

When several axis group are set, an axis group of an axis that you would like to have a brake control should be selected with the <u>Axes group No. 1</u> and <u>Axes group No. 2</u> buttons.

The brake operation button and the status of an effective axis should be displayed.

Back

8:51

To release an axis in brake lock status compulsorily, touch the Release button in the brake operation column.

As the screen shifts to the confirmation window, confirm the contents and touch the OK button when having a compulsory release, and touch the Cancel button when cancel.

Brake control Brake will be locked/released by touching the "Brake operation" buttons.	When the brake is to be locked, confirm the servo in the axis number to lock is off, and touch the
Axis No. Brake operation Brake Status Servo Axes group No.1 Axis1 Lock Release Release Axes group No.2	Lock button in the brake operation column. When it
Axis2 Lock Release Lock	is locked, the brake status should be shown "Lock".
Axis3 Lock Release Release	When the servo is on, touch the Back button to return to the teach window, turn the servo off and turn it back on to lock it.
Back	
8.51	

/ Warning: Caution for Brake Compulsory Release

- (1) The moving part may drop, which may cause injury or cause damage on the actuator main unit, workpiece or equipment. Pay special attention.
- (2) Make sure to lock the brake after the work is finished to set the brake control back to the normal condition.
- (3) When the servo is turned on and when it gets back to the menu window, the brake control should get back to the normal condition automatically.









16. Absolute Reset

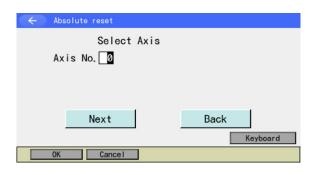
16.1 Absolute Reset of the Orthogonal Axis Axes of XSEL-J/K/P/Q/R/S, or 5th and 6th Axes of XSEL-PX/QX, 5th to 8th Axes of XSEL-RX/SX, SSEL and ASEL Controller

When the controller is applicable to the "battery-less absolute reset", the procedure is different. In such case, perform the absolute reset operation following the [16.8.1 Battery-less Absolute Reset Applicable Absolute Reset Procedure].

Select Absolute Reset from Controller Menu.

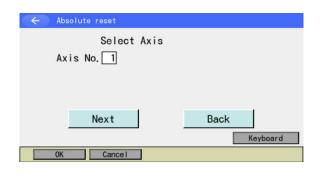
$\left(\leftarrow \right)$	Conf	irmation		
Start ABS. Encoder Reset Operation. Do you want to continue?				
		Yes	No	
	Yes	No		

To have an absolute reset, touch Yes button. When not to have an absolute reset, touch No button. The display returns to the previous screen.



Axis No. Input

Input the axis number that you want to have an absolute reset on the touch panel numeric keys and then touch $\boxed{\mathsf{ENT}}$ for confirmation.



Once the input is confirmed, the cursor disappears. If you want to redo the input, touch the axis number input box.

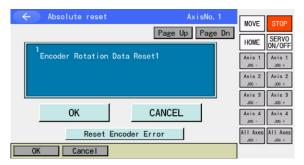
If you want to continue absolute reset, touch Next button.

When you cancel absolute reset, touch Back button.

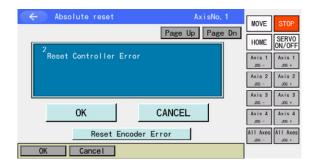
When canceling an absolute reset on any screen of the following 1) through 6) touch CANCEL button.



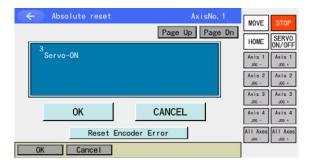




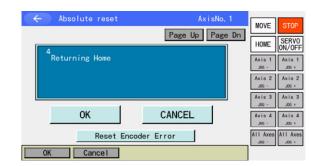
1) Encoder Rotation Data Reset 1 Touch OK button.



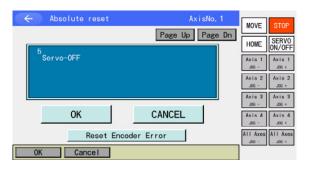
2) Reset Controller Error Touch OK button.



3) Servo-ON Touch OK button.



4) Returning Home Touch OK button.



INTELLIGENT ACTUATOR =

5) Servo-OFF Touch OK button.

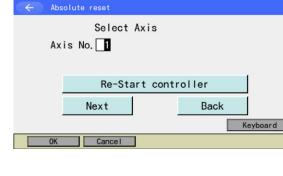
6) Encoder Rotation Data Reset 2 Touch OK button.

- Absolute reset Select Axis Axis No. 1 Re-Start controller Back Next Keyboard
- Return to the axis No. input screen. When you want to have another axis conduct absolute reset, input the axis number and touch OK button.

To finish absolute reset, touch Re-Start controller button.

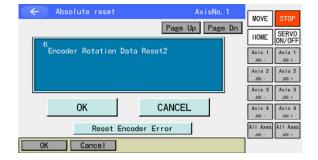
Restart the controller. Touch Yes button. The display returns to the main menu when the reboot is finished.

After executing absolute reset, be sure to reset software or reconnect the power.















16.2 Absolute Reset of the SCARA Axis

16.2.1 XSEL-JX/KX/RXD/SXD or 1st to 4th Axes of XSEL-PX/QX/RX/SX

When the controller is applicable to the "battery-less absolute reset", the procedure is different. In such case, perform the absolute reset operation following the [16.2.2 Battery-less Absolute Reset Applicable Absolute Reset Procedure].

Absolute Reset Preparation

The following jigs are required to perform an absolute reset:

•	 Absolute Reset Adjustment jigs 				
	Туре	Remarks			
	JG-1	Arm length 500/600			
	JG-2	Arm length 250/300/350			
	JG-3	Arm length 700/800			
	JG-4	Arm length 500/600 high-speed type			
	JG-5	Arm length 120/150/180			

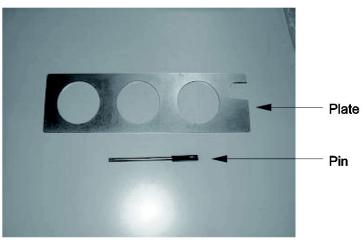
Absolute Reset Adjustment jigs

Connect the robot, controller and teaching pendant to make an operable status from the teaching pendant.

Always check operation of the EMG switch before performing work.

The absolute reset adjustment jig is always required to perform an absolute reset for the rotation axis and vertical axis, but not always required for Arm1 and Arm2.

(Rotation data can be reset as long as positioning accuracy of "center of positioning mark label ±1 graduation" is ensured.)



Example of Absolute Reset Adjustment Jig (Type JG-1)

- / Warning:
 - Performing work without understanding inspection and maintenance work thoroughly may cause an accident resulting in injury or death.
 - Post a sign "MEN WORKING" to prevent other workers from operating the controller, operation panel or other equipment.





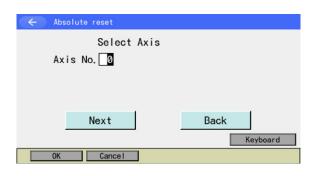
There are three types of absolute reset, Arm1, Arm2 and Z-axis + R-axis.

(1) Absolute Reset on Arm1 and Arm2

Select Absolute Reset from Controller Menu.

C Conf	irmation				
Start ABS. Encoder Reset Operation. Do you want to continue?					
	Yes	No			
Yes	No				

To have an absolute reset, touch \underline{Yes} button. When not to have an absolute reset, touch \underline{No} button. The display returns to the previous screen.



Axis No. Input

Input the axis number that you want to have an absolute reset on the touch panel numeric keys and then touch $\boxed{\text{ENT}}$ for confirmation. Input 1 when you conduct the absolute reset on Arm1 and 2 when on Arm2.

🔶 Absolute reset	
Select Axis Axis No. 1	
Next	Back Keyboard
OK Cance I	

Once the input is confirmed, the cursor disappears. If you want to redo the input, touch the axis number input box.

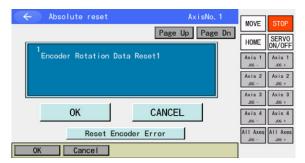
If you want to continue absolute reset, touch Next button .

When you cancel absolute reset, touch Back button.

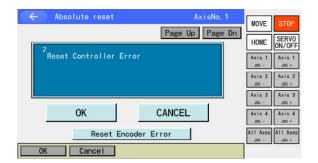
When canceling an absolute reset on any screen of the following 1) through 9) touch CANCEL button.



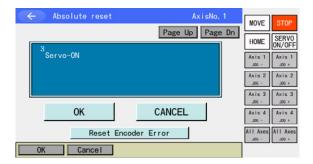




1) Encoder Rotation Data Reset 1 Touch OK button.



2) Reset Controller Error Touch OK button.



3) Servo-ON Touch OK button.

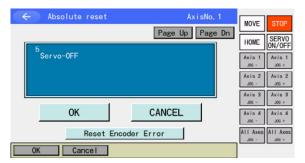
← Absolute reset	AxisNo.1	MOVE STOP
	Page Up Page Dn	HOME SERVO
4 Jog -≻ Standard posture (Mat	Axis 1 J0G - J0G +	
		Axis 2 JOG - JOG +
		Axis 3 JOG - JOG +
OK CA	NCEL	Axis 4 JOG - JOG +
JVel Reset Encoder Erro	or	All Axes JOG - JOG +
OK Cance I	JVel	10:00

4) Jog Movement

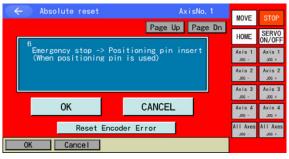
Move the actuator with jog to a point near the standard posture (refer to the figures for standard posture in the following pages), and touch OK button.







5) Servo-OFF Touch <mark>OK</mark> button.





6) Emergency stop input and adjusting jig set
Press the EMERGENCY STOP button and set an
adjusting jig.
Fix at the datum posture described in the next
page, and touch OK button.

\leftarrow	Message			
Message No. BEO				
Emergency Stop				
Back Inquiry				

Inputting emergency stop displays the screen at the left.

Touch Back button, and the screen goes back to the previous.



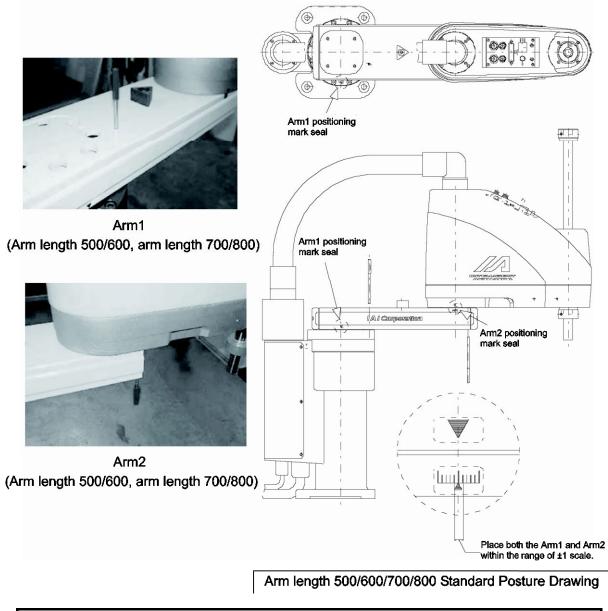


Check that the EMERGENCY STOP button has been pressed.

When performing an absolute reset for Arm1, set an adjustment jig (pin) in Arm1 to fix the arm at the reference position. In that case, Arm2 may be moved.

When performing an absolute reset for Arm2, set an adjustment jig (pin) in Arm2 to fix the arm at the reference position. In that case, Arm1 may be moved.

- After checking that the EMERGENCY STOP button has been pressed, set the jig.
- Decide the basic position referring to the positioning mark seal and set the jig.
- Only the Arm1 is covered with a lid with setscrews. Remove them and set the jig.
- An absolute reset on the arm with the adjusting jig is recommended. However, a multi-rotation reset is possible if the arm position is within the range of the mark seal ±1 scale.



Warning: Be sure to press the EMERGENCY STOP switch before setting an adjusting jig. Failure to do so may cause a robot malfunction, which may lead to a serious accident resulting in injury or death.

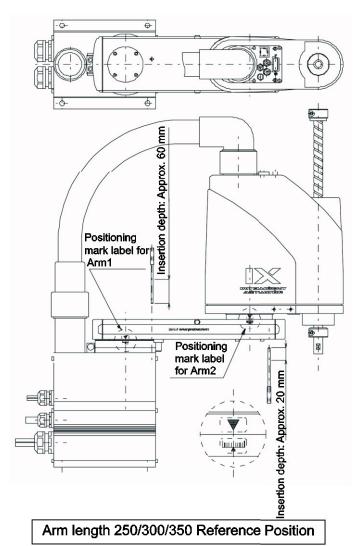


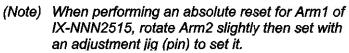


Arm1 (Arm length 250/300/350)



Arm2 (Arm length 250/300/350)











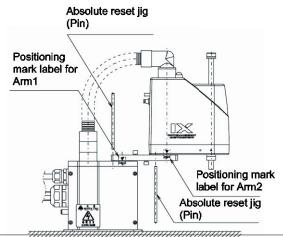
Arm1 (Arm length 120/150/180)



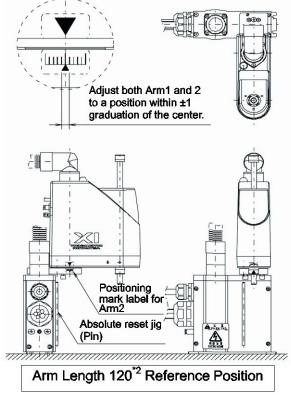
Arm2 (Arm length 150/180)



Arm2 (Arm length 120)



- Arm Length 120^{*1}/150/180 Reference Position
- *1: When an absolute reset is performed for Arm1 (arm length: 120)

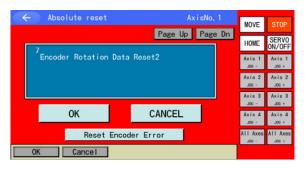


*2: When an absolute reset is performed for Arm2 (arm length: 120)

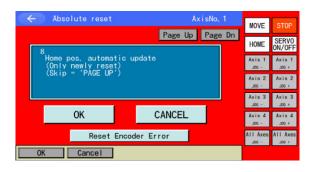
Warning: Be sure to press the EMERGENCY STOP switch before setting an adjusting jig. Failure to do so may cause a robot malfunction, which may lead to a serious accident resulting in injury or death.





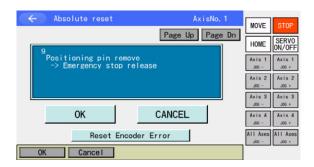


7) Encoder Rotation Data Reset 2 Touch OK button.



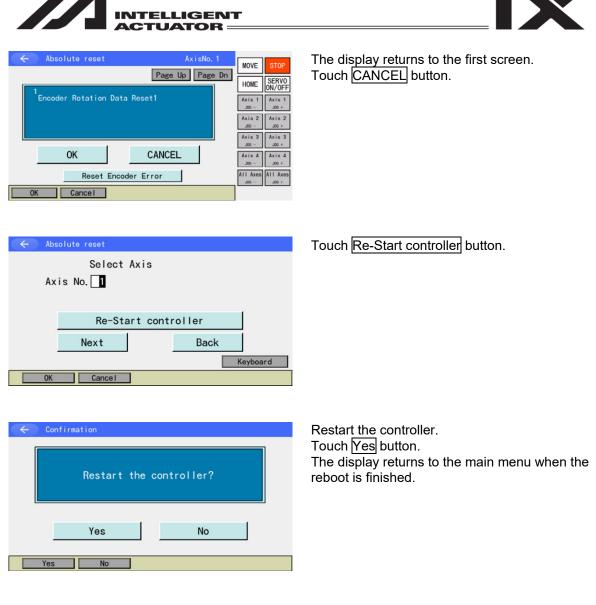
8) Home pos. automatic update Touch Page Up button. Make sure not to touch OK button

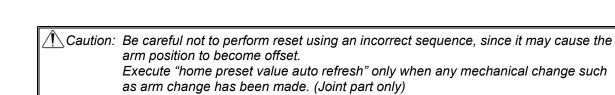
- Do not execute the item of "Home pos. automatic update" (Be careful especially when performing an absolute reset without a jig.)
- If "Home pos. automatic update" is executed by mistake, perform absolute reset work without writing to Flash ROM. (The status will be the same as the one in which "Home pos. automatic update" is not executed.)



9) Detach adjusting tool and cancel emergency stop

Detach the adjusting tool if it has been set on. Release the EMERGENCY STOP button before touching OK button.





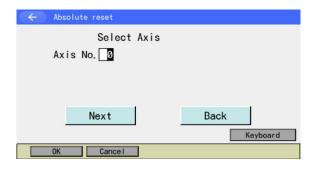




(2) Absolute reset on Z-axis + R-axis Select Absolute Reset from Controller Menu.

← Conf	irmation		
	Start ABS. Encoder I Do you want to	Reset Operation, o continue?	
	Yes	No	
Yes	No		

To have an absolute reset, touch Yes button. When not to have an absolute reset, touch No button. The display returns to the previous screen.



Axis No. input

Input 3 on the touch panel numeric keys to indicate the axis number to have the absolute reset conducted, and touch $\boxed{\text{ENT}}$ for confirmation.

🔶 Absolute reset	
Select Axis Axis No.3	
Next	Back
OK Cance I	

Once the input is confirmed, the cursor disappears. If you want to redo the input, touch the axis number input box.

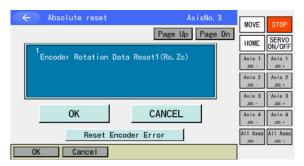
If you want to continue absolute reset, touch Next button.

When you cancel absolute reset, touch Back button.

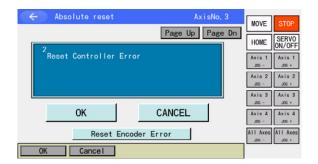
When canceling an absolute reset on any screen of the following 1) through 15) touch CANCEL button.



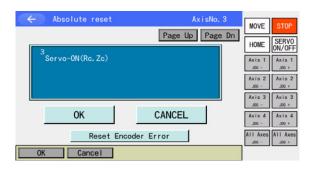




1) Encoder Rotation Data Reset 1 Touch OK button.



2) Reset Controller Error Touch OK button.



3) Servo-ON Touch <mark>OK</mark> button.





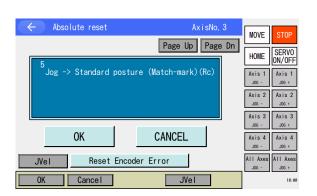
🔶 Absolute reset	AxisNo.3	MOVE	STOP
4	Page Up Page Dn	HOME	SERV0 0N/0FF
Temp. Standard posture stan	dby(Zc)	Axis 1 JOG -	Axis 1 JOG + Axis 2
		JOG - Axis 3	JOG +
ОК С	ANCEL	J06 -	J06 +
JVel Reset Encoder Err	or		All Axes
OK Cance I	JVel		

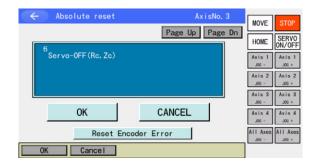
4) Temp. standard posture standby Touch OK button.

Caution:

The Z-axis returns to the home position.

5) Jog Movement Move the R-axis with the jog button to a place around the standard posture (refer to the figures of standard posture in the next page and after), and touch OK button.





6) Servo-OFF Touch OK button.





4	Absolute reset	A:	cisNo, 3		_
		Deep line	Deep De	MOVE	STOP
	Page Up Page Dn			HOME	SERV0 0N/0FF
	Emergency stop -> Brake Release(BK_SW-RLS)				Axis 1 JOG +
	-> Positioning pin insertion (When positioning pin is used)			Axis 2 J06 -	Axis 2 J06 +
				Axis 3 J06 -	Axis 3 J06 +
	OK	CANCEL		Axis 4 J05 -	Axis 4 _J05 +
	Reset Enco	oder Error		All Axes J06 -	All Axes JOG +
C	K Cancel				

7) Emergency stop input and adjusting jig set Press the EMERGENCY STOP button. Press the brake release switch to release the brake.

Fix at the datum posture described in the next page, and touch OK button.



÷	Message	
	Mess	age No. BE0
	Emerg	ency Stop
	Back	Inquiry

Inputting emergency stop displays the screen at the left.____

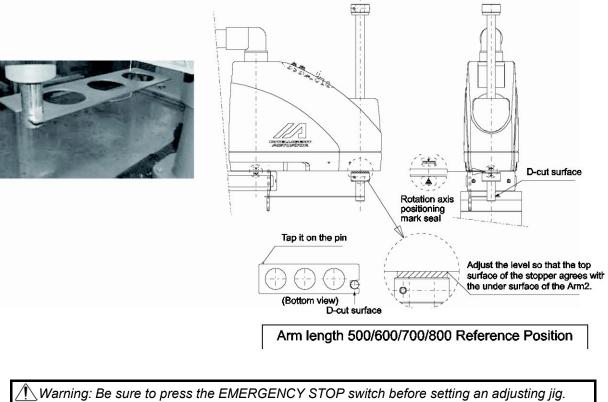
Touch Back button to go back to the previous screen.



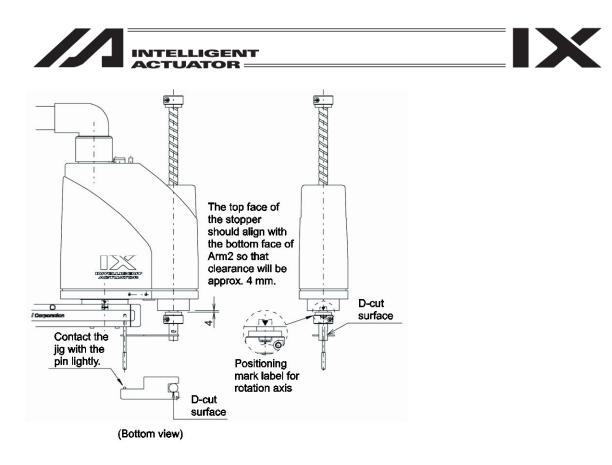


Place the adjusting jig plate and pin as shown below and fix the standard posture.

- After checking that the EMERGENCY STOP switch has been pressed, set the jig.
- Set the jig by referring to the positioning mark.
- Adjust the level so that the top surface of the stopper approximately agrees with the under surface of the Arm2.



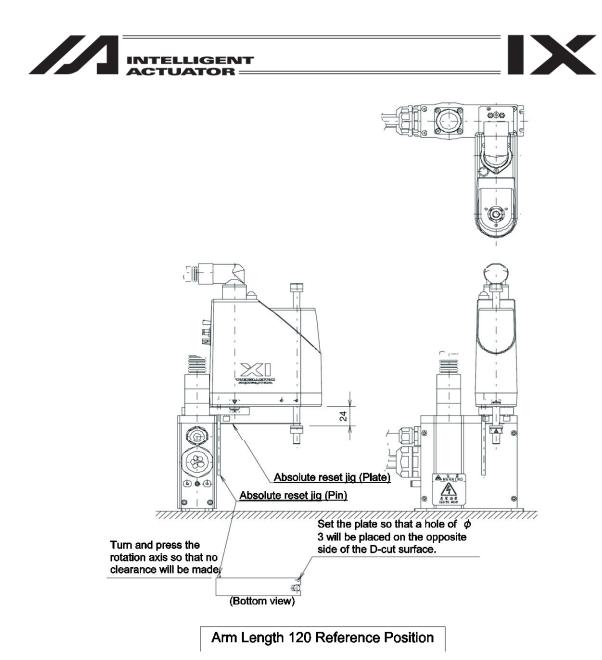
Warning: Be sure to press the EMERGENCY STOP switch before setting an adjusting jig. Failure to do so may cause a robot malfunction, which may lead to a serious accident resulting in injury or death.

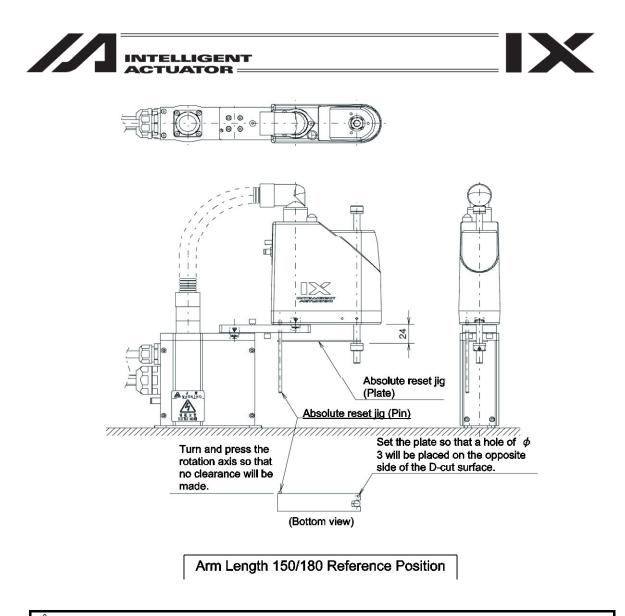




Arm Length 250/300/350 Reference Position

Warning: Be sure to press the EMERGENCY STOP switch before setting an adjusting jig. Failure to do so may cause a robot malfunction, which may lead to a serious accident resulting in injury or death.

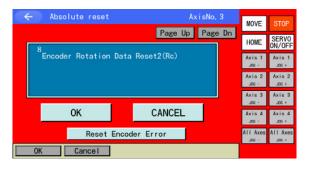




- Warning: Be sure to press the EMERGENCY STOP switch before setting an adjusting jig. Failure to do so may cause a robot malfunction, which may lead to a serious accident resulting in injury or death.
 - Pay attention to the orientation of the D-cut surface of the plate jig.







8) Encoder Rotation Data Reset 2 Touch OK button.

-	- Absolute reset	A	cisNo. 3		
		_	_	MOVE	STOP
	9	Page Up	Page Dn	HOME	SERV0 0N/0FF
	Home pos. automatic upda (Indispensability)(Rc)	ite		Axis 1 .J06 -	Axis 1 _306 +
				Axis 2 J06 -	Axis 2 J06 +
	_			Axis 3 JOG -	Axis 3 JOG +
	ОК	CANCEL		Axis 4 J06 -	Axis 4 J06 +
	Reset Encoder	Error		All Axes J00 -	All Axes
	0K Cance I				

9) Home pos. automatic update Touch OK button.

	AxisNo.3 Up Page Dn	MOVE STOP
10 Positioning pin remove -> Brake Lock(BK SW-NOM) -> Emergency stop release (When positioning pin is used)		Axis 1 JOG - Axis 2 JOG - Axis 2 JOG +
OK CANCE Reset Encoder Error		Axis 3 J06 - Axis 4 J06 - Axis 4 J06 - Axis 4 J06 + All Axes J00 - All Axes
0K Cance I		

10) Adjusting jig removal and emergency off Remove the adjusting jig.

Turn off the brake release switch to enable the brake.

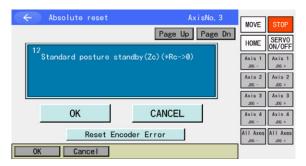
Turn off the EMERGENCY STOP button. Touch OK button.

← Absolute reset	AxisNo. 3	MOVE	STOP
11	Page Up Page Dn	HOME	SERV0 0N/0FF
Servo-ON(Rc,Zc)		Axis 1 JOG -	Axis 1 JOG +
		Axis 2 J06 -	Axis 2 J0G +
		Axis 3 JOG -	Axis 3 306 +
OK	CANCEL	Axis 4 JOG -	Axis 4 _J05 +
Reset Encoder	Error	All Axes	All Axes
OK Cancel			

11) Servo-ON Touch <mark>OK</mark> button.

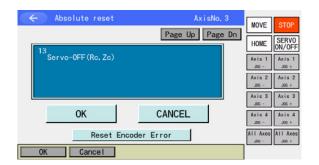




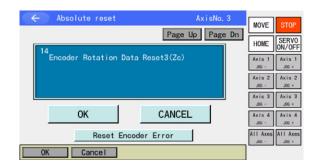


12) Standard posture standby Touch OK button.

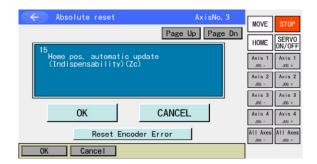
Caution: The Z-axis returns to the home position.



13) Servo-OFF Touch OK button.



14) Encoder Rotation Data Reset 3 Touch OK button.



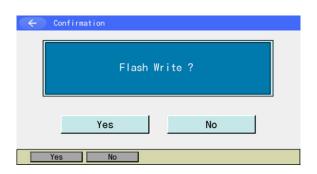
15) Home pos. automatic update Touch OK button.





Absolute reset AxisNo. 3 MOVE Page Up Page Dn SERV0 ON/OFF HOME Axis Axis 1 J05 4 Axis 2 Axis 2 306 J06 + J06 4 CANCEL 0K Axis 4 J05 + Reset Encoder Error All Ax Cancel

The display returns to the first screen. Touch CANCEL button. The display returns to the previous screen.

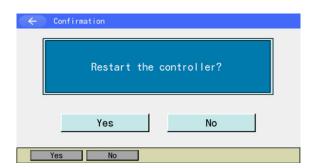


Do not fail to conduct Flash ROM Writing \rightarrow Software Reset after the home preset automatic updating.



While in writing process to flash ROM, the screen shown in the left will be displayed.

Never turn off the power to the Controller at this time.



After flash ROM writing is complete, the display changes to the software reset screen. To activate the parameters that you had changed, it is necessary to have a software reset. Touch Yes button.





Software Reset

Controller Restarting...

The screen shown on the left is displayed during the software reset.

Once the software reset is complete, the display returns to the main menu screen.

🥢 Menu	
Edit	File
Play	
Monitor	Environment Set
Controller	Next
Edit Play	Nonitor Control ->



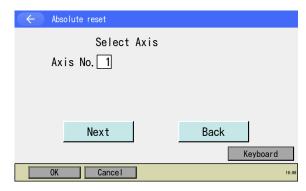


16.2.2 How to Conduct Absolute Reset for Battery-less Absolute SCARA Type

Absolute Reset on SCARA Axes: Follow the procedures below to conduct the absolute reset on 1st to 4th^{*1} Axes of XSEL-RAX/SAX and XSEL2-TX (axes group No. 1), 1st to 4th Axes or 5th to 8th Axes of XSEL-RAXD/SAXD. (*1 1st to 3rd Axes for 3-axis SCARA type)

There are some types as shown below for the absolute reset. For 4-Axis SCARA : Arm1, Arm2 and Z-axis + R-axis For 3-Axis SCARA : Arm1, Arm2 and Z-axis

(1) Absolute Reset on Arm1 and Arm2



1) Input the axis number to the axis number box using the touch panel numeric keys, and then touch Next button.

* Input 1or 5 when you conduct the absolute reset on Arm1 and 2 or 6 when on Arm2.

2) Encoder Rotation Data Reset 1 to Servo-ON Touch OK button

* After touching OK, the process will be carried out in order from Encoder Multi-Rotation Data Reset 1 to Servo-ON.

Absolute reset	AxisNo.1 Page Up Page Dn	MOVE STOP
1 Encoder Rotation Data Rese -> Reset Controller Error -> Servo-ON	ət1	HOME SERVO ON/OFF Axis 1 J06 - Axis 1 J06 + Axis 2 J06 - Axis 2 J06 +
ОК	CANCEL	Axis 3 J06 - Axis 3 J06 + Axis 4 J06 - Axis 4 J06 +
Reset Encoder E	rror	All Axes J0G - J0G +
OK Cance I		10:00

AxisNo.1 MOVE Page Up Page Dn SERVO ON/OFF HOME log -> Standard posture Axis *After "OK", then Servo-off is executed. J0G + Axis 3 0K CANCEL Axis J0G + ALL Axes Reset Encoder Error JVel Cancel JVel OK 10:00

3) Jog Movement

Move the actuator with jog to a point near the standard posture (refer to [figures for standard posture in 16.2.1 (1)]), and touch OK button.

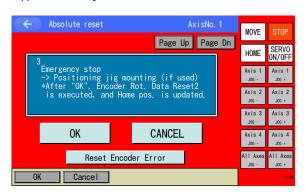
* After touching OK, the servo will get automatically turned OFF.

The following procedures should differ for when the SCARA axis is the battery-less absolute encoder and when it is other than the battery-less absolute encoder.





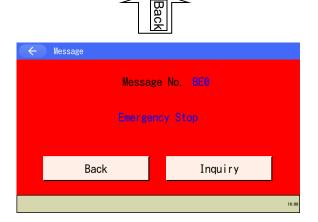
(i) For battery-less absolute encoder



4) Emergency stop and Positioning jig mounting Press the EMERGENCY STOP button, and then attach the positioning tool.

Affix to the standard posture (refer to [figure of standard posture in 16.2.1 (1)]), and then touch OK button.

* After touching OK, Encoder Multi-Rotation Data Reset 2 and Home Position Preset Automatic Update should be conducted.



Inputting emergency stop displays the screen at the left.

Touch Back button, and the screen goes back to the previous.

Absolute reset AxisNo. 1	MOVE STOP
Page Up Page Dn	HOME SERVO ON/OFF
Positioning jig removal -> Emergency stop release	Axis 1 J0G - J0G +
*After "OK", then the process completes.	Axis 2 J0G - Axis 2 J0G +
	Axis 3 J0G - J0G +
OK CANCEL	Axis 4 JOG - JOG +
Reset Encoder Error	All Axes JOG - JOG +
OK Cancel	10:00

5) Positioning jig removal and Emergency stop release

Detach the positioning tool.

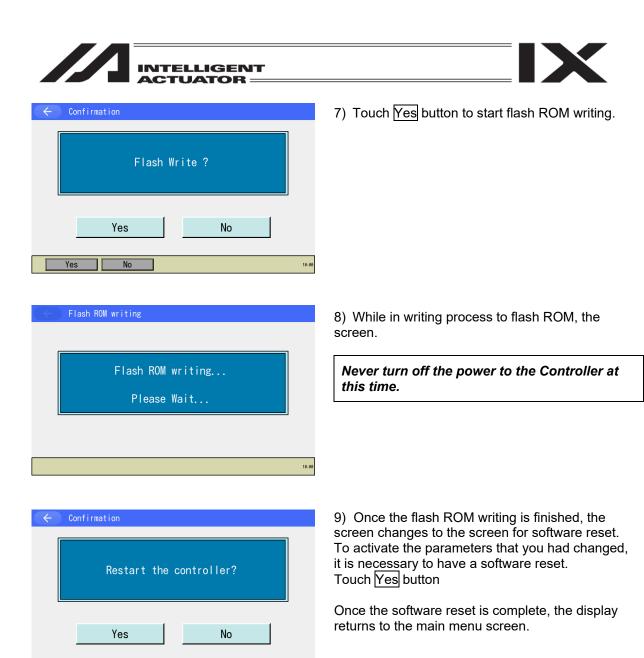
Release the EMERGENCY STOP button before touching OK button.

* After confirming OK, the screen automatically returns to the axis select screen.

	301410 10301			
Ax	Select (is No. 1	Axis		
	Re-Sta	art conti	roller	
	Next	1	Back	
		1	K	eyboard
OK	Cancel	1		10:00

6) Touch Re-Start controller button. A confirmation screen for the flash ROM writing appears.

Absolute r



10:00

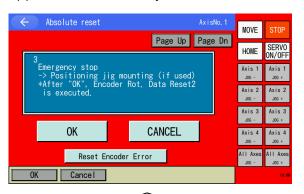
No

Yes





(ii) For other than battery-less absolute encoder



4) Emergency stop and Positioning jig mounting Press the EMERGENCY STOP button, and then attach the positioning tool.

Affix to the standard posture (refer to [figure of standard posture in 16.2.1 (1)]), and then touch \overrightarrow{OK} button.

* After touching OK, Encoder Multi-Rotation Data Reset 2 should be conducted.

	L		
\leftarrow	Message		
		sage No. BE0 gency Stop	
	Back	Inquiry	
			10:00

Bac

Inputting emergency stop displays the screen at the left.

Touch Back button, and the screen goes back to the previous.

•	Absolute reset		AxisNo.1	MOVE	STOP
1	4	Page Up	Page Dn	HOME	SERVO ON/OFF
	Home pos. automatic (Only newly reset) (Skip = 'PAGE UP')	update		Axis 1 _{JOG} –	Axis 1 _{JOG +}
	(SKTP - FAGE UF)			Axis 2 _{JOG} -	Axis 2 _{JOG +}
l	_			Axis 3 _{JOG} -	Axis 3 _{JOG +}
	OK	CANCEL		Axis 4 JOG -	Axis 4 _{JOG +}
	Reset Encod	der Error		All Axes JOG -	All Axes JOG +
	OK Cancel				10:00

5) Home pos. automatic update

Touch Page Up button. Make sure not to touch OK button.

• Do not execute the item of "Home pos. automatic update" (Be careful especially when performing an absolute reset without a jig.)

• If "Home pos. automatic update" is executed by mistake, perform absolute reset work without writing to Flash ROM. (The status will be the same as the one in which "Home pos. automatic update" is not executed.)



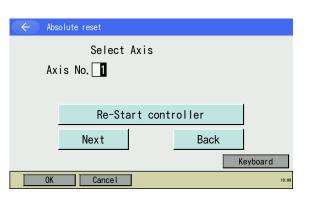


Absolute reset AxisNo. 1	MOVE	STOP
Page Up Page Dn	HOME	SERV0 0N/0FF
Positioning jig removal -> Emergency stop release	Axis 1 _{JOG} -	Axis 1 _{JOG +}
*After "OK", then the process completes.	Axis 2 _{JOG} -	Axis 2 _{JOG +}
	Axis 3 JOG -	Axis 3 JOG +
OK CANCEL	Axis 4 JOG -	Axis 4 JOG +
Reset Encoder Error	All Axes J0G -	All Axes JOG +
OK Cance I		10:00

6) Positioning jig removal and Emergency stop release

Detach the positioning tool. Release the EMERGENCY STOP button before touching OK button.

* After confirming OK, the screen automatically returns to the axis select screen.





Touch Re-Start controller button.

Restart the controller. Touch Yes button. The display returns to the main menu when the reboot is finished.

Caution: Be careful not to perform reset using an incorrect sequence, since it may cause the arm position to become offset. Execute "home preset value auto refresh" only when any mechanical change such as arm change has been made. (Joint part only)





(2) Absolute reset on Z-axis + R-axis

* For 4-Axis SCARA

Absolute reset

 Select Axis

 Axis No. 3

 Next
 Back

 Keyboard

 OK
 Cancel

AxisNo.3 MOVE Page Up Page Dn SERVO ON/OFF HOME coder Rotation Data Reset1(Rc,Zc) Reset Controller Error Servo-ON(Rc,Zc) Temp. Standard posture standby(Zc) Axis 1 Axis 1 JOG J0G + Axis 2 Axis 2 Axis 3 Axis 3 J0G + 0K CANCEL Axis 4 Axis 4 J0G + JOG Reset Encoder Error All Axes All Axes J0G + Cancel 10:00

1) Input the axis number to the axis number box using the touch panel numeric keys, and then touch Next button.

* Input the axis number of the Z-axis (either 3 or 7).

2) Encoder Rotation Data Reset 1 (Rc, Zc) to Temp. Standard posture standby (Zc) Touch OK button.

* After touching OK, the process will be carried out in order from Encoder Multi-Rotation Data Reset 1 (Rc, Zc) to Temp. Standard posture standby (Zc).

Caution: The Z-axis returns to the home position.

3) Jog Movement

Move the R-axis with the jog button to a place around the standard posture (refer to [figures for standard posture in 16.2.1 (2)]), and touch OK button.

* After touching OK, the servo will get automatically turned OFF (Rc, Zc).

Absolute reset AxisNo.		MOVE STOP
Page Up Page Dn 2 Jog -> Standard posture (Match-mark)(Rc) *After "OK", then Servo-off(Rc,Zc) is executed.		HOME SERV0 ON/OFF Axis 1 JG - JG - Axis 2 JG - JG + Axis 3 Axis 3
OK CANCEL	-	JOG - JOG + Axis 4 JOG + JOG - JOG +
JVel Reset Encoder Error OK Cancel JVel		All Axes JOG - JOG + 10:00

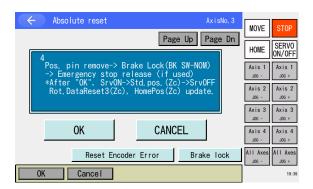




Absolute reset AxisNo. 3	MOVE	STOP
Page Up Page Dn	HOME	SERV0 0N/0FF
Emergency stop -> Brake RIs.(BK SW-RLS) -> Positioning pin insertion (if used) *After "OK". Encoder Rot.Data Reset2(Rc)	Axis 1 JOG -	Axis 1 J06 +
is exec., and Home pos. (Rc) is updated.	Axis 2 JOG -	Axis 2 _{J06} +
	Axis 3 JOG -	Axis 3 JOG +
OK CANCEL	Axis 4 JOG -	Axis 4 JOG +
Reset Encoder Error Brake release	All Axes JOG -	All Axes J0G +
OK Cance I		19:32



÷	Message			
Message No. BEO				
	Emergency Stop			
	Lifergen			
	Back	Inquiry		
			10:00	



4) Emergency stop input and Positioning pin set Press the EMERGENCY STOP button.

Set the brake release switch on the controller to the RLS side or touch the Brake release button (when the button is activated) to release the brake in the confirmation window.

Affix to the standard posture (refer to [figure of standard posture in 16.2.1 (2)]), and then touch \overrightarrow{OK} button.

* After touching OK, the process will be carried out in order from Encoder Multi-Rotation Data Reset 2 (Rc) to Home preset value automatic update (Rc).

Inputting emergency stop displays the screen at the left.____

Touch Back button, and the screen goes back to the previous.

5) Pos. pin remove and Emergency stop release Detach the positioning pin.

Set the brake releasee switch back to the NOM side or touch the Brake lock button (when the button is activated) to lock the brake. Set back the EMERGENCY STOP button, and touch OK button.

* After touching OK, the process will be carried out in order from Servo ON to Home preset value automatic update (Zc).

<u> Caution:</u>

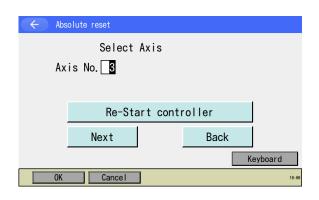
The Z-axis returns to the home position.



🔶 Absolute reset	AxisNo.3	MOVE STOP
5 Complete!	Page Up Page Dn	HOME SERVO ON/OFF Axis 1 Axis 1 JOG + Axis 2 Axis 2 JOG +
0K	CANCEL	Axis 3 JOG - JOG - JOG + Axis 4 JOG + JOG - JOG +
Reset Encoder	ror	All Axes JOG - JOG + 10:00

6) Complete! Touch OK button.

* After confirming OK, the screen automatically returns to the axis select screen.



7) Touch Re-Start controller button. A confirmation screen for the flash ROM writing appears.

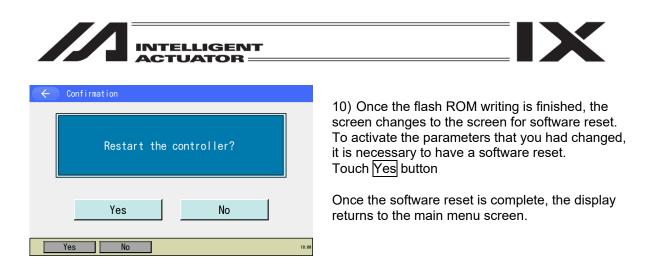
8) Touch Yes button to start flash ROM writing.



Flash ROM writing Flash ROM writing... Please Wait...

10:00

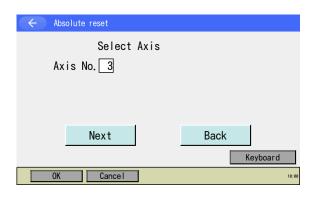
- 9) While in writing process to flash ROM, the screen.
- Never turn off the power to the Controller at this time.

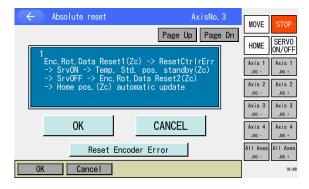


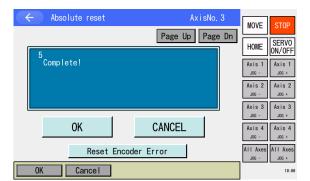


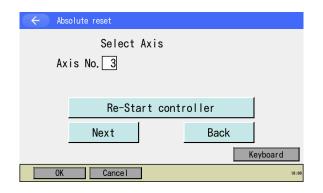
(3) Absolute reset on Z-axis

* For 3-Axis SCARA









1) Input the axis number to the axis number box using the touch panel numeric keys, and then touch Next button.

* Input the axis number of the Z-axis (either 3).

- 2) Absolute Reset Touch OK button.
- * After touching OK, steps from Encoder Multi-Rotation Data Reset 1 (Zc) to the home preset value (Zc) automatic update should be performed in order.

- 3) Complete! Touch OK button.
- * After confirming OK, the screen automatically returns to the axis select screen.

4) Touch Re-Start controller button.

A confirmation screen for the flash ROM writing appears.

INTELLIGENT ACTUATOR	
Confirmation	5) Touch Yes button to start flash ROM writing.
Flash Write ?	
Yes No	
Yes No 18:00	
Flash ROM writing	6) While in writing process to flash ROM, the left screen.
Flash ROM writing Please Wait	
19-00	Never turn off the power to the Controller at this time.
Confirmation	
Restart the controller?	 7) Once the flash ROM writing is finished, the screen changes to the screen for software reset. To activate the parameters that you had changed, it is necessary to have a software
Yes No	reset. Touch <u>Yes</u> button.
Yes No 10:00	Once the software reset is complete, the display returns to the main menu screen.





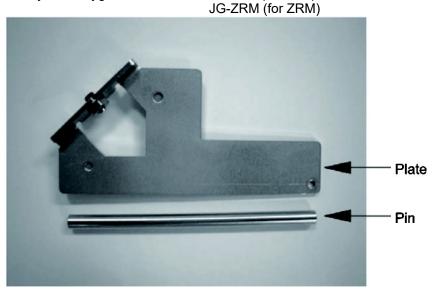
16.3 Perform Absolute Reset on ZR Unit (Absolute Type)

Under certain conditions such as when the ZR unit is connected to the controller for the first time, absolute encoder battery voltage is abnormal, or encoder cable has been disconnected, an encoder battery error will generate and absolute reset will be required.

[1] Preparing for Absolute Reset

You also need a special jig to perform an absolute reset.

Absolute-reset adjustment jig Model number : JG-ZRS (for ZRS)



Connect the cables for the robot, controller and teaching pendant to enable operation from the teaching pendant.

Before proceeding, be sure to confirm that the EMG switch operates properly.

<u>/Î</u>	∖Warning: •	Carrying out any inspection or maintenance work without fully understanding the
		work may result in serious injury.
		Dut we a size that as a "Alark' in Descences" as as to reason to the end of the second state of the second

- Put up a sign that says "Work in Progress" so as to prevent other operators from accidentally operating the controller, operation panel, etc.
- After having a backup of the parameters, conduct the absolute reset.





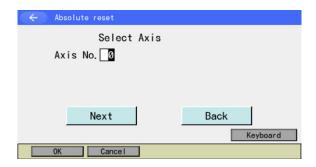
[2] Absolute Reset Procedures

For absolute reset for the ZR unit, a series of operations of the vertical axis and rotation axis is performed. Because there is an item for operating the robot in the adjustment procedure, perform the adjustment in the condition where the actuator is available by setting the appropriate moving range of the actuator and arranging it so there are no obstacles etc. for the actuator.

Select Absolute Reset from Controller Menu.

Centi	rmation				
Start ABS. Encoder Reset Operation. Do you want to continue?					
	Yes	No			
Yes	No				

To have an absolute reset, touch \underline{Yes} button. When not to have an absolute reset, touch \underline{No} button. The display returns to the previous screen.



Axis No. input Input the axis number of the vertical axis on ZR Unit on the touch panel numeric keys , and confirm the input with $\boxed{\text{ENT}}$.

🗲 Absolute reset	
Select Axis Axis No. 1	
Next	Back
OK Cancel	

Once the input is confirmed, the cursor disappears. If you want to redo the input, touch the axis number input box.

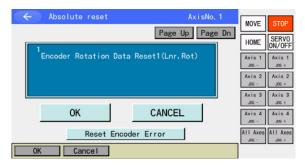
If you want to continue absolute reset, touch Next button.

When you cancel absolute reset, touch Back button.

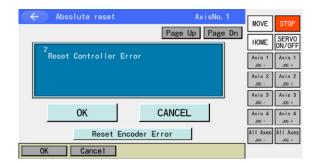
When canceling an absolute reset on any screen of the following 1) through 15) touch CANCEL button.







1) Encoder Rotation Data Reset 1 Touch OK button.



2) Reset Controller Error Touch OK button.

🔶 Absolute reset			STOP
3 Servo-ON(Lnr,Rot)	Page Up Page Dn	HOME Axis 1	SERVO ON/OFF Axis 1
		J0G - Axis 2 J0G -	J06 + Axis 2 J06 +
ОК	CANCEL	Axis 3 J06 - Axis 4 J06 -	Axis 3 J06 + Axis 4 J06 +
Reset Encoder E	rror	All Axes J00 -	All Axes JOG +

3) Servo-ON Touch OK button.

🗧 Absolute reset	AxisNo. 1	MOVE	STOP
Pa	age Up Page Dn	HOME	SERV0 0N/0FF
Temp. Standard posture standb	y(Lnr.Axis)	Axis 1 JOG -	Axis 1 JOG +
		Axis 2 J06 -	Axis 2 J06 +
		Axis 3 J06 -	Axis 3
		Axis 4 JOG -	Axis 4 J05 +
JVel Reset Encoder Error OK Cancel	JVel	J00 -	J00 +

- 4) Temp. standard posture standby Touch OK button.
- Caution:

The vertical axis returns to the home position





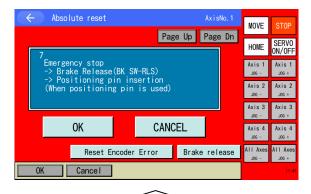
← Absolute reset	AxisNo.1	MOVE STOP
5	Page Up Page Dn	HOME SERVO
Jog -> Standard posture(Mat	ch-mark) (Rot)	Axis 1 JOG - JOG + Axis 2 Axis 2
		J0G - J0G + Axis 3 J0G - J0G +
<u>ОК</u> С.	ANCEL	Axis 4 JOG - JOG +
JVel Reset Encoder Err	or JVel	All Axes J0G - J0G + 10:00

5) Jog Movement

Move the rotary axis with the jog button to a place around the standard posture (refer to the figures of standard posture in the next page and after), and touch OK button.

6) Servo-OFF Touch OK button.

🔶 Absolute reset	AxisNo. 1	MOVE	STOP
6 Servo-OFF(Lnr,Rot)	Page Up Page Dn	HOME Axis 1	SERVO ON/OFF Axis 1
		J06 - Axis 2 J06 -	.106 + Axis 2 .306 +
ОК СА	NCEL	Axis 3 J06 - Axis 4 J06 -	Axis 3 J06 + Axis 4 J06 +
Reset Encoder Erro	or	All Axes Joo -	All Axes JOO +



Press the EMERGENCY STOP button. Set the brake release switch on the controller to the RLS side or touch the <u>Brake release</u> button (when the button is activated) to release the brake in the confirmation window. Fix at the datum posture described in the next page, and touch OK button.

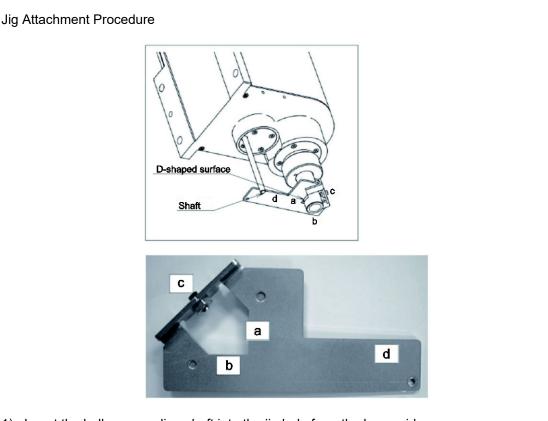
7) Emergency stop input and adjusting jig set



Inputting emergency stop displays the screen at the left.

Touch Back button to go back to the previous screen.



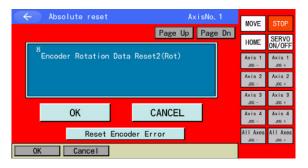


- 1) Insert the ball screw spline shaft into the jig hole from the lower side.
- 2) Put the D-cut surface of the ball screw spline shaft onto the surface "a".
- 3) Put the ball screw spline shaft side surface onto the surface "b".
- 4) Fasten the screw "c" and fix the jig onto the ball screw spline shaft.
 - * At that time, make sure that the adjusting jig is placed vertically to the ball screw spline shaft and the D-cut surface closely contacts the surface "a".
 - * Screws to be used : Hexagon socket head set screw M5
 - * Tightening Torque : 20 [N•cm] (reference)
- 5) Insert the attached shaft into the hole on the ZR unit body.
 - * Be careful because the shaft comes off easily when your hand is released.
- 6) Turn the ball screw spline shaft and put the attached shaft onto the surface "d" of the jig.

Warning: Be sure to press the EMERGENCY STOP switch before setting an adjusting jig. Failure to do so may cause a robot malfunction, which may lead to a serious accident resulting in injury or death.





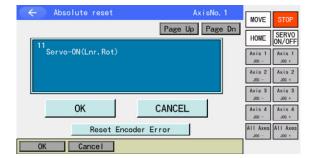


8) Encoder Rotation Data Reset 2 Touch OK button.

CL	Absolute reset	٨٧	isNo.1		
			MOVE	STOP	
	9	Page Up	Page Dn	HOME	SERV0 0N/0FF
	Home pos. automatic update (Indispensability)(Rot)		Axis 1 JOG -	Axis 1 J0G +	
				Axis 2 J06 -	Axis 2 JOG +
			_	Axis 3 J05 -	Axis 3 306 +
	OK C	CANCEL		Axis 4 JOG -	Axis 4 J05 +
	Reset Encoder Er	ror		All Axes Jos -	All Axes
0	K Cancel				

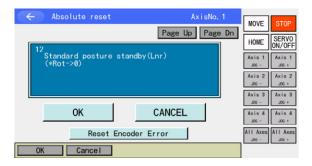
AxisNo.1 MOVE Page Up Page Dn SERV0 0N/0FF HOME Positioning pin remove -> Brake Lock(BK SW-NOM) -> Emergency stop release (When positioning pin is used) Axis 1 Axis 1 J0G + JOG Axis 2 Axis 2 J0G + Axis 3 Axis 3 JOG J0G + CANCEL 0K Axis 4 Axis 4 JOG J0G + Reset Encoder Error Brake lock All Axe s All Axes Cancel 11:48 9) Home pos. automatic update Touch OK button.

10) Adjusting jig removal and emergency off Remove the adjusting jig. Set the brake releasee switch back to the NOM side or touch the Brake lock button (when the button is activated) to lock the brake. Turn off the EMERGENCY STOP button. Touch OK button.



11) Servo-ON Touch OK button.





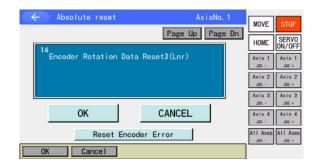
12) Standard posture standby Touch OK button.

A Caution:

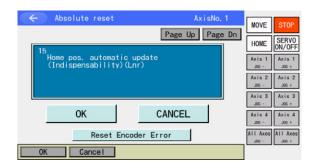
The vertical axis returns to the home position

Absolute reset MOVE Page Up Page Dn SERV0 0N/0FF HOME Servo-OFF(Lnr,Rot) Axis 1 Axis 1 Axis 2 J06 - J06 + Axis 3 J06 - J06 + OK CANCEL Axis 4 J06 - J06 + Reset Encoder Error ALL Axes ALL Axe Cancel OK

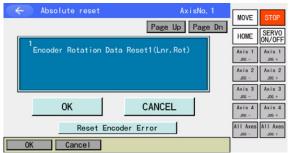
13) Servo-OFF Touch <mark>OK</mark> button.



14) Encoder Rotation Data Reset 3 Touch OK button.



15) Home pos. automatic update Touch OK button.



Re-Start controller

Flash Write ?

Back

No

Keyboard

Absolute reset

Axis No. 1

OK

← Confirmation

Next

Cancel

Yes

No

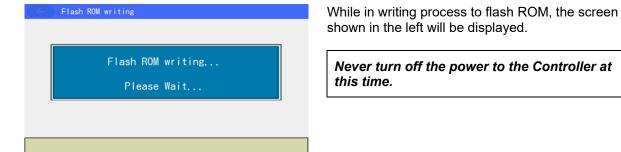
Select Axis

INTELLIGENT ACTUATOR =

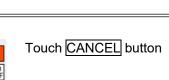
Touch Re-Start controller button.

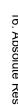
Do not fail to conduct Flash ROM Writing \rightarrow

Software Reset after the home preset automatic updating.



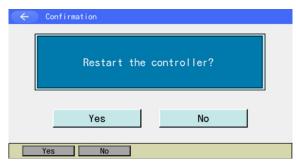
Never turn off the power to the Controller at this time.











After flash ROM writing is complete, the display changes to the software reset screen. To activate the parameters that you had changed, it is necessary to have a software reset. Touch Yes button.



The screen shown on the left is displayed during the software reset.

Once the software reset is complete, the display returns to the main menu screen.

🤄 Menu		
Edit	File	
Play		
Monitor	Environment Set	
Controller	Next	
Edit Play Monitor Control ->		





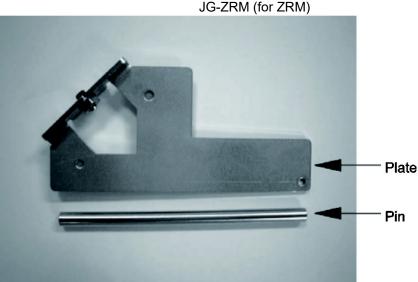
16.4 Perform Ball Screw Spline Shaft Adjusting on ZR Unit (Incremental Type)

Normally, adjustment of the ball screw spline shaft adjusting is not required. Perform it only when the combination of the main unit and the controller is changed because the ZR unit or controller is changed.

[1] Ball Screw Spline Shaft Adjusting Preparation

The absolute rest jig is required for the adjustment of the ball screw spline shaft adjusting for the ZR unit.

• Absolute-reset adjustment jig Model number : JG-ZRS (for ZRS)



Connect the cables for the robot, controller and teaching pendant to enable operation from the teaching pendant.

Before proceeding, be sure to confirm that the EMG switch operates properly.

Warning: • Carrying out any inspection or maintenance work without fully understanding the work may result in serious injury.

- Put up a sign that says "Work in Progress" so as to prevent other operators from accidentally operating the controller, operation panel, etc.
- After having a backup of the parameters, conduct the absolute reset.





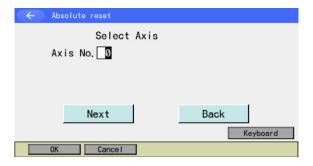
[2] Ball Screw Spline Shaft Adjusting Procedure

For ball screw spline shaft adjusting for the ZR unit, a series of operations of the vertical axis and rotation axis is performed. Because there is an item for operating the robot in the adjustment procedure, perform the adjustment in the condition where the actuator is available by setting the appropriate moving range of the actuator and arranging it so there are no obstacles etc. for the actuator.

Select Absolute Reset from Controller Menu.

Confirmation			
	BS. Encoder Ro o you want to	eset Operation. continue?	
Yes	3	No	
Yes	No.		

To have an absolute reset, touch Yes button. When not to have an absolute reset, touch No button. The display returns to the previous screen.



Axis No. Input Input the axis number of the vertical axis on ZR Unit on the touch panel numeric keys , and confirm the input with ENT.

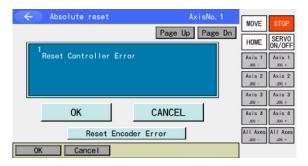
🔶 Absolute reset	
Select Axis Axis No. 1	
Next	Back
OK Cance I	

Once the input is confirmed, the cursor disappears. If you want to redo the input, touch the axis number input box.

If you want to continue absolute reset, touch Next button.

When you cancel absolute reset, touch Back button.

When canceling an absolute reset on any screen of the following 1) through 9) touch CANCEL button.



Servo-ON(Lnr,Rot)

OK

OK Cance I

INTELLIGENT ACTUATOR =

> 1) Reset Controller Error Touch OK button.

2) Servo-ON Touch OK button.

MOVE

HOME SERVO ON/OFF

Axis 1 Axis 1 J06 - J06 + Axis 2 Axis 2 J06 - J06 + Axis 3 Axis 3 J06 - J06 +

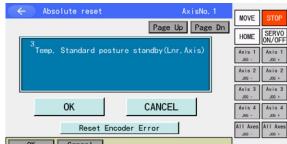
Axis 4 J06 - J06 +

All Axes All Axes

Page Up Page Dn

CANCEL

Reset Encoder Error



3) Temp. standard posture standby Touch OK button.

Caution: The vertical axis returns to the home position

4) Returning Home Touch OK button.

Caution:

The rotation axis returns to the home position.

Cancel OK



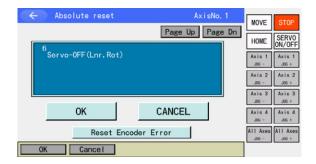




← Absolute reset AxisNo. 1	MOVE STOP
Page Up Page Dn	HOME SERVO ON/OFF
Jog -> Standard posture(Match-mark)(Rot)	Axis 1 JOG - JOG + Axis 2 Axis 2
	Axis 2 J0G - J0G + Axis 3 Axis 3
OK CANCEL	J0G - J0G + Axis 4 J0G - J0G +
JVel Reset Encoder Error	All Axes J0G - J0G +
OK Cance I JVe I	10:00

5) Jog Movement

Move the rotation axis to the vicinity of the standard position with jog button (see the "Standard Posture Drawing" on the next page). Touch OK button.



6) Servo-OFF Touch OK button.

← Absolute reset	Page Up	AxisNo.1	MOVE	STOP
7	Page Up	Page Dn	HOME	SERV0 0N/0FF
Emergency stop -> Brake Release(BK SW-RL			Axis 1 _{JOG} –	Axis 1 _{JOG +}
-> Positioning pin insertion (When positioning pin is used)			Axis 2 _{JOG} –	Axis 2 JOG +
			Axis 3 _{JOG} -	Axis 3 _{JOG +}
OK	CANCEL		Axis 4 _{JOG} -	Axis 4 JOG +
Reset Encoder Ern	or Bra	ke release	All Axes JOG -	All Axes JOG +
OK Cance I				11:47

7) Emergency stop input and adjusting jig set Press the EMERGENCY STOP button. Set the brake release switch on the controller to the RLS side or touch the <u>Brake release</u> button (when the button is activated) to release the brake in the confirmation window.

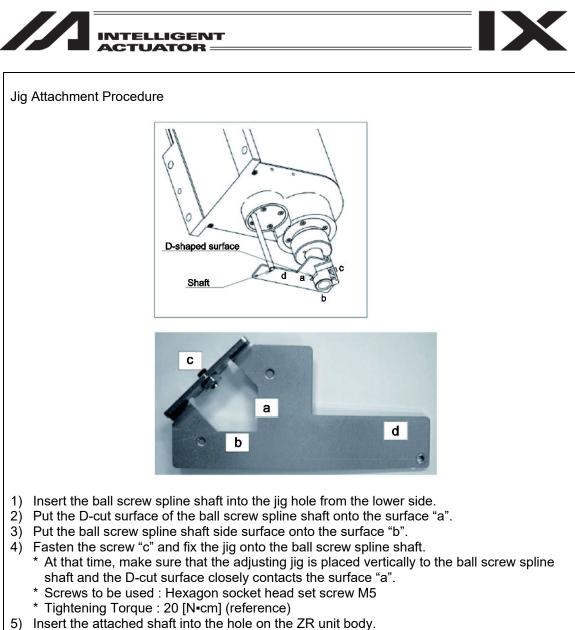
Fix at the datum posture described in the next page with using a jig, and touch OK button.



Back

Inputting emergency stop displays the screen at the left.

Touch Back button to go back to the previous screen.



- * Be careful because the shaft comes off easily when your hand is released.
- 6) Turn the ball screw spline shaft and put the attached shaft onto the surface "d" of the jig.

Warning: Be sure to press the EMERGENCY STOP switch before setting an adjusting jig. Failure to do so may cause a robot malfunction, which may lead to a serious accident resulting in injury or death.





🔶 Absolute reset		sNo. 1	MOVE	STOP
8	Page Up	Page Dn	HOME	SERV0 0N/0FF
Home pos. automatic update (Indispensability)(Rot)			Axis 1 J06 -	Axis 1 J06 +
			Axis 2 J06 -	Axis 2 J06 +
	_		Axis 3 JOG -	Axis 3 JOG +
ОК	CANCEL		Axis 4 J06 -	Axis 4 J06 +
Reset Enco	der Error		All Axes J00 -	All Axes J00 +
OK Cance I				

8) Home pos. automatic update Touch OK button.

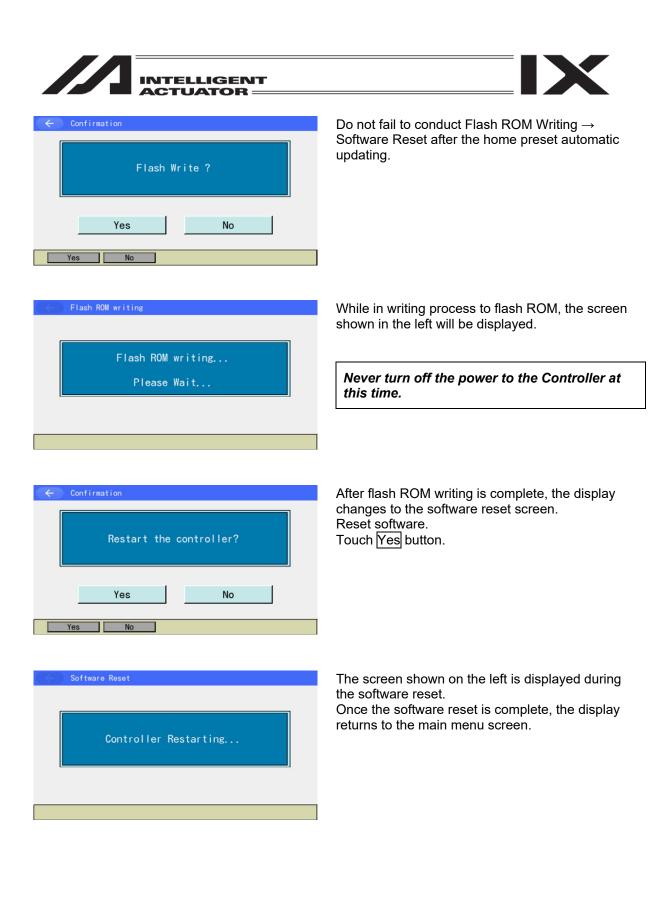
Absolute reset AxisNo. 1 Page Up Page Dn	MOVE STOP
9 Positioning pin remove -> Brake Lock(BK SW-NOM) -> Emergency stop release (When positioning pin is used)	HOME SERVO ON/OFF Axis 1 JOG - Axis 1 JOG + Axis 2 JOG - Axis 2 JOG + Axis 3 Axis 3
OK CANCEL	JOG - JOG + Axis 4 JOG - JOG +
Reset Encoder Error Brake lock OK Cancel	All Axes J0G - J0G + 11:48

9) Adjusting jig removal and emergency off Remove the adjusting jig. Set the brake releasee switch back to the NOM side or touch the Brake lock button (when the button is activated) to lock the brake. Touch OK button.

🔶 Absolute reset	AxisNo, 1	MOVE	STOP
1 Reset Controller Error	Page Up Page Dn	HOME	SERV0 ON/OFF
Reset Controller Error		Axis 1 J0G - Axis 2	Axis 1 JOG + Axis 2
		J0G - Axis 3 J0G -	J06 + Axis 3 J06 +
ОК	CANCEL	Axis 4 J06 -	Axis 4 J05 +
Reset Encoder E	rror	J00 -	J00 +

← Abse	olute reset	
	Select Axis	
Axi	is No. 1	
	Re-Start con	troller
	Next	Back
		Keyboard
ОК	Cancel	

Touch CANCEL button.



INTELLIGENT ACTUATOR ===
ACIDAIOR —



🤄 Menu		
Edit	File	
Play		
Monitor	Environment Set	
Controller	Next	
Edit Play Monitor Control ->		





16.5 Orthogonal Axis Synchro Specification Absolute Reset

The following are descriptions about the absolute reset methods for synchro specification axes. The products ordered as the synchro specification are shipped after setting parameters to the synchro specification. However, change the parameters when executing an absolute reset.

16.5.1 Synchro Axes

Synchro axes are comprised of the master axis (main axis) and the slave axis (sub-axis). The axis of which the number is smaller becomes the master axis.

Program commands are valid only for the master axis. (Commands to the slave axis are prohibited.) As the absolute reset methods, there is the standard procedure and the special procedure. Which procedure to be used is determined by the "specific-axis parameter No. 38 encoder ABS/INC type" values for the master and slave axes.

"Specific-Axis Parameter No. 38 Encoder ABS/INC Type" Values		Absolute Reset Methods
Master Axis	Slave Axis	
1	1	Special procedure
1	0	Standard procedure
0	0	

(When the value is 0 for both the master axis and the slave axis, both the axes are of the increment specification.)

Example 1) When special procedure is executed for 2-axis controller:

Display Transition: Edit \rightarrow Parameter \rightarrow Specific Axis

s number i						
e Pa	arameter Edit					
Type:Spec	ific Axis	√ No.	3 <mark>8</mark> A	xis +	Axis -	
No. Par	ameter Info.	Axis 1	Axis 2	Axis 3	Axis 4	
38 Encdr (ABS/INC)	1	1			
39 (NotCh	angeable)	1	1			
40 (NotCh	angeable)	0	0			
41 (NotCh	angeable)	25	25			
42 Encdr	Resolutn	131072	131072			
43 Encdr	DivFrqRat	3	3			
44 Measur	e Revise	0	0			
45 BltBrk	InPolar	0	0			
46 (for e	xpansion)	0 h	0 h			
47 Screw	Lead	3000	6000			
Back Write Keyboard						
			Axis+	Axis-		

Smaller axis number is the master axis Slave axis

Caution: To change the axis number in a controller with five axes or more, touch Axis + and Axis - buttons.





Example 2) When standard procedure is executed for 2-axis controller:

🔶 Parameter Edit					
Type:Specific Axis	No.	3 <mark>8</mark> A	xis +	Axis -	
No. Parameter Info.	Axis 1	Axis 2	Axis 3	Axis 4	
38 Encdr (ABS/INC)	(1)	(0)			
39 (NotChangeable)	$ \rightarrow $	\rightarrow			
40 (NotChangeable)	0	0			
41 (NotChangeable)	25	25			
42 Encdr Resolutn	131072	131072			
43 Encdr DivFrqRat	3	3			
44 Measure Revise	0	0			
45 BitBrkInPolar	0	0			
46 (for expansion)	0 h	0 h			
47 Screw Lead	3000	6000			V
Back		Write	e K	Keyboard	
		Axis+	Axis-	-	





16.5.2 Location Adjustment of Synchro Axes Sliders

Align the synchro axes sliders. (Physical parallel adjustment)

(1) Adjust the relative locations between the sliders of the master and slave axes and connect them while the axes are not connected to the controller via cables (controller main power OFF).

- (2) If location adjustment cannot be made while the axes are not connected to the controller via cables (such as with the brake), follow the steps below.
 - 1) Disconnect the sliders temporarily and connect the axes to the controller via cables.
 - 2) Record the current values of the "Specific-axis parameter No. 65 synchro other axis No." For the master and slave axes. (Record them to return to their original values in a later process.)
 - 3) To cancel the synchro function temporarily, input 0 to the "Specific-axis parameter No. 65 synchro other axis No." for both the master and slave axes, and execute the data transfer to the controller, Flash ROM writing and controller restart (software reset) in this order.
 - 4) Execute an absolute reset (standard procedure) for specific of the master and slave axes as a single axis.
 - 5) Adjust the relative locations of the sliders by jog operation, etc., and connect them.
 - 6) To activate the synchro function again, input the values recorded in 2) above to the "Specific-axis parameter No. 65 synchro other axis No." for the master and slave axes, and execute the data transfer to the controller, Flash ROM writing and controller restart (software reset) in this order.





16.5.3 Special Procedure Absolute Reset

In the case of "Specific-axis parameter No. 38 encoder ABS/INC type": master axis = 1 and slave axis = 1:

When a connected controller is XSEL2-T/TX, refer to 16.14 "Absolute Reset for Synchronizing Axis: XSEL2-T/TX".

When a connected controller is other than XSEL2-T/TX and it is a battery-less absolute applicable model, refer to 16.8.2 "Battery-less Absolute Applicable Synchronizing Type Absolute Reset Procedures".

 Record the current value of the "Specific-axis parameter No. 83 ABS synchro slave axis coordinate initialization cancel" for the slave axis. (Record it to return to the original value in a later process.)

Display Transition: Edit \rightarrow Parameter \rightarrow Specific Axis Slave axis Parameter Edit 83 Axis + Type:Specific Axis No. Axis Axis 1 Axis 3 anc Init Coord ynch Vel Ma loming Acc/Dec Conel Max 30 30 ne1 Mi nel Output No ne2 Max ne2 Min ne2 Output No ne3 Max Write Keyboard ack

Axis+

Axis-

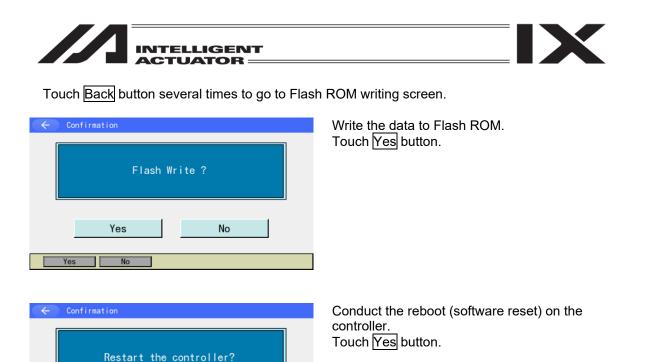
(2) Input 0 for the "Specific-axis parameter No. 83 ABS synchro slave axis coordinate initialization cancel" for the slave axis.

← Parameter Edit						
Type:Specific Axis	No.	83 A	xis +	A>	(is -	
No. Parameter Info.	Axis 1	Axis 2	Axis	3 A	xis 4	
83 Canc Init Coord	0	0				
84 Synch Vel Max	5	5				
85 Homing Acc/Dec	30	30				
86 Zone1 Max	0	0				0
87 Zone1 Min	0	0	7	8	9	ESC
88 Zone1 Output No	0	0	/	0	9	ESC
89 Zone2 Max	0	0	- 1	E	6	DO
90 Zone2 Min	0	0	4	5	6	BS
91 Zone2 Output No	0	0				
92 Zone3 Max	0	0	1	2	3	CLR
Back		Write	e 0		+/-	ENT
		Axis+	Ax	is-		

Input 0 on the touch panel numeric keys, and then touch $\boxed{\mathsf{ENT}}$ to confirm the input.

Once it is confirmed, the background color of the number display column turns to orange, which shows that it is being edited (controller writing not yet done), and the cursor moves to the next input column.

Touch Write button to transfer the data to the controller.



(3) Execute an absolute reset according to the following special procedure (forced operation by ignoring the screen steps):

When the controller is applicable to the "battery-less absolute reset", the procedure is different. In such case, perform the absolute reset operation following the [16.8.2 Special Procedure: How to Conduct Absolute Reset Battery-less Absolute Synchronizing Type].

Select Absolute Reset in the controller menu.

Yes

No

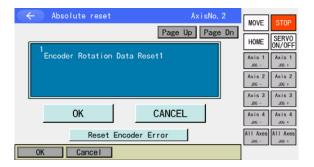
1) Execute the "Encoder Rotation Data Reset1" for the slave axis.

No

← Absolute reset	
Select Axis Axis No. 2	
Next	Back Keyboard
OK Cance I	

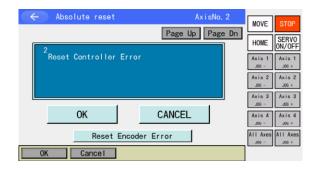
Input the axis number of the slave axis by using the touch panel numeric keys, and then touch ENT to confirm the input. Touch Next button.





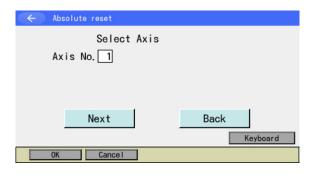
Touch OK button.

Touch OK button.



Touch CANCEL button. Make sure not to touch OK button. Get out of Absolute Reset Mode now.

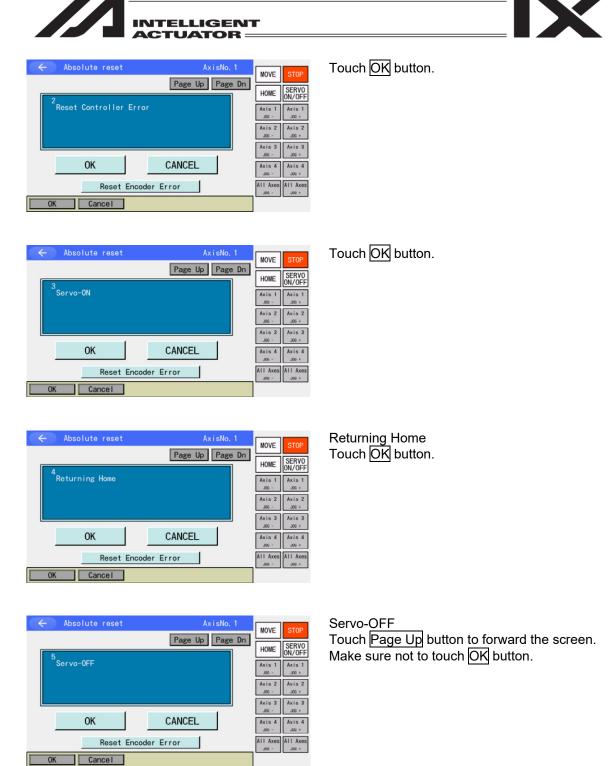
2) Execute an absolute reset for the master axis according to the screen steps.

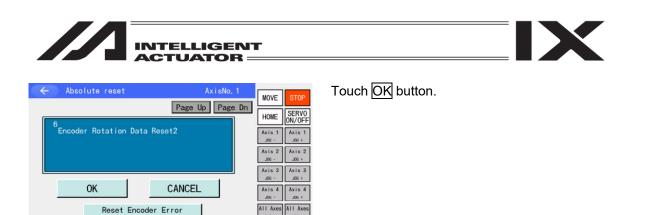


Input the axis number of the master axis by using the touch panel numeric keys, and then touch ENT to confirm the input. Touch Next button.

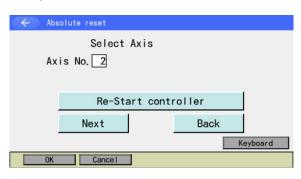
Absolute reset	AxisNo.1	MOVE	STOP
	op rage on	HOME	SERV0 0N/0FF
Encoder Rotation Data Reset1		Axis 1 J0G -	Axis 1 _306 +
		Axis 2 J06 -	Axis 2 JOG +
		Axis 3 J06 -	Axis 3 306 +
OK CANCE	EL	Axis 4 J06 -	Axis 4 305 +
Reset Encoder Error		All Axes Jos -	All Axes
OK Cance I			

16. Absolute Reset





3) Execute the "Encoder Rotation Data Reset1" for the slave axis again

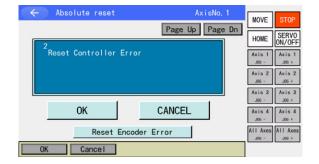


Cancel

Input the axis number of the slave axis by using the touch panel numeric keys, and then touch ENT to confirm the input. Touch Next button.

MOVE Page Up Page Dn SERV0 0N/0FF HOME Axis Axis Axis J06 (Axis 3 Axis J06 + OK CANCEL Axis 4 J06 - J06 + Reset Encoder Error All Axes All Axes Cancel OK

Touch OK button.



Touch CANCEL button. Make sure not to touch OK button. Get out of Absolute Reset Mode.

Absolute reset Select Axis Axis No. 2	Touch Re-Start controller button.
Re-Start controller Next Back 0K Cancel	
Confirmation Restart the controller?	Restart the controller. Touch <u>Yes</u> button.
Yes No	



4) Return the slave-axis value for the "specific-axis parameter No. 83 ABS synchro slave axis coordinate initialization cancel" to the original value.

← Parameter Edit						
Type:Specific Axis	No.	83 A	xis +	A	(is -	
No. Parameter Info.	Axis 1	Axis 2	Axis :	3 A	xis 4	
83 Canc Init Coord	0	1				
84 Synch Vel Max	5	5				
85 Homing Acc/Dec	30	30				
86 Zone1 Max	0	0				
87 Zone1 Min	0	0	7	8	9	ESC
88 Zone1 Output No	0	0	/	0	9	ESU
89 Zone2 Max	0	0		E	C	
90 Zone2 Min	0	0	4	5	6	BS
91 Zone2 Output No	0	0				
92 Zone3 Max	0	0	1	2	3	CLR
Back		Writ	e 0		+/-	ENT
Axis+ Axis-						

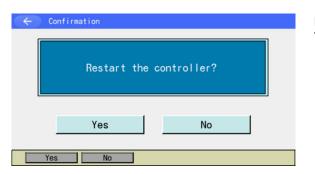
Display Transition: Edit \rightarrow Parameter \rightarrow Specific Axis

Input 1 on the touch panel numeric keys, and then touch ENT to confirm the input. Once it is confirmed, the background color of the number display column turns to orange, which shows that it is being edited (controller writing not yet done), and the cursor moves to the next input column. Touch Write button to transfer the data to the controller.

Once the transfer is complete, the display proceeds to the next parameter number. Use Back button to go to the flash ROM writing screen.



Write the data to Flash ROM. Touch Yes button.



Restart the controller. Touch Yes button.





- (5) Set the preset home value to uniform the coordinate values of the master and slave axes.
 - 1) If the controller 7 segment display is "rdy" while the servo is OFF, read the displayed current positions of the master and slave axes.

. (If the error No. C74 real position soft limit over error occurs, reset the error. When "rdy" is displayed, the displayed current positions can be read.)

Display ⁻	Fransition: Monitor	\rightarrow Specific	Axis \rightarrow	Cur pos.
 ← Cu	urrent Position			
AxisNo.	1 - 4	Page Up	Page Dn	
Axis	Current Pos.		Position	1
1	0.005		Servo	
2	-39.816		Sensor	
			Encoder	
			AxisErr	
			Back	

- * If the servo is turned ON at this stage, error No. D0A driver overload error, error No. C6B deviation overflow error, error No. CA5 stop deviation overflow error, etc., occurs.
 - 2) Calculate the following:

Specific-axis parameter No. 12 preset home value for slave axis [0.001 mm] + ((displayed current position value for master axis [mm] - displayed current position value for slave axis [mm]) × 1000)

🔶 Parameter Edit					
Type:Specific Axis	No.	1 2 A	xis +	Axis -	
No. Parameter Info.	Axis 1	Axis 2	Axis 3	Axis 4	
12 Preset Home	0 (-45505	\mathcal{D}		
13 SIO/PIO HomSqnc	0	0			
14 Home In Polar	0	0			
15 Ovrn In Polar	0	0			1
16 Creep In Polar	0	0			1
17 IntHmSnsEscpSpd	10	10			1
18 Home Crp Speed	20	20			
19 Homing Speed	20	20			
20 Home Z Srch Spd	3	3			
21 Home Ret Offset	2000	2000			Ý
Back		Writ	e	Keyboard	
		Axis+	Axis	-	

In this example: -45505 + ((0.005 - (-39.816)) × 1000) = -5684



3) Input the calculation result in 2) above to the "Specific-axis parameter No. 12 preset home value" for the slave axis.

← Parameter Edit							
Type:Specific Axis	No.	12 A	xis	+	A×	is -	
No. Parameter Info.	Axis 1	Axis 2	A	xis :	3 A	xis 4	
12 Preset Home	0	-5684					
13 SIO/PIO HomSqnc	0	0					
14 Home In Polar	0	0					FCOM
15 Ovrn In Polar	0	0					-5684
16 Creep In Polar	0	0		7	8	9	ESC
17 IntHmSnsEscpSpd	10	10		/	0	9	ESC
18 Home Crp Speed	20	20		4	E I	0	
19 Homing Speed	20	20		4	5	6	BS
20 Home Z Srch Spd	3	3					
21 Home Ret Offset	2000	2000		1	2	3	CLR
Back		Write	•	0		+/-	ENT
Axis+ Axis-							

After touching ENT, touch Write button to transfer the data to the controller.

Use Back button to go to Flash ROM writing screen.

← Conf	irmation		
	Flash Wr	ite ?	
	Yes	No	
Yes	No		

Write the data to Flash ROM . Touch Yes button.

Confirmation	R
Restart the controller?	1
Yes No	
Yes No	

Restart the controller. Touch \underline{Yes} button.





(6) Display the current positions on the teaching screen. After turning the servo ON, execute action check by jogging. (Master axis operation)

← Teach(Linear) Current Pos. Position No. 1 Clear Page Up Page Dn Axis1 0.005 SV Axis2 0.005 SV UsrOut Sts 0000 0000	MOVE STOP HOME SERVO ON/OFF Axis 1
Switch Axis Cont. In Out InOut User JogVelocity Scan Back InputScreen Write Keyboard Disp Scan Clear Axis ->	All Axes JOG - JOG +

Display Transition: Edit \rightarrow Position \rightarrow Teach(Linear)

Use Disp button to switch to the Cur Pos. To turn the servo ON/OFF, use the SERVO ON/OF, Axis 1 JOG-, Axis 1 JOG+, Axis 2 JOG-, Axis 2 JOG+, Axis 3 JOG-, Axis 3 JOG+, Axis 4 JOG- and Axis 4 JOG+ buttons.

If the error No. D0A driver overload error, error No. C6B deviation overflow error, error No. CA5 stop deviation overflow error, etc., occurs, check the following items:

- If the current position of the master axis is greatly different from that of the slave axis, setting in (5) may be wrong.
- Confirm that there are no input errors or change omissions as for the parameters below. "Specific-axis parameter No. 65 synchro other axis No."
- "Specific-axis parameter No. 83 ABS synchro slave axis coordinate initialization cancel"
- Confirm that slider actions are not restrained.





16.5.4 Standard Procedure Absolute Reset

In the case of "Specific-axis parameter No. 38 encoder ABS/INC type": master axis = 1 and slave axis = 0:

After "2. Location Adjustment of Synchro Axes Sliders," execute a normal absolute reset only for the master axis.

For the operating method, refer to the [16.1. Absolute Reset of the Orthogonal Axis].

Note: The synchro axis for which the standard procedure absolute reset has been executed does not have the function of correcting the slider displacement during power OFF after the servo is turned ON.

When a connected controller is a battery-less absolute applicable model, refer to 16.8.1 "How to Conduct Absolute Reset for Battery-less Absolute Type".





16.6 Push Type Absolute Reset on IX-1000/1200

Have "Push Type Absolute Reset" conducted in case the absolute data is lost in Ultra Large SCARA Robot IX-NNN10040/NNN12040.

Also, in the following cases, have "Stopper Pressing Position Acquirement" before conducting the absolute reset to change the initial posture.

- When the absolute reset cannot be performed in the direction of the stopper interfering movement with the initial posture at the delivery from the factory due to such reasons as interference to the peripheral equipment.
- There was a change in the stopper position due to such reasons as a removal of the stopper of the vertical axis.

Refer below for each procedure.

Item	Push Type Absolute Reset	Stopper pressing position acquirement
All axes	Conduct [16.6.2.1 Procedures for All Axes in Batch]	Conduct [16.6.1.1 Procedures for All Axes in Batch] and then [16.6.2.1 Procedures for All Axes in Batch].
Individual axis	Conduct [16.6.2.2 Procedures for Individual Axis]	Conduct [16.6.1.2 Procedures for Individual Axis] and then [16.6.2.2 Procedures for Individual Axis].
(Applicable Axes)	How to Operate Each Axis Conduct [16.6.2.2(1) Arm1 and Arm2] Conduct [16.6.2.2(2) Vertical Axis + Rotation Axis] or [16.6.2.2(3) Vertical Axis]	How to Operate Each Axis Conduct [16.6.1.2(1) Arm1 and Arm2] Conduct [16.6.1.2(2) Vertical Axis + Rotation Axis] or [16.6.1.2(3) Vertical Axis]

🕂 Caution:	"Stopper pressing position acquirement" may not be available in the situation that
	the absolute reset is required. Have it done while the normal operation can be
	performed.





[Initial posture]

Arm1, Arm2 0

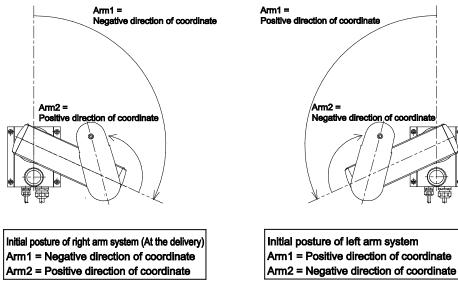
Considering the stopper pressing position, adjust the posture to either of right arm system or left arm system.

When the product is delivered, it is set to the right arm system.

In case the arm interferes with the peripheral in the right arm system, set it to the left arm system in advance, conduct "Push stopper position acquisition" and then adjust to the left arm system.

For the position of the initial posture, have the arm away for 10deg or more from the position where it was pressed to the stopper.

Error No. B0D "Push Stopper Operation Start Position Error" (Error No. 4BE "Absolute Reset Error" for XSEL2-TX) will occur if the arm is too close to the position where it was pressed to the stopper.



Vertical Axis

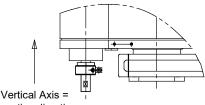
Rotation axis

0

For the position of the initial posture, have the arm away for 10mm or more from the coordinate 0mm (upper end). "Push Stopper Operation Start Position Error" (Error No. 4BE "Absolute Reset Error" for XSEL2-TX) will occur if the arm is too close to the upper end.

There is no indication in specific for the position of the

initial posture of the rotation axis. It can be set at any position.



Negative direction

Rotation axis = Positive direction



Rotation axis = Negative direction (Pressing direction at delivery)

16. Absolute Reset





16.6.1 How to Acquire Stopper Pressing Position

Linear

Back

->

Backup the parameters so that they can be put back anytime to those before changing them. (Go to $\overline{File} - \overline{Backup} - \overline{Parameter}$ in the main menu to open the parameter backup screen and save the file.)

1) Select Absolute Reset from Controller Menu.

← Confi	rmation		
	Start ABS, Encoder F Do you want to	leset Operation. continue?	
	Yes	No	
Yes	No		2
← Absol	ute reset		

Pin insertion type

Stopper position acquisition

Push type

Pin Ins Push Pos Push

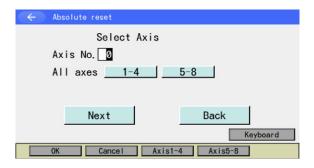
2) To have an absolute reset, touch Yes button.

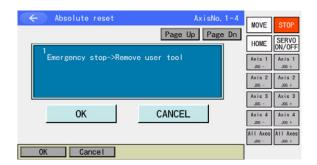
When not to have an absolute reset, touch No button. The display returns to the previous screen.

- 3) Touch Stopper position acquisition button.
- * Linear button should be shown only when there is a linear axis.



16.6.1.1 Procedures for All Axes in Batch





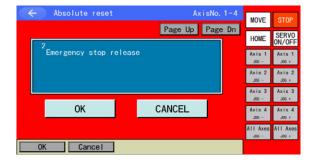
1) Either touch 1-4 or 5-8 button, and touch Next button.

- * There is 5-8 button equipped in XSEL-RXD/SXD/RAXD/SAXD only.
- * It should be from 1-3 button for 3-axis SCARA
- 2) Remove user tool

In case there is a concern of interference during operation, detach the user tool in the emergency stop condition.

After detaching, touch OK button.

To cancel the process, touch CANCEL button.



3) Emergency stop release

If the emergency stop is conducted in the previous section, cancel the emergency stop. (The screen for emergency stop is shown in the figure on the left.)

Touch OK button.

AxisNo, 1-4 MOVE Page Up Page Dn SERV0 0N/0FF HOME Servo-ON Axis 1 Axis 1 J06 + Axis 2 Axis 2 J06 Axis 3 Axis 3 J06 + OK CANCEL Axis 4 ALL Axe All Axe 0K Cancel

4) Align the arm to the initial posture with JOG operation or manually.

(The initial posture is the position stated in the beginning of 16.6.)

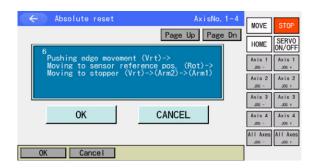
- 1. <u>If using JOG operation to align to initial posture</u> Touch OK button to turn the servo ON.
- 2. If aligning to initial posture manually Touch Page Up button.

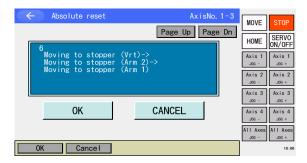




🔶 Absolute reset	AxisNo. 1-4	MOVE	STOP
4	Page Up Page Dn	HOME	SERV0 0N/0FF
JOG->Initial position(All	Axes)	Axis 1 JOG -	Axis 1 JOG +
		Axis 2 J0G -	Axis 2 J06 + Axis 3
ок	CANCEL	Axis 3 J06 -	Axis 3 J06 +
JVel			JOG + All Axes
OK Cance I	JVel	J06 -	300 +







- 5) Moving to Initial Posture
- If using JOG operation to align to initial posture To avoid interference, use JOG operation to align each axis to the initial posture. Touch OK button.
- If aligning to initial posture manually Turn on the emergency stop. Align each axis to the initial posture manually. Turn OFF the emergency stop. Touch OK button.
- 6) Selection for Moving Direction of Vertical Axis and Rotation Axis

It is not necessary to change the moving direction in ordinary use. Make sure to set the vertical axis to the negative side of the coordinate.

To select the moving direction, touch on a radio button.____

Touch OK button.

* The rotary axis should not be shown for 3 axis SCARA.

7) Acquirement of Stopper Pressing Position / Sensor Datum Position for All Axes Touch OK button.

The axes shift in the order of vertical pressing position movement, rotation axis sensor datum position movement, vertical axis stopper pressing movement, Arm2 stopper pressing movement and Arm1 stopper pressing movement to acquire the pressing position.

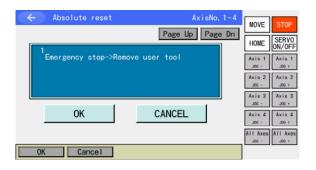
* The figure shown on the left should be shown for 3 axis SCARA.

Touch the OK button.

The axis shifts in the order from the vertical axis stopper pressing movement to the Arm 2 stopper pressing movement and then to the Arm 1 stopper pressing movement in order to acquire the pressing positions.







Select Axis

All axes 1-4 5-8

Re-Start controller

Cancel Axis1-4 Axis5-8

Back

Keyboard

Axis No. 0

OK

Next

8) The screen goes back to the first screen once the process is complete. Touch CANCEL button.

9) Touch Re-Start controller button.

A confirmation screen for the flash ROM writing appears.



10) Touch Yes button to start flash ROM writing.

- Flash ROM writing Flash ROM writing... Please Wait...
 - Confirmation

 Restart the controller?

 Yes

 Yes

 No

11) While in writing process to flash ROM, the screen.

Never turn off the power to the Controller at this time.

12) Once the flash ROM writing is finished, the screen changes to the screen for software reset. Touch Yes button to reflect the pressing position.

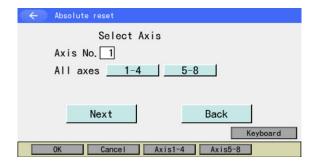
After finished, conduct the stopper pressing absolute reset.





16.6.1.2 Procedures for Individual Axis

16.6.1.2 (1) Arm1 and Arm2



1) Input either 1 or 2 (5 or 6) in Axis No. box with using the software numeric keys, and then touch Next button.

Shown in the figure on the left is the condition that Arm1 on the 1st SCARA in XSEL-RXD/SXD is selected.

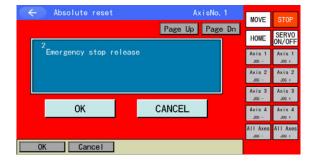
Absolute reset AxisNo. 1 MOVE Page Up Page Dn HOME SERV0 0N/0FF Emergency stop->Remove user tool Axis 1 Axis 1 Axis 2 Axis 2 Axis 3 J06 - J06 + OK CANCEL Axis 4 J05 + Cancel OK

2) Remove user tool

In case there is a concern of interference during operation, detach the user tool in the emergency stop condition.

After detaching, touch OK button.

To cancel the process, touch CANCEL button.



3) Emergency stop release

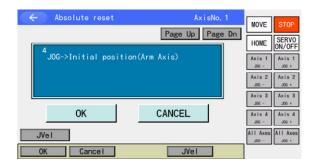
If the emergency stop is conducted in the previous section, cancel the emergency stop. (The screen for emergency stop is shown in the figure on the left.)

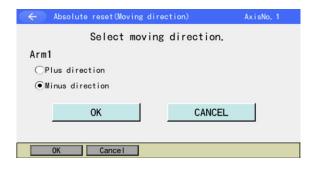
Touch OK button.





Absolute reset	AxisNo, 1 Page Up Page Dn	MOVE STOP HOME SERVO ON/OFF Axis 1 Axis 1
OK Cancel	CANCEL	J06 - J06 + Axis 4 J06 + J06 - J06 + All Axes J06 + J06 - J00 +





4) Align the arm to the initial posture with JOG operation or manually.

(The initial posture is the position stated in the beginning of 16.6.)

- 1. <u>If using JOG operation to align to initial posture</u> Touch OK button to turn the servo ON.
- 2. <u>If aligning to initial posture manually</u> Touch Page Up button.

5) Moving to Initial Posture

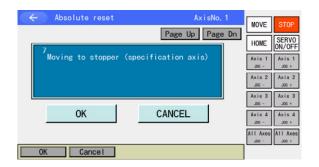
- If using JOG operation to align to initial posture To avoid interference, use JOG operation to align Arm1 (2) to the initial posture. Touch OK button.
- 2. <u>If aligning to initial posture manually</u> Turn ON the emergency stop. Align Arm1 (2) to the initial posture manually. Turn OFF the emergency stop. Touch OK button.

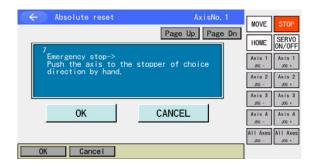
6) Selection for Moving Direction of Arm1 (2) The vicinity stopper position direction is selected as the moving direction in the initial setting. To select the moving direction, touch the applicable radio button. Touch OK button.





Absolute reset(Moving method)	AxisNo. 1
Select moving method.	
●Motor drive ◯Hand	
OK CANCEL	
0K Cance I	





- 7) Selection for Moving Direction of Arm1 (2)
 - 1. <u>If conducting with motor drive</u> Touch the radio button for motor drive. Touch OK button.
- If conducting manually Touch the radio button for manual (hand). Touch OK button.
- Note: Touch CANCEL button to finish the absolute reset.

8) Moving to stopper of Arm1 (2) (in motor drive) Touch OK button.

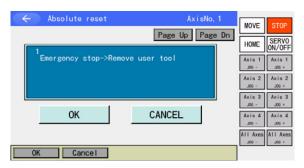
Arm1 or 2 moves for stopper pressing to acquire the pressing position.

9) Moving to stopper of Arm1 (2) (in hand operation) Turn ON the emergency stop, and have Arm1 or

Arm2 pressed manually against the stopper. Touch OK button.







10) The screen goes back to the initial screen once it is finished. Touch CANCEL button.

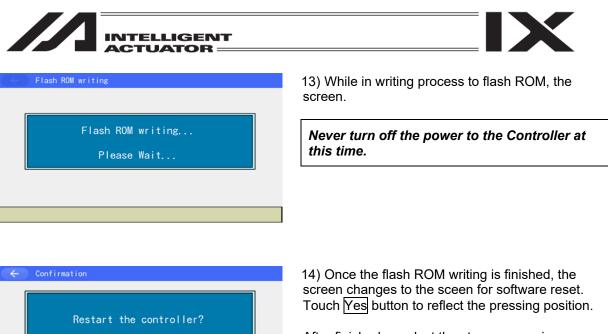
(\leftarrow)	Absolute reset
	Select Axis
	Axis No. 1
	All axes <u>1-4</u> <u>5-8</u>
	Re-Start controller
	Next Back
	Keyboard
0	K Cancel Axis1-4 Axis5-8

11) Touch Re-Start controller button.

A confirmation screen for the flash ROM writing appears.

Fla	sh Wri	te ?	
Yes		No	

12) Touch Yes button to start flash ROM writing.



After finished,	conduct the	stopper	pressing
absolute reset			

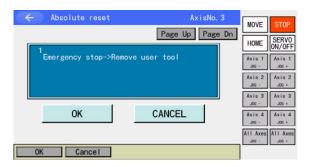
Yes No





16.6.1.2 (2) Vertical Axis + Rotation Axis * For 4-Axis SCARA

Absolute reset
Select Axis
Axis No. 3
All axes <u>1-4 5-8</u>
Next Back
Keyboard
OK Cancel Axis1-4 Axis5-8



1) Input either 3 or 7 (7 for XSEL-RXD/SXD/ RAXD/SAXD only) in Axis No. box with using the software numeric keys, and then touch Next button.

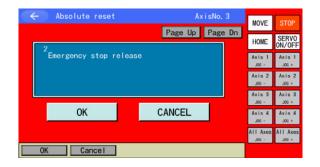
Shown in the figure on the left is the condition that vertical axis + rotation axis on the 1st SCARA in XSEL-RXD/SXD are selected.

2) Remove user tool

In case there is a concern of interference during operation, detach the user tool in the emergency stop condition.

After detaching, touch OK button.

To cancel the process, touch CANCEL button.



3) Emergency stop release

If the emergency stop is conducted in the previous section, cancel the emergency stop. (The screen for emergency stop is shown in the figure on the left.)

Touch OK button.



4) Align the arm to the initial posture with JOG operation or manually.

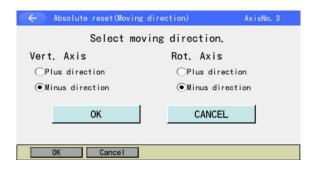
(The initial posture is the position stated in the beginning of 16.6.)

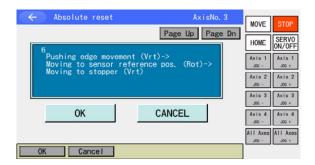
- 1. If using JOG operation to align to initial posture Touch OK button to turn the servo ON.
- 2. If aligning to initial posture manually Touch Page Up button.

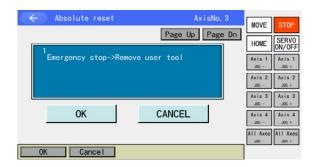




Absolute reset	AxisNo.3 Page Up Page Dn + Vrt)	MOVE HOME Axis 1 J06 - Axis 2 J06 - Axis 3	STOP SERVO ON/OFF Axis 1 JO5 + Axis 2 JO5 +
OK JVe I	CANCEL	J06 - Axis 4 J06 -	Axis 4 J05 + Axis 4 J05 + All Axes J00 +







- 5) Moving to Initial Posture
- If using JOG operation to align to initial posture To avoid interference, use JOG operation to align the vertical axis and rotary axis to the initial posture. Touch OK button.
- If aligning to initial posture manually Turn ON the emergency stop. Align the vertical axis and rotary axis to the initial posture manually. Turn OFF the emergency stop. Touch OK button.

6) Selection for Moving Direction of Vertical Axis and Rotation Axis

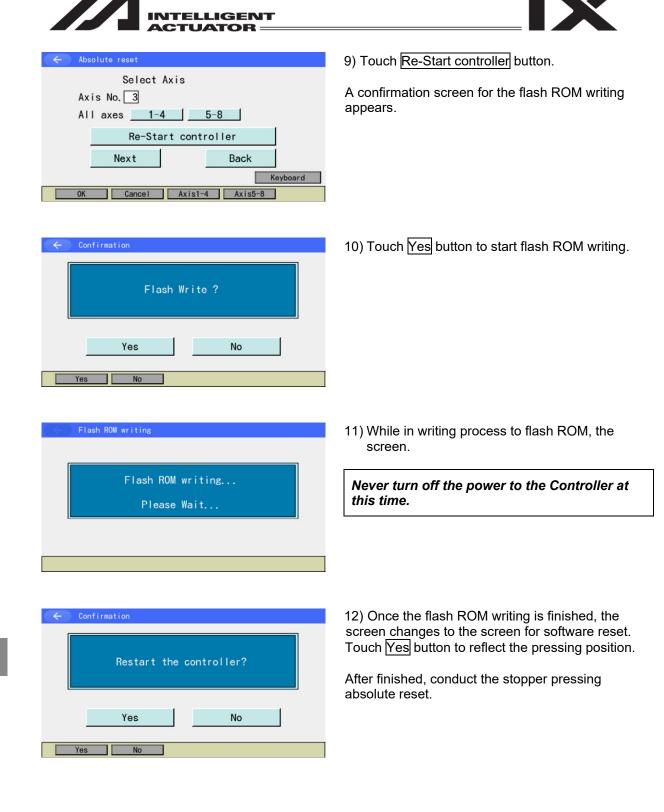
The vicinity stopper position direction is selected as the moving direction in the initial setting. To select the moving direction, touch on a radio button.____

Touch OK button.

7) Acquirement of Stopper Pressing Position / Sensor Datum Position Touch OK button.

The axes shift in the order of vertical pressing position movement, rotation axis sensor datum position movement, vertical axis stopper pressing movement to acquire the pressing position.

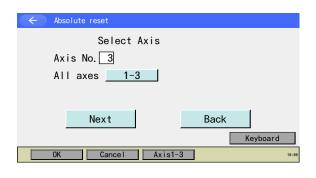
8) The screen goes back to the initial screen once it is finished. Touch CANCEL button.



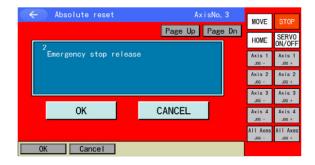




16.6.1.2 (3) Vertical Axis * For 3-Axis SCARA







1) Input a number in "Axis No." box with using the software numeric keys, and then touch the Next button.

The figure on the left shows the condition that the vertical axis has been selected in XSEL-RAX/SAX or XSEL2-TX (3 axis SCARA).

2) Remove user tool In case there is a concern of interference during operation, remove the user tool in the emergency stop condition. After detaching, touch OK button.

To cancel the process, touch CANCEL button.

3) Emergency stop release If the emergency stop is conducted in the previous section, cancel the emergency stop. (The screen for emergency stop is shown in the figure on the left.) Touch OK button.

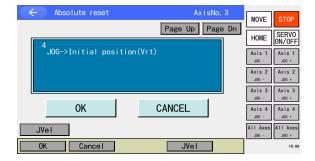
4) Align the arm to the initial posture with JOG operation or manually.

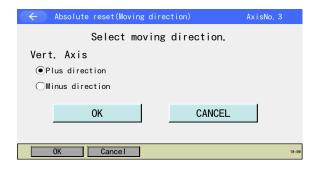
(The initial posture is the position stated in the beginning of 16.6.)

- 1. <u>If using JOG operation to align to initial</u> <u>posture</u>
- Touch OK button to turn the servo ON. 2. If aligning to initial posture manually
- Touch Page Up button.









Absolute reset(Moving metho	d) Ax	isNo.3
Select movin	g method.	
● Motor drive ○ Hand		
ОК	CANCEL	
OK Cance I		10:00

- 5) Moving to Initial position
- 1. <u>If using JOG operation to align to initial</u> <u>position</u> To avoid interference, use JOG operation

to align the vertical axis and rotary axis to the initial position. Touch OK button.

2. <u>If aligning to initial position manually</u> Turn ON the emergency stop. Align the vertical axis and rotary axis to the initial position manually. Turn OFF the emergency stop. Touch OK button.

6) Selection for Moving Direction of Vertical Axis and Rotation Axis
The vicinity stopper position direction is selected as the moving direction in the initial setting.
To select the moving direction, touch on a

radio button.

Touch OK button.

- 7) Selecting Moving Method of Vertical Axis
 - When Moving with Motor Touch the radio button for the motor drive. Touch OK button.
- When Moving Manually Touch the radio button for manual (handpressed). Touch OK button.
- Caution : Touch Cancel and the whole process of absolute reset will be closed.







8) Stopper Pressing Movement of Vertical Axis (in Motor Drive) Touch OK button.

The vertical axis moves in the stopper pressing movement and acquire the pressing position.



← Absolute reset	AxisNo. 3	1.00	705 V
Absolute reset		MOVE	STOP
	Page Up Page Dn	HOME	SERV0 0N/0FF
Emergency stop->Remove us	ser tool	Axis 1 JOG -	Axis 1 JOG +
		Axis 2 J06 -	Axis 2 J0G +
		Axis 3 JOG -	Axis 3 J06 +
ОК	CANCEL	Axis 4 JOG -	Axis 4 _J05 +
		All Axes	All Axes
OK Cancel			

Abs	solute reset	
	Select Axis is No. 3 I axes <u>1-3</u>	
	Re-Start con	troller
	Next	Back
		Keyboard
ОК	Cancel Axis	1-3 10:00

9) Stopper Pressing Movement of Vertical Axis (in Manual) Set the brake release switch to the RLS side or touch the Brake release button (when the button is activated) to release the brake in the confirmation window.

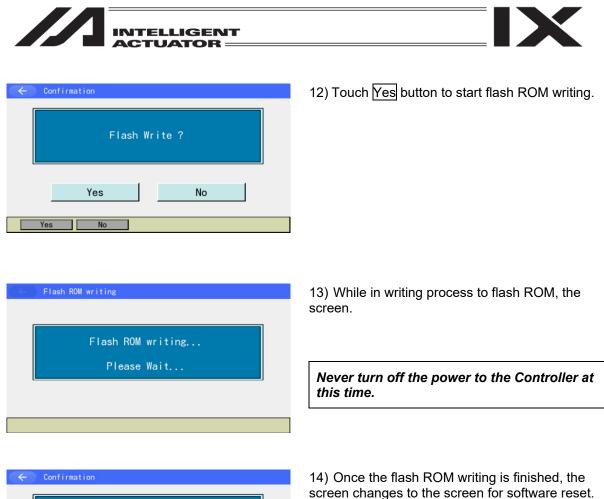
Push the vertical axis against the stopper with hand.

Touch OK button.

10) The screen goes back to the initial screen once it is finished. Touch CANCEL button.

11) Touch Re-Start controller button.

A confirmation screen for the flash ROM writing appears



< Co	nfirmation	
	Restart the controller?	
	Yes No	
Yes	s No	

screen changes to the screen for software reset. Touch Yes button to reflect the pressing position.

After finished, conduct the stopper pressing absolute reset.





16.6.2 How to Conduct Stopper Pressing Absolute Reset

Backup the parameters so that they can be put back anytime to those before changing them. (Go to $\boxed{File} - \boxed{Backup} - \boxed{Parameter}$ in the main menu to open the parameter backup screen and save the file.)

1) Select Absolute Reset from Controller Menu.

	firmation		
	Start ABS. Encoder Re Do you want to d	eset Operation. continue?	
	Yes	No	
Yes	No		

2) Touch Yes button to conduct the absolute reset.

If the absolute reset is not required, touch No button.

The screen goes back to the previous screen.

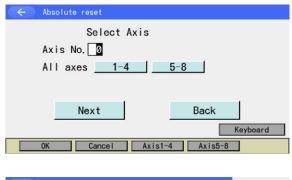
🗲 Absolute reset	
Pin insertion type	Linear
Stopper position acquisition	
Push type	
	Back
Pin Ins Push Pos	Push ->

- 3) Touch Push type button.
- * Linear button should be shown only when there is a linear axis.





17.6.2.1 Procedures for All Axes in Batch





Absolute reset AxisNo.1-4 MOVE STOP Page Up Page Dn HOME SENOP HOME SENOP Axis 1 Axis 2 Axis 2 Axis 2 Axis 3 Axis 4 Ax

- 1) Touch 1-4 or 5-8 button, and touch Next button.
 - * There is <u>5-8</u> button equipped in XSEL-RXD/SXD/RAXD/SAXD only.
 - * It should be from 1-3 button for 3-axis SCARA.

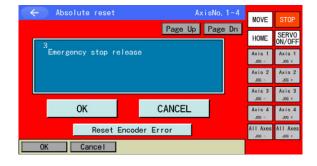
2) Encoder Rotation Data Reset / Reset Controller Error Touch OK button.

3) Remove user tool

In case there is a concern of interference during operation, detach the user tool in the emergency stop condition.

After detaching, touch OK button.

To cancel the process, touch CANCEL button.



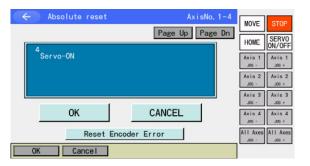
4) Emergency stop release

If the emergency stop is conducted in the previous section, cancel the emergency stop. (The screen for emergency stop is shown in the figure on the left.)

Touch OK button.







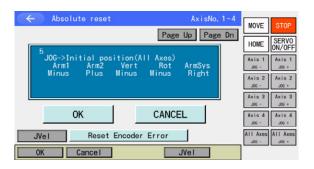
5) Align the arm to the initial posture with JOG operation or manually.

(The initial posture is the position stated in the beginning of 16.6.)

- 1. <u>If using JOG operation to align to initial posture</u> Touch OK button to turn the servo on.
- 2. If aligning to initial posture manually Touch Page Up button.

The 4 axis SCARA and 3 axis SCARA require different steps to take in the following procedures.

(i) For 4-Axis SCARA



6) Moving to Initial Posture

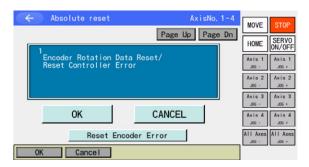
- If using JOG operation to align to initial posture To avoid interference, use JOG operation to align each axis to the initial posture. Touch OK button.
- 2. <u>If aligning to initial posture manually</u> Turn ON the emergency stop. To avoid interference, align each axis to the initial posture manually. Turn OFF the emergency stop. Touch OK button.
- * With the operation in Step 7), each axis moves to the direction shown in this screen.

7) Stopper Pressing Absolute Reset on All Axes Touch OK button.

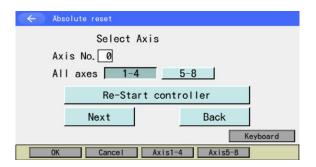
The axes shift in the order of vertical pressing position movement, rotation axis sensor datum position movement, vertical axis stopper pressing movement, Arm2 stopper pressing movement and Arm1 stopper pressing movement.

← Absolute reset	AxisNo.1−4	MOVE	STOP
6	Page Up Page Dn	HOME	SERV0 0N/0FF
Pushing edge movement (Vrt) Moving to sensor reference Moving to stopper (Vrt)->(A	pos. (Rot)->	Axis 1 JOG -	Axis 1 _J0G +
		Axis 2 JOG -	Axis 2 J06 +
ОК С		Axis 3 J06 - Axis 4	Axis 3 J06 +
Reset Encoder Err			JOG + All Axes
OK Cancel		J00 -	- 00L





8) The screen goes back to the initial screen once it is finished. Touch CANCEL button.



9) Touch Re-Start controller button.

A confirmation screen for the flash ROM writing appears.



10) Touch Yes button to start flash ROM writing.

Flash ROM writing Flash ROM writing... Please Wait... 11) While in writing process to flash ROM, the screen.

Never turn off the power to the Controller at this time.







screen changes to the screen for software reset. Touch Yes button.

12) Once the flash ROM writing is finished, the

(ii) For 3-Axis SCARA

	AxisNo, 1-3 Page Up Page Dn ion(All Axes) Vert ArmSys inus Right	MOVE STOP HOME SERV0 ON/OFF Axis 1
OK		J0G - J0G + Axis 4 J0G - J0G + Axis 4 J0G - J0G +
JVel Reset En	JVel	J0G - J0G + 10:00

Absolute reset AxisNo. 1-3 Page Up Page Dn Page Up Page Dn HOME SERV HOME Store HOM Store HOM St

- 6) Moving to Initial Posture
- If using JOG operation to align to initial posture To avoid interference, use JOG operation to align each axis to the initial posture. Touch OK button.
- If aligning to initial posture manually Turn ON the emergency stop. To avoid interference, align each axis to the initial posture manually. Turn OFF the emergency stop. Touch OK button.
- * With the operation in Step 7), each axis moves to the direction shown in this screen.

7) Vertical Stopper Pressing Style Absolute Reset

Touch OK button.

Conduct the vertical axis stopper pressing movement.





Absolute reset AxisNo, 1-3 Page Up Page Dn	MOVE STOP
^o Moving to stopper (Arm 2)-> Moving to stopper (Arm 1) * Home pos. automatic update. (Arm1,2)	Axis 1 J06 - J06 - J06 + Axis 2 J06 - J06 - J06 + Axis 3 Axis 3
OK CANCEL Reset Encoder Error OK Cancel	J06 - J06 + Axis 4 J06 - J06 - J06 + All Axes J06 + J06 - I06 + 100 + I00 +

8) Arm 1 and Arm 2 Stopper Pressing Style Absolute Reset Touch OK button.

The axis moves in the order from the Arm 2 stopper pressing movement to the Arm 1 stopper pressing movement.

Absolute reset	AxisNo.1-3 Page Up Page Dn	MOVE	STOP
1		HOME	SERV0 0N/0FF
Encoder Rotation Data Reset/ Reset Controller Error		Axis 1 _{J0G} -	Axis 1 JOG +
		Axis 2 _{J06} -	Axis 2 JOG +
		Axis 3 JOG -	Axis 3 JOG +
ОК СА	NCEL	Axis 4 _{J06} -	Axis 4 JOG +
Reset Encoder Erro	r	All Axes	All Axes
OK Cance I			10:00

9) The screen goes back to the initial screen once it is finished. Touch CANCEL button.

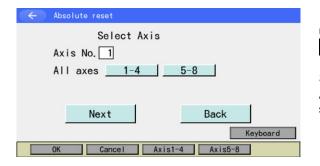
For the further operation, refer to the steps from Step (9) in [(i) For 4-Axis SCARA].





16.6.2.2 Procedures for Individual Axis

16.6.2.2 (1) Arm1 and Arm2



1) Input either 1 or 2 (5 or 6) in Axis No. box with using the software numeric keys, and then touch Next button.

Shown in the figure on the left is the condition that Arm1 on the 1st SCARA in XSEL-RXD/SXD is selected.

🗲 Absolute reset	AxisNo. 1	MOVE	STOP
1 Encoder Rotation Data Re Reset Controller Error	Page Up Page Dn	HOME Axis 1 J06 - Axis 2 J06 - Axis 3	SERVO ON/OFF Axis 1 .06 + Axis 2 .06 + Axis 3
OK Reset Encoder	CANCEL	J06 - Axis 4 J06 - All Axes J00 -	Axis 4 A05 + All Axes
OK Cance I			

2) Encoder Rotation Data Reset / Reset Controller Error Touch OK button.

🔶 Absolute reset	AxisNo. 1	MOVE	STOP
2	Page Up Page Dn	HOME	SERV0 ON/OFF
Emergency stop->Remove user	tool	Axis 1 JOG -	Axis 1 JOG +
		Axis 2 J06 -	Axis 2 J06 +
		Axis 3 JOG -	Axis 3 JOG +
OK CA	NCEL	Axis 4 J06 -	Axis 4 JOG +
Reset Encoder Erro	r	All Axes J00 -	All Axes
0K Cance I			

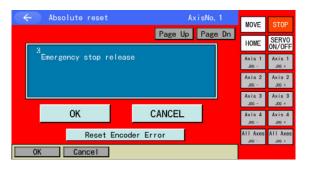
3) Remove user tool

In case there is a concern of interference during operation, detach the user tool in the emergency stop condition.

After detaching, touch OK button.

To cancel the process, touch CANCEL button.

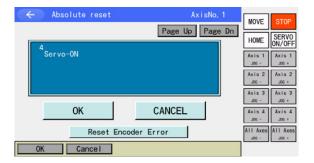




4) Emergency stop release

If the emergency stop is conducted in the previous section, cancel the emergency stop. (The screen for emergency stop is shown in the figure on the left.)

Touch OK button.



5) Align the arm to the initial posture with JOG operation or manually.

(The initial posture is the position stated in the beginning of 16.6.)

- 1. <u>If using JOG operation to align to initial posture</u> Touch OK button to turn the servo ON.
- 2. If aligning to initial posture manually Touch Page Up button.

	isNo. 1 Page Dn	MOVE HOME Axis 1 J0G - Axis 2 J0G - Axis 3	STOP SERVO ON/OFF Axis 1 .05 + Axis 2 .06 + Axis 3
OK CANCEL		J06 - Axis 4 J06 -	J06 + Axis 4 J06 +
JVel Reset Encoder Error OK Cancel JVel		JOG -	All Axes JOG +

6) Moving to Initial Posture

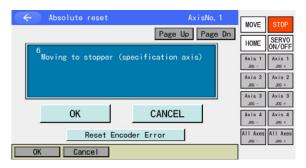
- If using JOG operation to align to initial posture To avoid interference, use JOG operation to align Arm1 (2) to the initial posture. Touch OK button.
- 2. <u>If aligning to initial posture manually</u> Turn ON the emergency stop. To avoid interference, align indicated axis to the initial posture manually. Turn OFF the emergency stop.

Touch OK button.

* With the operation in Step 7), the axis moves to the direction shown in this screen.

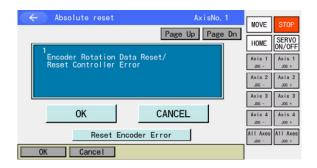






7) Stopper Pressing Absolute Reset on Indicated Axis Touch OK button.

Arm1 (2) moves for stopper pressing.



8) The screen goes back to the initial screen once it is finished. Touch CANCEL button.

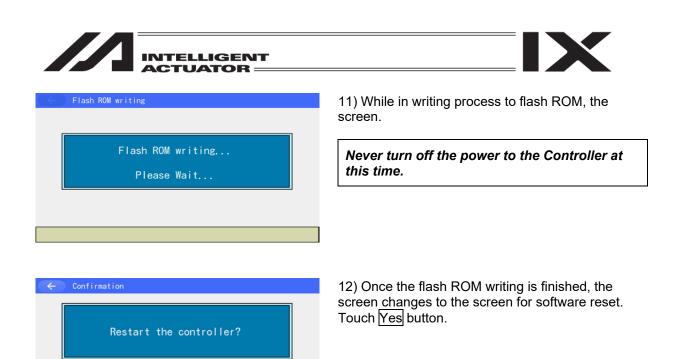
🗧 Absolute reset
Select Axis Axis No.
All axes <u>1-4 5-8</u> Re-Start controller
Next Back Keyboard
OK Cancel Axis1-4 Axis5-8

9) Touch Re-Start controller button.

A confirmation screen for the flash ROM writing appears.

Confirmation	Flash Write ?	
Yes	s N/	o

10) Touch Yes button to start flash ROM writing.



Yes

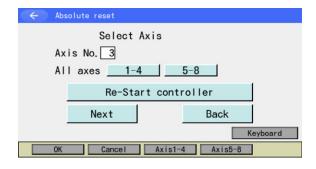
Yes No

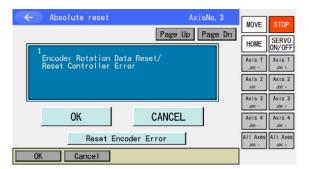
No





16.6.2.2 (2) Vertical Axis + Rotation Axis * For 4-Axis SCARA





1) Input either 3 or 7 (7 for XSEL-RXD/SXD/ RAXD/SAXD only) in Axis No. box with using the software numeric keys, and then touch Next button.

Shown in the figure on the left is the condition that vertical axis + rotation axis on the 1st SCARA in XSEL-RXD/SXD are selected.

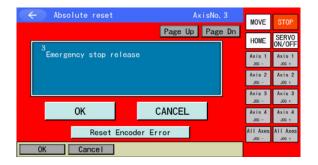
2) Encoder Rotation Data Reset / Reset Controller Error Touch OK button.

- Absolute reset AxisNo.3 MOVE Page Up Page Dn SERV0 0N/0FF HOME mergency stop->Remove user tool Axis 1 Axis 1 J06 + Axis 2 J06 + Axis 2 Axis Axis 3 OK CANCEL Axis 4 J06 + Reset Encoder Error ALL Axe s All Axe Cancel
- 3) Remove user tool

In case there is a concern of interference during operation, detach the user tool in the emergency stop condition.

After detaching, touch OK button.

To cancel the process, touch CANCEL button.

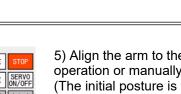


4) Emergency stop release

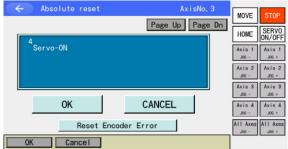
If the emergency stop is conducted in the previous section, cancel the emergency stop. (The screen for emergency stop is shown in the figure on the left.)

Touch OK button.









5) Align the arm to the initial posture with JOG operation or manually.

(The initial posture is the position stated in the beginning of 16.6.)

- 1. If using JOG operation to align to initial posture Touch OK button to turn the servo ON.
- 2. If aligning to initial posture manually Touch Page Up button.

Absolute reset MOVE Page Up Page Dn HOME SERVO ON/OFF JOG->Initial position(Rot+Vrt) Vert Rot Minus Minus Axis 1 Axis 1 Axis 2 Axis 2 _J06 - ____J06 + Axis 3 J06 - J06 + OK CANCEL Axis 4 J06 - J06 + Reset Encoder Error All Axes All Axes JVel

JVel

Cancel

OK

6) Moving to Initial Posture

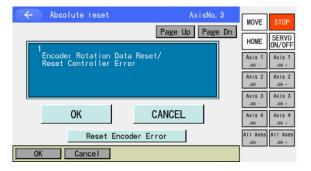
- 1. If using JOG operation to align to initial posture To avoid interference, use JOG operation to align the vertical axis and rotary axis to the initial posture. Touch OK button.
- 2. If aligning to initial posture manually Turn ON the emergency stop. To avoid interference, align each axis to the initial posture manually. Turn OFF the emergency stop. Touch OK button.
- * With the operation in Step 7), the axis moves to the direction shown in this screen.

7) Stopper Pressing Absolute Reset on Vertical and Rotation Axes Touch OK button.

The axes shift in the order of vertical axis pressing end movement, rotation axis sensor datum position movement and vertical axis stopper pressing movement.

Absolute reset	AxisNo. 3	MOVE	STOP
	Page Up Page Dn	MOVE	STUP
6		HOME	SERV0 0N/0FF
Pushing edge movement (Vrt Moving to sensor reference		Axis 1 JOG -	Axis 1 JOG +
Moving to stopper (Vrt) * Home pos. automatic update			Axis 2 J06 +
		Axis 3 JOG -	Axis 3 J06 +
ОК	CANCEL	Axis 4 J06 -	Axis 4 J05 +
Reset Encoder E	ror	All Axes Jog -	All Axes
OK Cance I			

16. Absolute Reset



INTELLIGENT ACTUATOR =

> 8)The screen goes back to the initial screen once it is finished. Touch CANCEL button.

🔶 Absolute reset
Select Axis
Axis No. 3
All axes <u>1-4 5-8</u>
Re-Start controller
Next Back
Keyboard
OK Cancel Axis1-4 Axis5-8

9)Touch Re-Start controller button.

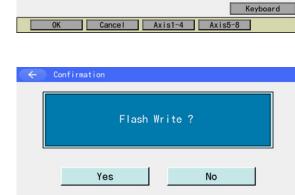
A confirmation screen for the flash ROM writing appears.

- Flash Write ? Yes No No
- Flash ROM writing Flash ROM writing... Please Wait...

10) Touch Yes button to start flash ROM writing.

11) While in writing process to flash ROM, the screen.

Never turn off the power to the Controller at this time.









Confirmation	
Restart the controller?	
Yes No	
Yes No	

12) Once the flash ROM writing is finished, the screen changes to the screen for software reset. Touch Yes button.





16.6.2.2 (3) Vertical Axis

Absolute reset

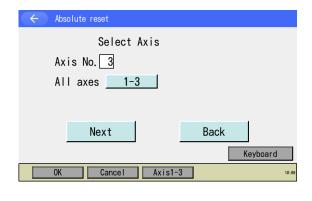
OK

Cancel

ncoder Rotation Data Reset/ eset Controller Error

Reset Encoder Error

* For 3-Axis SCARA



AxisNo. 3

Page Up Page Dn

MOVE

Axis 2

Axis 4

All Axes All Axe

HOME SERVO

Axis 2 JOG + Axis 3 JOG +

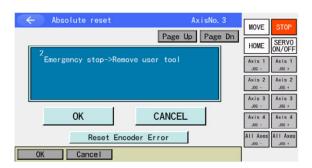
Axis 4

Axis 1 Axis 1

1) Input 3 in "Axis No." box with using the software numeric keys, and then touch the Next button.

The figure on the left shows the condition that the vertical axis has been selected in 3-axis SCARA.

2) Encoder Multi-Rotation Data Reset / Controller Error Reset Touch OK button.

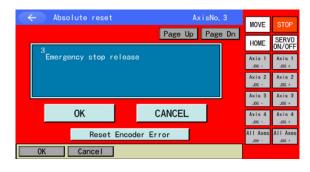


CANCEL

3) Remove user tool

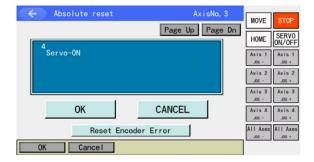
In case there is a concern of interference during operation, detach the user tool in the emergency stop condition. After detaching, touch OK button.

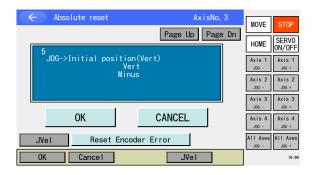
To cancel the process, touch CANCEL button.



4) Emergency stop release If the emergency stop is conducted in the previous section, cancel the emergency stop. (The screen for emergency stop is shown in the figure on the left.) Touch OK button.







Absolute reset MOVE STOF Page Up Page Dn SERV0 0N/0FF HOME Moving to stopper (Vrt) Axis 1 Axis 1 JOG + Axis 2 Axis 2 JOG J0G + Axis 3 Axis 3 CANCEL 0K Axis 4 J0G - J0G + Reset Encoder Error All Axes All Axes Cancel

5) Align the arm to the initial posture with JOG operation or manually. (The initial posture is the position stated in the beginning of 16.6.)

- 1. <u>If using JOG operation to align to initial</u> posture
 - Touch OK button to turn the servo ON.
- 2. <u>If aligning to initial posture manually</u> Touch Page Up button.
- 6) Moving to Initial position
- If using JOG operation to align to initial position To avoid interference, use JOG operation to align the vertical axis and rotary axis to the initial posture. Touch OK button.
- If aligning to initial position manually Turn ON the emergency stop. To avoid interference, use manually operation to align the vertical axis and rotary axis to the initial posture. Turn OFF the emergency stop. Touch OK button.
- With the operation in Step (7), the axis should move in the direction shown in this window.

7) Vertical Axis Stopper Pressing Style Absolute Reset Touch OK button.

The vertical axis performs the stopper pressing movement.

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10) Touch Yes button to start flash ROM writing.

MOVE Page Up Page Dn SERV0 0N/0FF HOME Encoder Rotation Data Reset/ Reset Controller Error Axis 1 Axis 1 Axis 2 Axis 2 Axis Axis OK CANCEL xis Reset Encoder Error AII Ax Cancel OK

8) The screen goes back to the initial screen once it is finished. Touch CANCEL button.

9) Touch Re-Start controller button.

A confirmation screen for the flash ROM writing appears.

Select Axis

Flash ROM writing... Please Wait...

11) While in writing process to flash ROM, the screen.

Never turn off the power to the Controller at this time.



Absolute reset

Axis No. 3

All axes 1-3







Confirmation	
Restart the controller?	
Yes No	
Yes No	

12) Once the flash ROM writing is finished, the screen changes to the screen for software reset. Touch Yes button.





16.7 Home Adjustment / Absolute Reset on MSEL-PC/PG/PCF/PGF/PCX/PGX, PSEL

Backup the parameters so that they can be put back anytime to those before changing them. (Go to $\boxed{File} - \boxed{Backup} - \boxed{Parameter}$ in the main menu to open the parameter backup screen and save the file.)

Controller			
Request Power Recovery	Multi Task		
Request Release Pause			
Calibration Home / Absolute Reset	Menu		
Safety Velocity	Next		
RePower ReAct CalH/RAbs SVel ->			

- 1) Select Calibration Home / Absolute Reset from Controller Menu.
- * Depending on the controller, Absolute Reset may be displayed. In such case, select it.

Confirmation Start Calibration Home, or ABS. Encoder Reset Operation, Do you want to continue?			
	Yes	No	
Yes	No		

 Touch Yes button to conduct home adjustment / absolute reset.
 If the absolute reset is not required, touch No button. The screen goes back to the previous

button. The screen goes back to the previous screen.



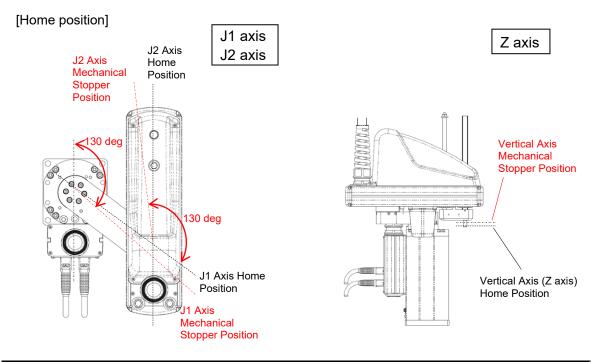


It is available to perform operation on SCARA Robot without having anything special as an absolute reset has already been conducted before delivered out from our factory. It is necessary to have an absolute reset when an absolute error generates or the robot is dismantled for such a reason as motor replacement work.

Caution:	In case of not having the absolute reset conducted, it may cause malfunction of
	the robot or a critical operational error.

The way to have the home adjustment / absolute reset differs depending on the axis types. (It will be selected automatically considering the specifications of the axis.) Refer to each chapter for details.

Model of the Robot	3N3515-WA / 3N4515-WA (3-axis Absolute Type)	4N3515-WA / 4N4515-WA (4-axis Absolute Type)
J1 axis	16.7.1.1 Calibration Home / Absolute reset	16.7.1.1 Calibration Home / Absolute reset
J2 axis	16.7.1.1 Calibration Home / Absolute reset	16.7.1.1 Calibration Home / Absolute reset
Z axis	16.7.2.1 Absolute reset	16.7.2.1 Absolute reset
R axis		16.7.1.1 Calibration Home / Absolute reset
Added Axis	16.7.2.1 Absolute reset	



Caution: Home-return operation is to have the actuator pressed against the mechanical stopper. Make sure that the home-return posture shown in the figure above can be performed at the standard home position or that there is no interference to peripheral devices during home-return operation.





16.7.1 SCARA J1, J2 and R Axes

16.7.1.1 How to Home Adjustment / Absolute Reset

Have the absolute reset and home adjustment (home preset automatic update) conducted with the following steps for SCARA J1, J2 and R axes.



OK

Cancel

OK



CANCEL

- 1) Input a number in Axis No. box with using the software numeric keys, and then touch Next button.
- 1, 2 or 4 for 4-axis SCARA and 1 or 2 for 3-axis SCARA is available to indicate. (1: J1 axis, 2: J2 axis, 4: R axis)
- 2) Home-Return Operation and Absolute Reset Touch OK button.
- After confirming OK, the process is carried out from the controller error reset to the absolute reset in order.

▲ Caution:	Home-return operation starts as soon as either touching OK button. The standard home position is the posture described in the beginning of 16.7. In case there is any interference to peripheral equipment during the home-return operation, the home-return operation completes at the position of interference, and the proper home position cannot be acquired. In such cases, it may cause a crash or unexpected operation, which could cause malfunction or critical operation error to the robot or the peripherals. Make sure to secure enough space for home-return posture to avoid any interference to the peripherals during
	space for home-return posture to avoid any interference to the peripherals during the home-return operation.

Axis 2 Axis 2 J06 - J06 +

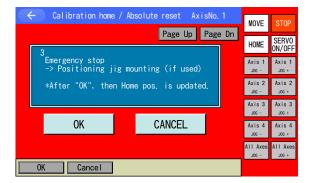
Axis 3 Axis 3 J06 - J06 +

Axis 4 J05 - J05 + All Axes All Axes





Calibration home / Absolute reset AxisNo. 1 Page Up Page Dn Page Dn Page -> Standard posture *After "OK", then Servo-off is executed.	MOVE STOP HOME SERVO ON/OFF Axis 1 Jo6 - Axis 2 Jo6 - Axis 2 Jo6 - Axis 3 Axis 3
OK CANCEL	J06 - J06 + Axis 4 Axis 4 J06 - J06 + All Axes All Axes
OK Cancel JVel	J0G - J0G + 10:00



	Message		
Message No. BE0			
Emergency Stop			
	Back	Inquiry	

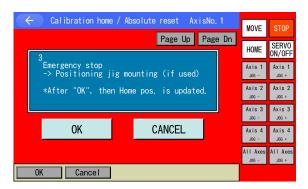
- Jog -> Standard posture Align the indicated axis to the vicinity of the datum position with JOG operation. (Refer to the figure in Step 6) for the datum position.) After finished, touch OK button.
- * After confirming OK, the indicated axis turns off automatically.
- 4) Emergency stop Press the EMERGENCY STOP button.

5) Once the emergency stop is input, the screen turns to the screen shown in the figure on the left.

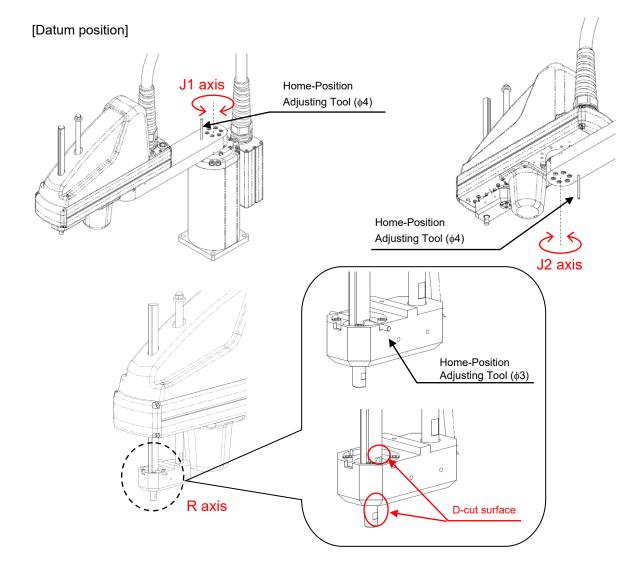
Touch Back button to go back to the previous screen.







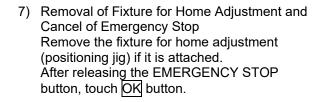
- 6) Fixture Set for Home Adjustment Set the fixture (positioning pin) for home adjustment.
 After setting is complete and fixed at the datum posture, touch OK button.
- * After confirming OK, home preset gets automatically updated.







Calibration home / Absolute reset AxisNo. 1 Page Up Page Dn Positioning jig removal -> Emergency stop release *After "OK", then the process completes.	MOVE STOP HOME SERVO ON/OFF Axis 1 Jo6 - Axis 2 Jo6 + Axis 3 Axis 3
OK CANCEL	JOG - JOG + Axis 4 JOG + JOG - JOG + All Axes JOG + JOG - JOG +

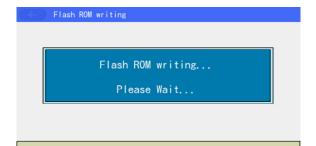


- * After confirming OK, the screen automatically returns to the axis select screen.
- Touch <u>Re-Start controller</u> button. A confirmation screen for the flash ROM writing appears.
- (Reference) Flash ROM writing can be conducted at once after absolute reset completes on each axis.
- 9) Make sure to conduct flash ROM writing and then software reset as the parameters are updated.
- updated.
- 10) While in writing process to flash ROM, the screen.

Never turn off the power to the Controller at this time.

	Absolute reset		
Select Axis			
Axis No. 1			
Re-	Start contr	oller	
Next		Back	
		K	eyboard
0K Cance	I		





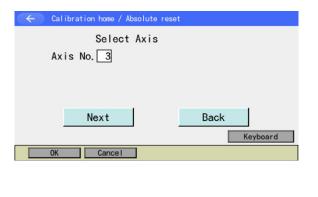
INTELLIGENT ACTUATOR	
Confirmation	 11) After flash ROM writing is complete, the display changes to the Software Reset screen. To activate the parameters that you had changed, it is necessary to have a software reset. Touch Yes button.
Yes No	Once the software reset is complete, the screen automatically returns to the main menu screen.

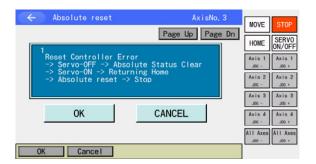


16.7.2 SCARA Z-Axis, Battery-less Absolute Type Additional Axes and Linear Axes

16.7.2.1 How to Absolute Reset

For SCARA Z-axis, the battery-less absolute type additional axes and the linear axes, have the absolute reset conducted with the following steps.





- Input a number in Axis No. box with using the software numeric keys, and then touch <u>Next</u> button.
- * For axis Nos., the following Nos. can be designated. MSEL-PCX/PGX : 3 (for Z-Axis), 4(for Additional Axis) ("4" is selectable, only when there is an additional axis).
 MSEL-PC/PG/PCF/PGF : 1~4 PSEL : 1~2
- 2) Home-Return Operation and Absolute Reset Touch OK button.
- * After confirming OK, the process is carried out from the controller error reset to the stop in order.

Caution: Home-return operation starts as soon as touching OK button. The standard home position is the posture described in the beginning of 16.7. In case there is any interference to peripheral equipment during the home-return operation, the home-return operation completes at the position of interference, and the proper home position cannot be acquired. In such cases, it may cause a crash or unexpected operation, which could cause malfunction or critical operation error to the robot or the peripherals. Make sure to secure enough space for home-return posture to avoid any interference to the peripherals during the home-return operation.

Absolute reset AxisNo, 3 Move STOP Page Up Page Dn Move SERVP Complete! Axis 1 Axis 1 ServP Axis 2 Axis 2 Axis 2 OK CANCEL Axis 4 Axis 4 OK Cancel OK Cancel	 3) Complete! Touch OK button. * After confirming OK, the screen automatically returns to the axis select screen.
Calibration home / Absolute reset Select Axis Axis No. 3 Re-Start controller Next Back Keyboard	 4) Touch <u>Re-Start controller</u> button. A confirmation screen for the flash ROM writing appears. (Reference) Flash ROM writing can be conducted at once after absolute reset completes on each axis.
Confirmation Flash Write ? Yes No Yes No	5) Make sure to conduct flash ROM writing and then software reset as the parameters are updated.
Flash ROM writing Flash ROM writing Please Wait	 6) While in writing process to flash ROM, the screen. Never turn off the power to the Controller at this time.

INTELLIGENT ACTUATOR	
Confirmation	 After flash ROM writing is complete, the display changes to the Software Reset screen.
Restart the controller?	To activate the parameters that you had changed, it is necessary to have a software reset. Touch Yes button.
Yes No	Once the software reset is complete, the screen automatically returns to the main menu screen.





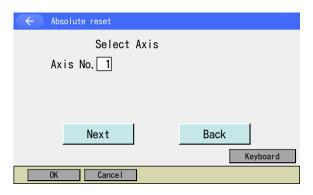
16.8 Absolute Reset for Battery-less Absolute Type

Make sure to have a backup before conducting it so the parameters can be set back any time. (Go to File - Backup - Parameter from the main menu to open the parameter backup screen to save a file.)

16.8.1 How to Conduct Absolute Reset for Battery-less Absolute Type

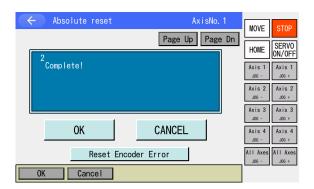
Absolute Reset on Cartesian Axes:

Absolute reset should be performed in the following procedures for AC servo motor type TTA, XSEL-P/Q (V1.52 and later), XSEL-R/S/RA/SA, XSEL2-T, 5th to 8th Axes of XSEL-RX/SX (V1.23 and later), 5th to 8th Axes of XSEL-RAX/SAX (4th to 8th Axes if 3-axis SCARA), SSEL (V0.57 and later), ASEL (V0.45 and later) and XSEL2-TX (Axis 5 to 8 in Axis Group No. 1 and all axes in Axis Group No. 2).



 Input the axis number to the axis number box using the touch panel numeric keys, and then touch Next button.

← Absolute reset	AxisNo.1 e Up Page Dn	MOVE STOP
Pag 1 Encoder Rotation Data Reset1 -> Reset Controller Error -> Se -> Returning Home -> Encoder Rotation Data Reset2	HOME SERV0 0N/OFF Axis 1 Axis 1 J06 - Axis 2 J06 - Axis 2 J06 - Axis 3	
OK CANC Reset Encoder Error	EL	
OK Cance I		

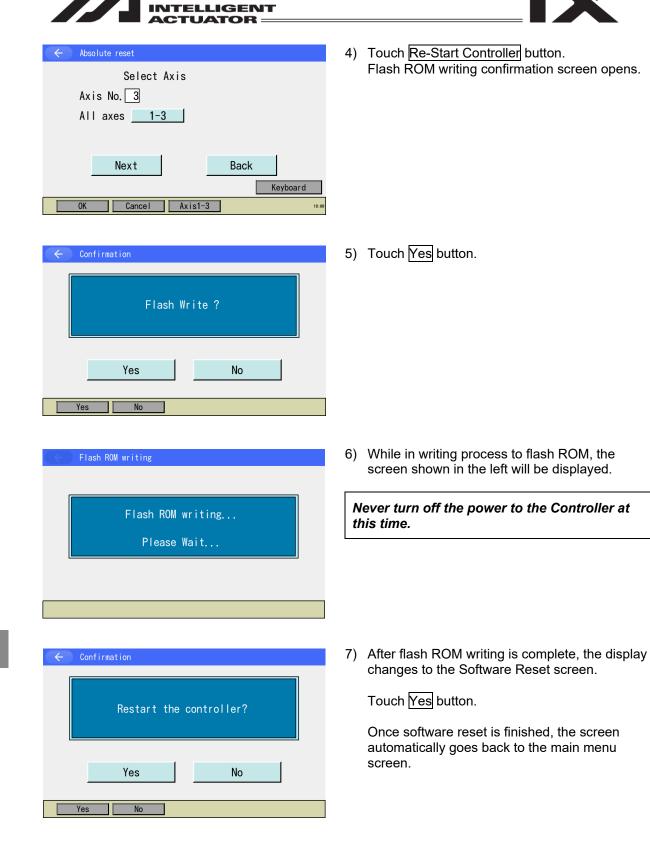


- 2) Touch Absolute Reset OK button.
- After touching OK, the process is carried out in order from Encoder Multi-Rotation Data Reset 1 till it stops.

/ Caution:

The indicated axis conducts the home-return operation.

- 3) Complete screen Touch OK button.
- * After touching OK, the screen automatically goes back to the axis select screen.







16.8.2 Special Procedure: How to Conduct Absolute Reset Battery-less Absolute Synchronizing Type

Synchronizing Type Absolute Reset

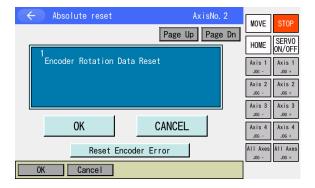
Synchronizing type absolute reset be performed in the following procedures for XSEL-P/Q (V1.52 and later), XSEL-R/S/RA/SA, 5th to 8th Axes of XSEL-RX/SX (V1.23 and later), 5th to 8th Axes of XSEL-RAX/SAX (4th to 8th Axes if 3-axis SCARA), SSEL (V0.57 and later) and ASEL (V0.45 and later). For XSEL2-T/TX, conduct it in the procedures in [16.14 Absolute Reset for Synchronizing Axis: XSEL2-T/TX].

This section describes only the corresponding section to (3) Special Procedure Absolute Reset in the [16.5.3 Special Procedure Absolute Reset] procedures. Perform the procedures before (2) or after (4) the same as above, referring to [16.5.3 Special Procedure Absolute Reset].

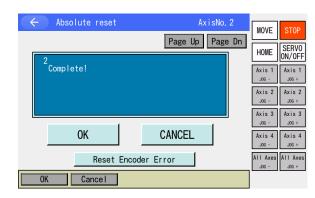
1) Conduct the absolute reset on the slave axes.

← Absolute reset	
Select Axis Axis No. 2	
Next	Back Keyboard
OK Cance I	

Input the axis number of the slave axis using the touch panel numeric keys, and then touch $\boxed{\text{Next}}$ button.



Touch OK button.



Touch OK button.

* After touching OK, the screen automatically goes back to the axis select screen.

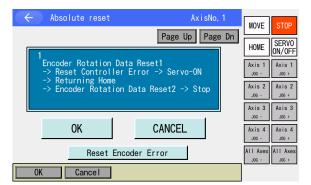




2) Conduct the absolute reset on the master axis.

Abs	solute reset	
Ax	Select Axis is No.	
	Re-Start co	ntroller
	Next	Back
		Keyboard
ОК	Cancel	

Input the axis number of the master axis using the touch panel numeric keys, and then touch \underline{Next} button.

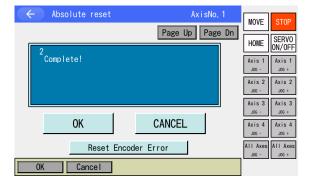


Touch OK button.

* After touching OK, the process is carried out in order from Encoder Multi-Rotation Data Reset 1 till it stops.

Caution:

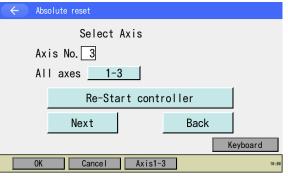
The indicated axis conducts the home-return operation.



Touch OK button.

* After touching OK, the screen automatically goes back to the axis select screen.

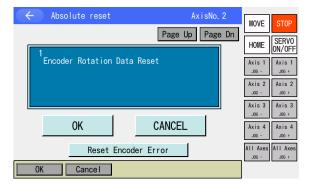
3) Conduct the absolute reset on the slave axes again.



Input the axis number of the slave axis using the touch panel numeric keys, and then touch Next button.

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Touch OK button.

🔶 Absolute reset	AxisNo.2	MOVE	STOP
	Page Up Page Dn	HOME	SERV0
2 Complete!		Axis 1 JOG -	ON/OFF Axis 1 JOG +
		Axis 2 _{JOG} -	Axis 2 JOG +
		Axis 3 JOG -	Axis 3 _{JOG +}
OK	CANCEL	Axis 4 _{JOG} -	Axis 4 JOG +
Reset Encode	er Error	All Axes JOG -	All Axes JOG +
OK Cance I			

Touch OK button.

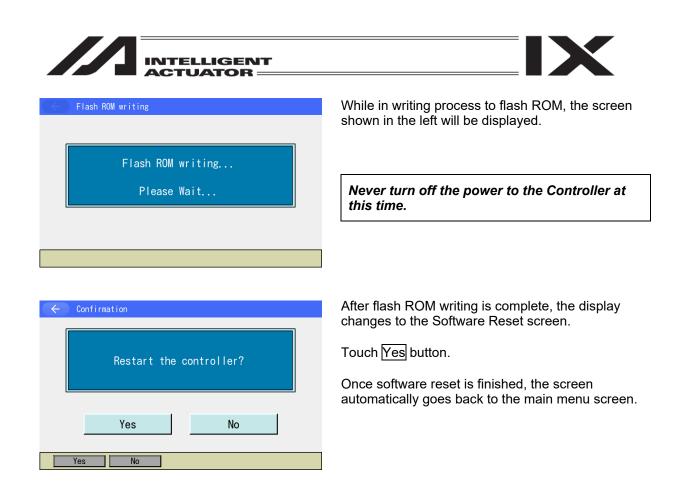
* After touching OK, the screen automatically goes back to the axis select screen.

← Abs	solute reset		
	Select Axis		
Ax	is No. 2		
	Re-Start co	ntroller	
	Next	Back	
		К	eyboard
ОК	Cancel		

Touch Re-Start Controller button.
Flash ROM writing confirmation screen opens.

← Cc	onfirmation		
	Flash Wi	ite ?	
	Yes	No	
Yes	s No		

Touch Yes button.







16.9 Absolute Reset on Pulse Motor Type TTA

Make sure to have a backup before conducting it so the parameters can be set back any time. (Go to File - Backup - Parameter from the main menu to open the parameter backup screen to save a file.)

16.9.1 How to Conduct Absolute Reset on Pulse Motor Type TTA

For Pulse Motor Type TTA, conduct the absolute reset in the following procedures.

Celibration home / Absolute reset	:
Select Axis Axis No. 1	
Next	Back Keyboard
OK Cancel	

 Input the axis number to the axis number box using the touch panel numeric keys, and then touch Next button.

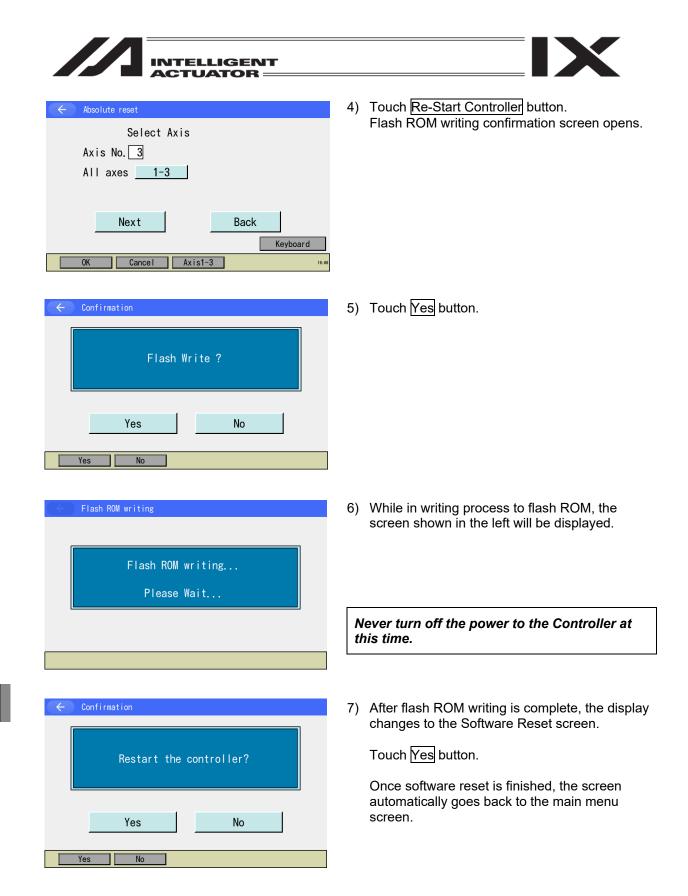
← Absolute reset	AxisNo.1	MOVE STOP
Pa 1 Reset Controller Error -> Serv -> Returning Home1 -> Encoder Rotation Data Reset -> Returning Home2 -> Stop ->		HOME SERVO ON/OFF Axis 1 JOG - JOG + Axis 2 Axis 2
OKCAN	CEL	J06 - J06 + Axis 3 J06 - J06 - J06 + Axis 4 J06 - J06 - J06 +
OK Cancel		All Axes JOG - JOG +

- 2) Absolute Reset Touch OK button.
- * After touching OK, the process is carried out in order from Controller Error Reset till the servo is turned off.

Caution: The indicated axis conducts the home-return operation.

Absolute reset	AxisNo. 1 Page Up Page Dn	MOVE STOP
2 Complete!		HOME SERVO ON/OFF Axis 1 J06 - J06 +
		Axis 2 JOG - JOG + Axis 3 Axis 3
ОК	CANCEL	J06 - J06 + Axis 4 J06 - J06 +
OK Cance I		All Axes JOG - JOG +

- 3) Complete! Touch OK button.
- * After touching OK, the screen automatically goes back to the axis select screen.





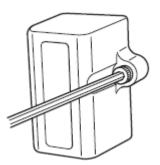


16.10 Resetting Absolute-Battery Voltage-Down Warning Error for Orthogonal Axis

XSEL-J/K/P/Q/R/S/RA/SA, XSEL2-T, 5th and 6th Axes of XSEL-PX/QX, 5th to 8th Axes of XSEL-RX/SX/RAX/SAX (4th to 8th Axes if 3-axis SCARA), XSEL2-TX (Axis 5 to 8 in Axis Group No. 1 and all axes in Axis Group No. 2), SSEL, ASEL and PSEL Controller

The encoder error reset / software reset should be conducted when replacing a battery for occurrence of No. A03 "Absolute Data Backup Battery Voltage Drop Warning" (No. 247 for XSEL2-T/TX) or error not occurred. Homing in the absolute reset procedures does not have to be attempted again. Keep the controller's main power ON until the following procedures have been completed:

- 1) Turn the servo OFF for all the axes for error resetting. (Use the SERVO ON/OFF, 1st axis servooff to 4th axis servo-off buttons on the teaching screen.)
- Replace the batteries of the axes for error resetting. When the voltage of absolute data holding batteries decreases, replace them together with the battery unit.



For XSEL-J/K Controllers, detach the screw holding the battery unit on the front panel as shown in the figure on the left with using a hex wrench.

Pull the battery unit towards you.

Replace it with a new one.

For battery replacement work for models other than XSEL-J/K Controllers, refer to [Instruction Manual for Each Controller].

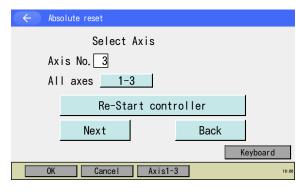
Select Absolute Reset from Controller Menu.

Con	firmation Start ABS, Encoder Do you want to	Reset Operation, o continue?	
	Yes	No	
Yes	No		

3) To have an encoder error reset, touch Yes button.

When not to have an encoder error reset, touch No button. The display returns to the previous screen.





Absolute reset Select Axis Axis No. 1 Next Back OK Cancel

5) Once the input is confirmed, the cursor

disappears. If you want to redo the input, touch the axis number input box.

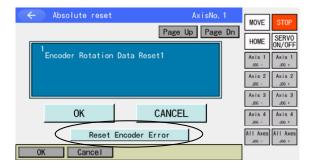
Input a number on the touch panel numeric keys to

indicate the axis number to have the encoder error

reset conducted, and touch ENT for confirmation.

If you want to continue encoder error reset, touch Next button.

When you cancel encoder error reset, touch Back button.



6) Encoder error reset

4) Axis No. Input

Touch Reset Encoder Error button. Touch CANCEL button. When you want to have the encoder error reset on other axes, repeat the steps in (4) to (6). To finish the process, touch Back button to return to Controller Menu screen.

← Controller	
Flash ROM Writing	Re-Connection
Software Reset	Baud Rate Change
Error Reset	Menu
Memory Clear	Next
FROM S Reset	F Reset M Clear ->

7) Res<u>et software.</u>

Touch Software Reset button. For the following operations, refer to [15.3. Software Reset].





16.11 Home Adjust / Absolute Reset for Wrist Unit: MSEL-PC/PG/PCF/PGF

Absolute reset for the wrist unit should be conducted on the B-axis and T-axis in a series of operations. As you will need to operate the robot in the process of adjustment, make sure that there is nothing to interrupt the robot movement in the actuator working area.

- (1) Preparing for Absolute Reset
- [Necessary Items for Absolute Reset]

Model Number : For S Type JG-WUS

For M Type JG-WUM

- (Note) The model numbers stated above are those that an absolute reset tool, screws and pins come in a set.
- Absolute Reset Tool (in common for S Type and M Type)
- Bolt Size S : Hexagonal Socket Head Bolt, M6 x 6, 1 piece
- Size M : Hexagonal Socket Head Bolt, M6 x 10, 1 piece
 Pin Size S : \$\$\operature{4}\$ B Type Parallel Pin, Length 40mm, 1 piece
 \$\$\operature{3}\$ B Type Parallel Pin, Length 40mm, 2 piece
 - Size M : ϕ 4 B Type Parallel Pin, Length 40mm, 3 piece



(2) How to Absolute Reset

Controller	
Request Power Recovery	Multi Task
Request Release Pause	
Calibration Home / Absolute Reset	Menu
Safety Velocity Next	
RePower ReAct CalH/RAbs SVel -> 18:00	

1) Select <u>Calibration Home / Absolute Reset</u> from Controller Menu.

- Confirmation

 Start Calibration Home, or

 ABS, Encoder Reset Operation.

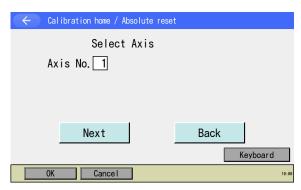
 Do you want to continue?

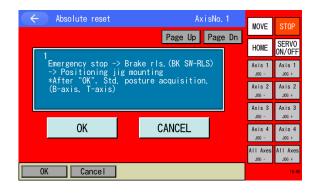
 Yes
 No
- 2) Touch Yes button to conduct calibration home / absolute reset.

If the calibration home / absolute reset is not required, touch \boxed{No} button. The screen goes back to the previous screen.









4) Emergency stop input and adjusting jig set

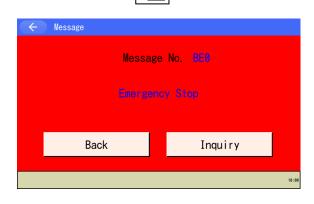
3) Input a number in Axis No. box with using the

software numeric keys, and then touch Next button.

Press the EMERGENCY STOP button. Press the brake release switch to release the brake.

Fix at the standard posture described in the following figure with using a jig, and touch OK button.

* After touching OK, acquirement of B-axis and T-axis standard posture should be performed.

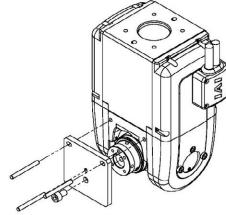


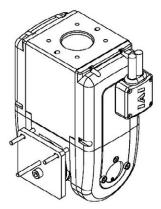
Back

Inputting emergency stop displays the screen at the left.

Touch Back button to go back to the previous screen.

[Standard posture]





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← Absolute reset	AxisNo.1	MOVE	STOP
2 Pos. jig removal->Brake lock -> Emergency stop release *Aftr "OK", SVON->Abs. rese ->Crd. origin assoc. data t	t (B, T)->Sv0FF	HOME C Axis 1 J06 - Axis 2 J06 -	SERVO N/OFF Axis 1 JOG + Axis 2 JOG + Axis 3
ОКС	ANCEL	J06 -	JOG + Axis 4 JOG +
OK Cance I			10:00

AxisNo.1

Page Up Page Dn

CANCEL

MOVE STOP

Axis 1

Axis 2

Axis 3 Axis 3

JOG

HOME SERVO ON/OFF

Axis 1

J0G +

Axis 2 _{JOG +}

J0G +

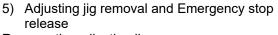
Axis 4 J0G -All Axes J0G -All Axes J0G -J0G +

Absolute reset

0K

Cancel

Complete!



Remove the adjusting jig.

Turn off the brake release switch to enable the brake.

Release the EMERGENCY STOP button, before touching OK button.

- * After confirming OK, the process is carried out from the Servo-ON to the coordinate origin association data update (B, T) in order.
- 6) Complete!

Touch OK button.

* After confirming OK, the screen automatically returns to the axis select screen.

- Calibration home / Absolute reset

 Select Axis

 Axis No. 1

 Re-Start controller

 Next
 Back

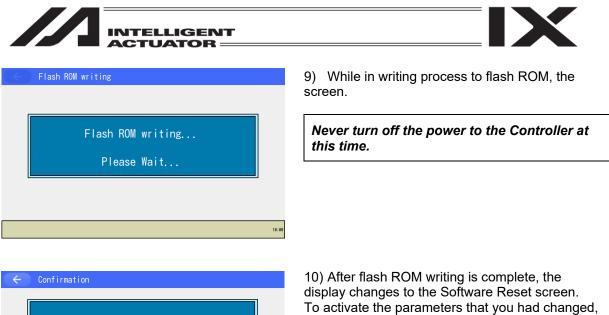
 Keyboard

 OK
 Cancel
- ← Confirmation Flash Write ? Yes No No

7) Touch Re-Start controller button.

A confirmation screen for the flash ROM writing appears.

8) Make sure to conduct flash ROM writing and then software reset as the parameters are updated.



Touch Yes button. Once the software reset is complete, the screen

automatically returns to the main menu screen.

it is necessary to have a software reset.

Confirmation

 Restart the controller?

 Yes
 No

16. Absolute Reset





16.12 Absolute Reset for 6-axis Cartesian : RSEL

Make sure to have a backup before conducting so the parameters can get back any time. (Open the parameter backup window from File - Backup - Parameter in the main menu and save the file.)

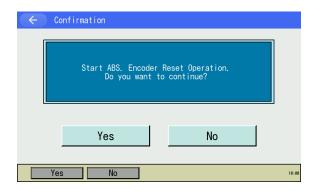
The absolute reset on the 6-axis cartesian should be conducted individually to X-, Y-, Z- and R-axes and in a set for B- and T-axes. In the process of tuning, there will be some cases to operate the robot. Make sure that there is no obstacles in the operation area of the actuator before start operating it.

- (1) Preparing for Absolute Reset
 - [Necessary Items for Absolute Reset]
 Model Number : For S Type JG-WUS For M Type JG-WUM
 (Note) The model numbers stated above are those that an absolute reset tool, screws and pins come in a set.
 Absolute Reset Tool (in common for S Type and M Type)
 Bolt Size S : Hexagonal Socket Head Bolt, M6 x 6, 1 piece Size M : Hexagonal Socket Head Bolt, M6 x 10, 1 piece
 Pin Size S : \$\oldsymbol{4}\$ B Type Parallel Pin, Length 40, 1 piece \$\oldsymbol{3}\$ B Type Parallel Pin, Length 40, 3 piece



(2) How to Absolute Reset

← Controller	
Request Power Recovery	Multi Task
Request Release Pause	
Absolute Reset	Menu
Safety Velocity	Next
RePower ReAct R	esetAbs SVel -> 10:00



1) Select Absolute Reset from Controller Menu.

2) Touch Yes button to conduct absolute reset.

Absolute reset is not required, touch No button. The screen goes back to the previous screen.





When an axis number assignment to activate several axes groups is performed in the axis number assignment feature (Refer to [15.17 Axis Number Assignment]), the select axes group screen should appear after you touch the Yes button. Touch an axes group number button to select the axes group number that is to be subject to.

÷	Select axes gro	oup					
		Axes	group	No. 1]	
		Axes	group	No. 2]	
					Cance I		
							10:00
×	Absolute reset				Axes group	No.	1

Touch the Yes button, and the select axes window should appear. Touch an Axes group No. button

Absolute reset

 Axes group No. 1

 Select Axis

 Axis No. 1

 Next

 Back

 Keyboard

The axis number input window should open.

* The axes group number that was selected should be shown on the top right of the screen.

Refer to each chapter below for details.

X Axis	[16.12.1.1 Absolute Reset]
Y Axis	[16.12.1.1 Absolute Reset]
Z Axis	[16.12.1.1 Absolute Reset]
R Axis	[16.12.2.1 Absolute Reset]
B and T Axis	[16.12.3.1 Absolute Reset]



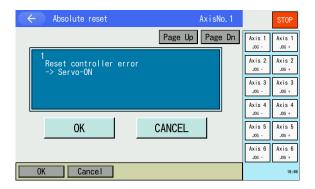
16.12.1 X-, Y- and Z-Axes of 6-axis Cartesian

16.12.1.1 How to Absolute Reset

For X-, Y- and Z-axes of the 6-axis cartesian, conduct the absolute reset in the procedures below.

$\left(\leftarrow \right)$	Absolute reset	Axes group No. 1
	Select Axis Axis No. 🚺	
	Next	Back Keyboard
	0K Cance I	10:00

 Using the touch panel numeric keys, input an axis number in the axis number box, and touch the Next button.



2) Reset controller error \rightarrow Servo-on shows up. Touch the OK button.

← Absolute reset	AxisNo.1	STO	DP
Pag	ge Up Page Dn	Axis 1 Axis	· · ·
2 Jog to interference avoidance posture *After "0K", then Returning home, Axis 3 Axis			; 2 + ; 3
		J0G - J0G Axis 4 Axis J0G - J0G	5 4
OK CANO	EL	Axis 5 Axis J0G - J0G	
JVel		Axis 6 J0G - J0G	
OK Cance I	JVel		10:00

- Jog to interference avoidance posture Move with the jog operation to the posture that would not have any interference during the home-return operation. Touch the OK button after finished.
- * After touching OK, process from the home-return operation to turning the servo off should take place in the order.

Caution:

The indicated axis conducts the home-return operation.



← Absolute reset	AxisNo.1	STOP
	Page Up Page Dn	Axis 1 JOG - JOG +
4 Complete!		Axis 2 J0G - J0G +
		Axis 3 J0G - J0G +
		Axis 4 Axis 4
ОК	CANCEL	Axis 5 J0G - J0G +
		Axis 6 J0G - J0G +
OK Cance I		10:00

4) Complete! Touch OK button.

*

After confirming OK, the screen automatically returns to the axis select screen.

5) Touch <u>Re-Start controller</u> button. Touch the re-start controller button.

6) Conduct the software reset. Touch the OK button.

Once the software reset finishes, it automatically goes back to the main menu.



÷	Confirmation	
	Restart the controller? ※The axes whose servo is ON will be terned OFF.	
	Yes No	
	Yes No	10:00





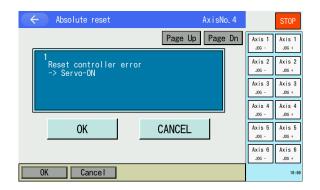
16.12.2 R-Axis of 6-axis Cartesian

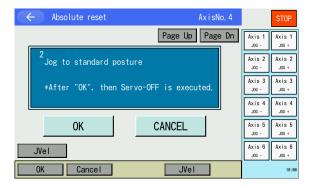
16.12.2.1 How to Absolute Reset

For R-axis of the 6-axis cartesian, conduct the absolute reset in the procedures below.

← Absolute reset	
Select / Axis No. 4	Axis
Next	Back Keyboard
OK Cancel	10:00

1) Using the touch panel numeric keys, input an axis number in the axis number box, and touch the Next button.



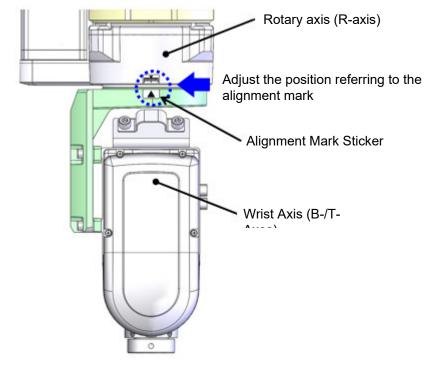


2) Reset controller error \rightarrow Servo-on shows up. Touch \overrightarrow{OK} button.

- Jog to standard posture Move the indicated axis with the jog operation to the posture vicinity. Touch the OK button after finished.
- * After touching OK, the indicated axis should automatically turn the servo off.



[Standard Posture]



Home position

Absolute reset Page Up Page Dn Axis 1 JOG -Axis 1 JOG + t, stop-> Brake rls.-> Pos. jig mount Brake lock -> Emg. stop rls. 'ter "OK", then SrvON, Return home, 5 reset and SrvOFF are executed. Axis 2 _{J06} -Emg. *Af ABS Axis 3 Axis 3 J06 + JOG Axis 4 JOG -Axis 4 JOG + Axis 5 JOG + CANCEL 0K Axis 5 JOG Axis 6 Axis 6 J0G + Cancel 10:0

4) Emergency STOP Press the Emergency STOP button.

- Error display
 Error list
 Check model num.
 Inquiry

 •Error descript

 Error No.
 500
 Error level
 Operation release

 Name
 Emergency stop

 Descr.
 Emergency stop has been detected.

 Detail code:
 BEØh
- 5) Inputting emergency stop displays the screen at the left.

Touch < button to go back to the previous screen.





← Absolute reset	Ax	isNo.4		STOP
	Page Up	Page Dn	Axis 1 JOG -	Axis 1 JOG +
3 Emg. stop-> Brake r -> Brake lock -> Emg	ls> Pos. jig moun z. stop rls.	t	Axis 2 JOG -	Axis 2 J0G +
*After "OK", then Si	*After "OK", then SrvON, Return home, ABS reset and SrvOFF are executed.		Axis 3 JOG -	Axis 3 J06 +
			Axis 4 J06 -	Axis 4
ОК	CANCEL		Axis 5 JOG -	Axis 5 JOG +
			Axis 6 J0G -	Axis 6 J0G +
OK Cancel				10:

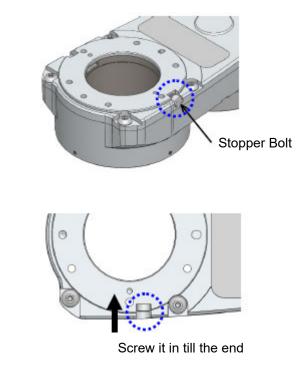
- Put on positioning tool Put the positioning tool on after the brake release. After putting it on, lock the brake and then cancel the emergency stop button. Touch OK button.
- * After touching OK, process from turning the servo on to servo off should take place in the order.

\land Caution:

The indicated axis conducts the home-return operation.

[To put on positioning tool]

Screw in the stop bolt till it stops with a slotted screwdriver.



← Absolute reset	AxisNo.4		STOP
	Page Up Page Dn	Axis 1 JOG -	Axis 1 JOG +
5 Emergency stop -> Positioning jig removal	e.	Axis 2 J06 -	Axis 2 J0G +
-> Emergency stop release		Axis 3 JOG -	Axis 3
		Axis 4 J06 -	Axis 4 J06 +
OK	CANCEL	Axis 5 JOG -	Axis 5 JOG +
		Axis 6 J0G -	Axis 6 J0G +
OK Cance I			10:00

7) Emergency STOP Press the Emergency STOP button.

0K

0K Cancel

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CANCEL

Axis 5

JOG

Axis 6

JOG

Axis 5

J0G +

Axis 6 J0G +

10:0

10) Complete!

Touch OK button.

* After confirming OK, the screen automatically returns to the axis select screen.

[To take off positioning tool]

•Error descript

Error No.

Error display Error list

Name Emergency stop

Troubleshooting

500

Set the position of the stopper bolt back to where it was. Align the head of the stopper bolt to the edge of the main unit.

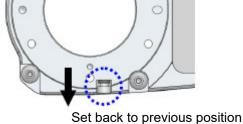
Page Up Page Dn Axis 1 Axis 1 JOG Emergency stop -> Positioning jig removal - Foorgency stop release Axis 2 Axis 2 JOG JOG · Axis 3 Axis 3 J0G + Axis 4 JOG + Axis 4 Axis 5 _{JOG +} 0K CANCEL Axis Axis 6 Axis 6 JOG + 0K Cancel 10:00

Detail code: BE0h

- 9) Take off positioning tool Take the positioning tool off. After taking it off, cancel the emergency stop button. Touch OK button.
- 8) Inputting emergency stop displays the screen at the left. Check model num. Inquiry Touch *C* button to go back to the previous screen. Error level Operation release Descr. Emergency stop has been detected.







INTELLIGENT ACTUATOR	
← Absolute reset	11) Touch Re-Start controller button.
Select Axis	The screen turns to the software reset window.
Axis No. 4	
Re-Start controller	
Next Back Keyboard	
OK Cancel 18-89	
Confirmation	12) Condu <u>ct th</u> e software reset.
	Touch Yes button.
Restart the controller? ※The axes whose servo is ON will be terned OFF.	Once the software reset finishes, it automatically goes back to the main menu.
Yes No	
Yes No 18:00	





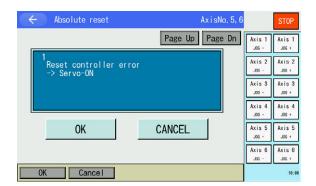
16.12.3 B- and T-Axes of 6-axis Cartesian

16.12.3.1 How to Absolute Reset

For B- and T-axes of the 6-axis cartesian, conduct the absolute reset in the procedures below.

$\left(\leftarrow \right)$	Absolute reset	
	Select Axis Axis No. 📑	
	Next	Back Keyboard
	0K Cancel	10:00

 Using the touch panel numeric keys, input an axis number in the axis number box, and touch the Next button. (Input an axis number of the B-axis)

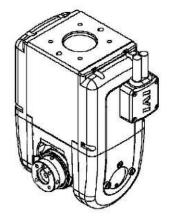


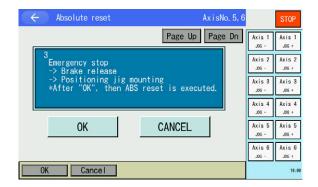
2) Reset controller error \rightarrow Servo-on shows up. Touch \overrightarrow{OK} button.

- Page Up Page Dn Axis 1 Axis 1 JOG Jog to standard posture Axis 2 Axis 2 JOG · JOG Axis 3 Axis 3 JOG JOG Axis 4 Axis 4 JOG + 0K CANCEL Axis 5 Axis 5 J0G + Axis 6 _{JOG} -Axis 6 _{JOG +} JVe Cancel JVel 0K
- Jog to standard posture show up. Move the indicated axis with the jog operation to the posture vicinity. Touch the OK button after finished.
- * After touching OK, the indicated axis should automatically turn the servo off.

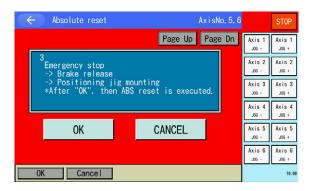


[Standard Posture]





(← @	Troubleshooti	ng			
Error display	Error list	Check mod	el num.	Inquir	y
•Error descript					
Error No.	500		Error	level	Operation release
Name Emerge	ency stop				
Descr. Emergency stop has been detected.					
Detail code:BE0h					
		1	Det	an coue.]
Troubl	eshooting				10:00



4) Press the Emergency STOP button.

5) The display turns to the window shown on the left.

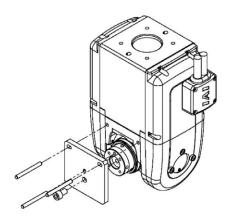
Touch \leftarrow button to go back to the previous screen.

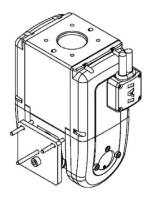
- 6) After brake release, put on the positioning tool. After putting it on, touch the OK button.
- * After touching OK, the absolute reset should get conducted.





[To put on positioning tool]





- Absolute reset Page Up Page Dn Axis 1 JOG + Axis 1 JOG Positioning jig removal -> Brake lock -> Emergency stop release Axis 2 Axis 2 J06 + Axis 3 Axis 3 JOG + Axis 4 JOG + Axis 0K CANCEL Axis 5 JOG -Axis 5 JOG + Axis 6 JOG + Axis 6 JOG -Cancel OK 10:0
 - Take the positioning tool off. After taking it off, lock the brake and then cancel the emergency stop button. Touch OK button.

- Absolute reset AxisNo.5,6 Page Up Page Dn Axis 1 JOG -Axis 1 JOG + Complete! Axis 2 Axis 2 JOG + .J0G Axis 3 Axis 3 JOG J06 + Axis 4 J0G + Axis 4 JOG OK CANCEL Axis 5 JOG + Axis 5 Axis 6 J0G + Axis 6 Cancel 0K
- 8) Complete! Should come out. Touch OK button.
 - * After confirming OK, the screen automatically returns to the axis select screen.

 Touch <u>Re-Start controller</u> button. The display turns to the software reset window.



INTELLIGENT ACTUATOR	
Confirmation	10) Conduct the software reset. Touch Yes button.
Restart the controller? ※The axes whose servo is ON will be terned OFF.	Once the software reset finishes, it automatically goes back to the main menu.
Yes No	
Yes No 18:00	





16.13 Absolute Reset on Wrist Unit : RSEL

Make sure to have a backup before conducting so the parameters can get back any time. (Open the parameter backup window from File - Backup - Parameter in the main menu and save the file.)

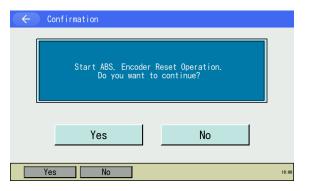
The absolute reset on the wrist unit should be conducted in a set for B- and T-axes. In the process of tuning, there will be some cases to operate the robot. Make sure that there is no obstacles in the operation area of the actuator before start operating it.

- (1) Preparing for Absolute Reset
 - [Necessary Items for Absolute Reset] Model Number : For S Type JG-WUS For M Type JG-WUM
 (Note) The model numbers stated above are those that an absolute reset tool, screws and pins come in a set.
 Absolute Reset Tool (in common for S Type and M Type)
 Bolt Size S : Hexagonal Socket Head Bolt, M6 x 6, 1 piece Size M : Hexagonal Socket Head Bolt, M6 x 10, 1 piece
 Pin Size S : \$\overline{4} B Type Parallel Pin, Length 40, 2 piece Size M : \$\overline{4} B Type Parallel Pin, Length 40, 3 piece



(2) How to Absolute Reset

← Controller		
Request Power Recovery	Multi Task	
Request Release Pause		
Absolute Reset	Menu	
Safety Velocity	Next	
RePower ReAct ResetAbs SVel -> 19:00		



1) Select Absolute Reset from Controller Menu.

2) Touch Yes button to conduct absolute reset.

Absolute reset is not required, touch <u>No</u> button. The screen goes back to the previous screen.





When an axis number assignment to activate several axes groups is performed in the axis number assignment feature (Refer to [15.17 Axis Number Assignment]), the select axes group screen should appear after you touch the Yes button. Touch an axes group number button to select the axes group number that is to be subject to.

Select axes group Axes group No. 1 Axes group No. 2 Cancel	Touch YES button. The select <u>axes group wi</u> ndow should appear. Touch an <u>Axes group No.</u> button.
Absolute reset Axes group No. 1 Select Axis Axis No. Next Back Keyboard	The axis number input window should open. * The axes group number that was selected should be shown on the top right of the screen.

Refer to [16.13.1.1 How to Absolute Reset] in the following page for detail.



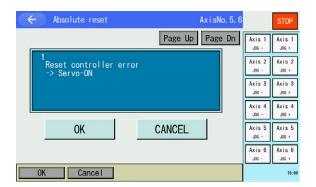
16.13.1 B- and T-Axes of the Wrist Unit

16.13.1.1 How to Absolute Reset

For B- and T-axes of the wrist unit, conduct the absolute reset in the procedures below.

((Absolute reset	
	Select Axis Axis No. 5	
	Next	Back
	OK Cancel	10:00

 Using the touch panel numeric keys, input an axis number in the axis number box, and touch the Next button. (Input an axis number of the B-axis)



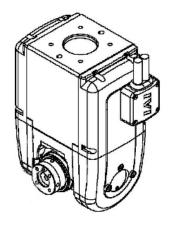
2) Reset controller error \rightarrow Servo-on shows up. Touch \overrightarrow{OK} button.

← Absolute reset	AxisNo. 5, 6	STOP
Page	Up Page Dn Axis 1	Axis 1
2 Jog to standard posture	Axis 2 J06 -	Axis 2 JOG +
*After "OK", then Servo-OFF is e	xecuted.	Axis 3 JOG +
OK CANCE	J06 -	JOG + Axis 5 JOG +
JVel	Axis 6 JOG -	Axis 6 JOG +
OK Cancel	JVel	10:00

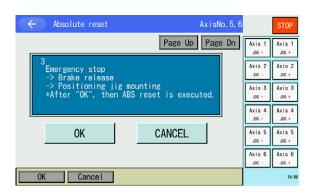
- Jog to standard posture show up. Move the indicated axis with the jog operation to the posture vicinity. Touch the OK button after finished.
- * After touching OK, the indicated axis should automatically turn the servo off.



[Standard Posture]



4) Press the Emergency STOP button.



← 1 Troubleshooting				
Error display Error list Check mode	l num. Inquiry			
•Error descript				
Error No. 500	Error level Operation release			
Name Emergency stop	Choi level operation release			
	atad			
Descr. Emergency stop has been detected.				
	Detail code: ^{BE0h}			
Troubleshooting	10:00			

Page Up Page Dn Axis 1 J0G - J0G + Axis 2 J0G -Axis 2 J0G + ency stop ake release ioning jig mounting OK", then ABS reset is executed. Axis 3 _{J06} -Axis 3 J06 + OK CANCEL Axis 5 JOG + Axis 5 JOG Axis 6 JOG + Axis 6 JOG Cancel 10:0 5) The display turns to the window shown on the left.

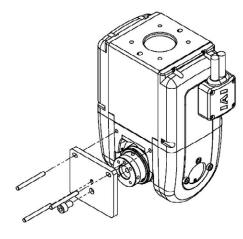
Touch \leftarrow button to go back to the previous screen.

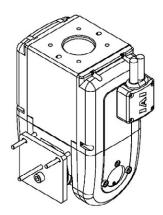
- 6) After brake release, put on the positioning tool. After putting it on, touch the OK button.
- * After touching OK, the absolute reset should get conducted.





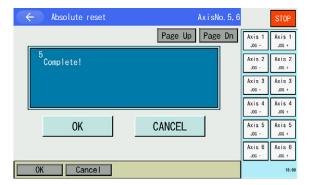
[To put on positioning tool]





← Absolute reset		AxisNo.5,6		STOP
	Page Up	Page Dn	Axis 1 JOG -	Axis 1 JOG +
4 Positioning jig rem -> Brake lock	noval		Axis 2 J06 -	Axis 2 J0G +
-> Emergency stop r	elease		Axis 3 JOG -	Axis 3 JOG +
			Axis 4 	Axis 4
ОК	CANCEL		Axis 5 JOG -	Axis 5 JOG +
			Axis 6 J0G -	Axis 6 J0G +
OK Cancel				10:00

 Take the positioning tool off. After taking it off, lock the brake and then cancel the emergency stop button. Touch OK button.



- 8) Complete! Should come out. Touch OK button.
- * After confirming OK, the screen automatically returns to the axis select screen.

 Touch <u>Re-Start controller</u> button. The display turns to the software reset window.

÷	Absolute reset	
	Select Axis Axis No. 5	
	Re-Start cont	roller
	Next	Back
		Keyboard

10:00

0K Cancel

INTELLIGENT ACTUATOR	
Confirmation	10) Conduct the software reset. Touch Yes button.
Restart the controller? ※The axes whose servo is ON will be terned OFF.	Once the software reset finishes, it automatically goes back to the main menu.
Yes No	
Yes No 18:00	





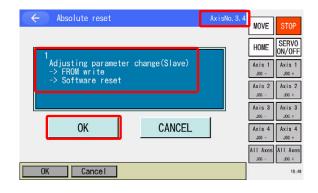
16.14 Absolute Reset for Synchronizing Axis : XSEL2-T/TX

When "Axis-Specific Parameter No. 38: Encoder ABS/INC Type" is Master Axis = 1, Slave Axis = 1, the absolute reset can be conducted in the following procedures.

(1) Select the master axis or slave axis in the Select Axis Number window, and the screen shifts to the synchronizing axis absolute reset window.

Caution:

operation.

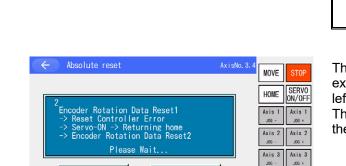


The synchronizing axis absolute reset window should show both of the master axis number and slave axis number as shown in the figure on the left.

Also, it shows "Adjusting parameter change (Slave)..." In the message box.

Touch the OK button and the displayed content should automatically be executed.

The screen should shift to the next window once all the procedures are completed.



CANCEL

Axis 4 J0G +

J0G +

Axis 4 ALL Ax ALL Ax JOG

OK

Cancel

The indicated axis conducts the home-return

The content in the message box should be executed in the window shown in the figure on the left.

The screen should shift to the next window once all the procedures are completed.



The content in the message box should be executed in the window shown in the figure on the left.

The screen should shift to the next window once all the procedures are completed.





$($ \in $)$ Absolute reset	AxisNo. 3, 4	MOVE	STOP
4		HOME	SERV0 ON/OFF
Home preset correction(Slave) -> FROM write -> Software reset		Axis 1 JOG -	Axis 1 JOG +
Please Wait		Axis 2 JOG -	Axis 2 J06 +
OK CANCEL	1	JOG - Axis 4	Axis 3 JOG + Axis 4
	-	12200 200255	JOG + All Axes
OK Cancel		J06 -	J0G + 18:48

The content in the message box should be executed in the window shown in the figure on the left.

The screen should shift to the next window once all the procedures are completed.

Absolute reset	i sNo. 3, 4 MOVE STOP
5	HOME SERVO ON/OFF
Complete!	Axis 1 J0G - J0G +
	Axis 2 J06 - J06 +
	Axis 3 Axis 3 J0G - J0G +
OK CANCEL	Axis 4 Axis 4 J06 - J06 +
	All Axes All Axes
OK Cance I	J06 - J06 + 18:53

"Complete!" should be displayed. Touch the OK button.

* The screen should go back to the Select Axis window after touching OK.









17. Gateway Function Associated

In the case of the XSEL-P/Q/PX/QX,XSEL-R/S/RX/SX/RXD/SXD controllers with the RC gateway function, the following operations are available.

- Editing of the RC Position Data in XSEL
- RC-axis Monitoring

17.1 Editing of the RC Position Data in XSEL

17.1.1 RC Position Data Creation

The RC position data to be set in the XSEL controller is edited.

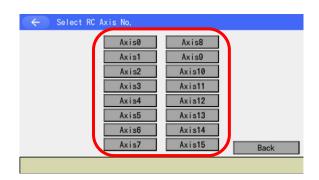
(🔶) Menu		
Edit	File	
Play	RC	
Monitor	Environment Set	
Controller	Next	
Edit Play Monitor Control ->		

Touch RC button in the menu screen.

← RC	
Edit	
Monitor	
	Back
Edit Monitor	

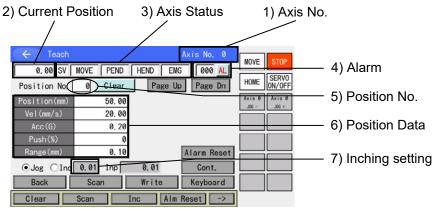
Touch Edit button in the RC menu screen.

	ELLIGENT TUATOR ————————————————————————————————————	
← Edit		Touch Teach button in the RC edit menu screen.
Teach		
Clear		
	Back	
Teach	Clear	



Select the RC axis number to have the position edit by touching the appropriate button. The display returns to the RC edit menu screen if you touch Back button.

[Items Displayed in RC Teach Screen]



- Axis No. The axis number in edit is displayed.
- 2) Current Position The current position [mm] of the actuator is displayed.





3) Axis Status

The status of the actuator is displayed.

- SV : Turns on when the servo is on
- MOVE : Turns on during operation
- PEND : Turns on when positioning is finished
- HEND : Turns on when home-return operation is finished
- EMG : Turns on during emergency stop
- 4) Alarm

An alarm code is displayed.

If you touch AL button, an alarm reset is held on the axis in edit.

5) Position No.

The position number is shown.

6) Position Data

Position (mm)

The target position for the actuator to be moved is indicated.

Absolute coordinate specification : Distance from home position of actuator

Incremental coordinate specification : Relative amount (movement amount) from current position

It is determined by the command in SEL language if the target position is indicated in absolute coordinates or relative coordinates (*).

(e.g.: RMVP Command → Absolute coordinates indication, RMP Command → Relative coordinates indication)

<u>Vel (mm/s)</u>

The velocity of the actuator in operation is indicated.

<u>Acc (G)</u>

The acceleration/deceleration of the actuator in operation is indicated.

The Acceleration and Deceleration can not be set separately.

<u>Push (%)</u>

Current limit in the pressing operation (RPUS Command) is indicated. Indicate 0 when pressing is unnecessary.

Range (mm)

Indication made to determine how much before the target position the positioning should finish. In pressing operation (RPUS Command), indication of maximum pressing amount from the target position is to be made.

7) Inching setting

The distance in the inching operation (distance of movement in each press of the jog button) is indicated. [Unit: mm]

[Explanation on each Touch Panel Button]

Clear : Clears the displayed position data.

Caution: At the time when this function is executed, the position data is cleared. Please take care.

Scan: Inputs the current position in the target position data section.Jog/Inc: Operation is switched during jog execution (jog/inching).Alm Reset: Have an alarm reset conducted on the indicated axis.

Cont. : Execute continuance operation.





[Addition and Change of Position Data]

First, indicate the position number that an addition or a change is required. When the screen is opened for the first time, a cursor is flashing in the position number input box. (When no flashing is confirmed, touch in the position number input box.)

/ Caution: The position data starts from No. 0 unlike XSEL.

- Teach	Axis No.	0 MOVE STOP
0.00 SV	MOVE PEND HEND EMG 000	AL
Position No.	0 Clear Page Up Page D	HOME SERVO ON/OFF
Position(mm)	50.00	Axis 0 J06 - J06 +
Vel(mm/s)	20.00	
Acc(G)	0. 20	
Push(%)	0	
Range(mm)	0.10 Alarm Re	set
⊙Jog ⊖Inc	0.01 Inp 0.01 Cont.	
Back	Scan Write Keyboar	d
Clear	Scan Inc Alm Reset	->

← Teach 0.00 SV	MOVE PEND		Axis No.		MOVE	STOP
Position No.[0 Clear	Page Up	Page	Dn	HOME	SERV0 0N/0FF
Position(mm)	50.00				Axis 0	Axis 0
Vel(mm/s)	20.00					0
Acc(G)	0.20		7	8	9	ESC
Push(%)	0		4	5	6	BS
Range(mm)	0.10		Ala 4	<u> </u>	<u> </u>	
⊙Jog ◯Inc	0.01 Inp	0.01	1	2	3	CLR
Back	Scan	Write	к 0		+/-	ENT
Clear	Scan	Inc Alm	Reset	->		

Input the position number by displaying the numeric keys on the touch panel by touching Keyboard button.

Touch the numerical part when it is desired to input number on the touch panel numeric keys when inputting the position number. The contents of input will be shown in the box above the touch panel numeric keys. When confirming the input number, touch \boxed{ENT} . The touch panel numeric keys close and the data of the indicated position number is displayed. When redoing the input, touch \boxed{ESC} . When it is desired to cancel the input, touch \boxed{ESC} again, and the touch panel numeric keys will close.

* The position number can also be changed on Page Up/Page Dn buttons in the screen.

Next, show the cursor to the input part in the item you want to make an input. To show the cursor, touch on the input part (the white area in the background, or area in the red frame for target position [mm]) in the item you want to make an input.





← Teach 0.00 SV	MOVE PEND	Axis No. 0	MOVE STOP
Position No.	0 Clear	Page Up Page Dn	HOME SERVO 0N/0FF
Position(mm)			Axis 0 Axis 0
Vel(mm/s)			
Acc(G)			
Push(%)			
Range(mm)		Alarm Reset	
⊙Jog ○Inc	0.01 Inp	0.01 Cont.	
Back	Scan	Write Keyboard	
Clear	Scan	Inc Alm Reset ->	

With the cursor shown in the appropriate area, touch Keyboard button to make the touch panel numeric keys appear on the screen to input a number.

← Teach 0.00 SV Position No.	MOVE	PEND Clear	HEND E	MG	No. 000 Page [AL	MOVE HOME	STOP SERVO ON/OFF
Position(mm) Vel(mm/s)		50					Axis 0	Axis 0
Acc(G) Push(%)					7	8	9	ESC
Range(mm)	0.01	Inp	0, 01	Ala	4	5	6	BS CLR
Back	Sca		Write	К	0		+/-	ENT
Clear	Clear Scan Inc Alm Reset ->							

If you want to input 50 to Position (mm), touch Keyboard button to show the touch panel numeric keys, and touch 50 ENT on the touch panel numeric keys.

🔶 Teach	Axis No. Ø	MOVE
0.00 SV MOVE PEND	HEND EMG 000 AL	C C C C C C C C C C C C C C C C C C C
Position No. 0 Clear	Page Up Page Dn	HOME ON/OFF
Position(mm) 50.00		Axis 0 Axis 0
Vel(mm/s)		
Acc(G) Push(%)	-	
Range(mm)	Alarm Reset	
● Jog ◯ Inc 0.01 Inp	0.01 Cont.	
Back Scan	Write Keyboard	
Clear Scan	Inc Alm Reset ->	

If the input is accepted, the cursor moves to the input box for Vel (mm/s). Then, input values for Vel (mm/s), Acc (G), Push

(%) and Range (mm).

Caution: In the TB-02, the input range check is not performed. Confirm the specifications for the RC actuator in using, and input the data.

C Teach	PEND	HEND EMG	Axis No. 0	MOVE STOP
Position No. 0	Clear	Page Up		HOME SERVO ON/OFF
Position(mm)				Axis 0 Axis 0
Vel(mm/s)				
Acc(G)				
Push(%)		F		
Range(mm)		*	Alarm Reset	
⊙Jog ◯Inc 0.0	1 Inp	0.01	Cont.	
Back So	can	Write	Keyboard	
Clear Scan	In	c Alm R	Reset ->	

When you want to erase the data that is already input, touch CLR ENT on the touch panel numeric keys to delete what you want.





[Data Transfer]

L				
🔶 Teach			Axis No. 0	MOVE
0.00 SV	MOVE PEND	HEND EMO	000 AL	
Position No.	0 Clear	Page Up	Page Dn	HOME SERVO ON/OFF
Position(mm)	50.00			Axis 0 Axis 0
Vel(mm/s)	20.00			
Acc(G)	0.20			
Push(%)	e			
Range(mm)	0.10		Alarm Reset	
●Jog ○Inc	0.01 Inp	0.01	Cont.	
Back	Scan	Write	Keyboard	
Clear	Scan	Inc Alm	Reset ->	

After data input is complete, touch Write button on the touch pane to transfer the data to the controller.

Caution: The input data would not be written to the controller unless the operation above is conducted.

In case the position number is changed without the operation above being conducted, the data remains the same as before change.

Position(mm) Aris 0 Vel(mm/s) Acc(G) Push(%) Alarm Reset (© Jog ◯ Inc 0.01 Inp 0.01	Teach O.00 SV MOVE PEND Position No. Clear	Axis No. 0 HEND EMG 000 AL Page Up Page Dn	MOVE STOP
Push (%) Alarm Reset @ Jog O Inc 0.01 Inp 0.01	Position(mm) Vel(mm/s)	rage up rage un	Axis 0 Axis 0
	Push(%)	Alarm Reset	
Back Scan Write Keyboard	Jog OInc 0.01 Inp Back Scan	0.01 Cont. Write Keyboard	

Once the transfer to the controller is complete, the position number gets incremented and the next data input screen is shown.

[Data Clear]

🔶 Teach			Axis No. 0	MOVE STOP
0.00 SV	MOVE PEND	HEND EMG	000 AL	SERVO
Position No.[0 Clear	Page Up	Page Dn	HOME SERVO ON/OFF
Position(mm)	50.00			Axis 0 JOG - JOG +
Vel(mm/s)	20.00			
Acc(G)	0.20			
Push(%)	0			
Range(mm)	0.10		Alarm Reset	
⊙Jog ○Inc	0.01 Inp	0.01	Cont.	
Back	Scan	Write	Keyboard	
Clear	Scan I	inc Alm I	Reset ->	

When you want to delete the data in the position number being displayed, touch Clear button in the touch panel.





← Teach 0.00 SV Position No.	MOVE PEND H	Axis No. END EMG 000	0	MOVE STOP
Position(mm) Vel(mm/s)	50.00 20.00			Axis 0 J0G - J0G +
F Ra	Do you want to this position	clear data?		
	Yes No	No		

Touch $\underline{\text{Yes}}$ button on the touch panel and the data gets transferred to the controller.

🔶 Teach			Axis No. 0	MOVE
0.00 SV	MOVE PEN	HEND EM	G 000 AL	SERVO
Position No.	0 Clea	r Page U	p Page Dn	HOME SERVO ON/OFF
Position(mm)				Axis 0 Axis 0 J06 - J06 +
Vel(mm/s)		-		
Acc(G) Push(%)		-		
Range(mm)			Alarm Reset	
⊙Jog ◯Inc	0.01 Inp	0.01	Cont.	
Back	Scan	Write	Keyboard	
Clear	Scan	Inc Alm	Reset ->	

Once the clear is succeeded, the data in the same position number (after cleared) is displayed.

[Alarm Reset]

<u>k</u>		
🔶 Teach	Axis No. 0	MOVE STOP
0.00 SV MOVE PEND	HEND EMG 00 AL	
Position No. 0 Clear	Page Up Page Dn	HOME SERVO 0N/0FF
Position(mm)		Axis 0 Axis 0 JOG - JOG +
Vel(mm/s)]	
Acc(G)		
Push(%)		
Range(mm)	Alarm Reset	
●Jog ○Inc 0.01 Inp	0.01 Cont.	
Back Scan	Write Keyboard	
Clear Scan	Inc Alm Reset ->	

If you want to have an alarm reset on the RC axis in edit, touch AL button.

When you want to have an alarm reset on the RC axes you want to choose, touch Alarm Reset button.

C RC Alarm Reset
Rst Axis No.
One Axis All Axes Cancel Keyboard
Cancel One axis All axes

When you want to have an alarm reset only on the indicated axis, set the axis number. With the cursor shown in the appropriate area, touch <u>Keyboard</u> button to make the touch panel numeric keys appear on the screen to input a number

RC Alarm Reset Rst Axis No.	When you want to have an alarm reset only on the indicated axis, touch <u>One Axis</u> button. When you want to have an alarm reset on all the RC axes, touch <u>All Axes</u> button.
One Axis All Axes Cancel Keyboard Cancel One axis All axes	
Confirmation RC axis Alarm will be cleared. Are you sure to continue? Yes No	Touch Yes button. Touch No button, to return to the RC alarm reset screen.
Yes No	The display shows this see as when the slaves
Complete!	The display shows this screen when the alarm reset is finished. Touch OK button, to return to the RC alarm reset screen.
ОК	





17.1.2 RC Position Data Input Using the Teaching Operation

One of the methods for the RC position data input is the teaching operation (The RC actuator is moved to any position and the RC actuator current position is captured as the data). The methods for moving the RC actuator to any position are the jog operation • inching operation and manual movement (direct teaching) with the servo-motor turned OFF.

The basic flow of teaching is as follows:

 Move the actuator. (jog operation • inching operation • manual movement (direct teaching) with a servo OFF status) select position No. and axis No. for data input. 			
\checkmark			
2) Take the data of the current position of the RC actuator into the teaching screen.			
↓			
3) Transmit the data to the controller.			





(1) Servo ON/OFF Operation

Using this operation, the RC actuator servo-motor is turned ON/OFF. This operation is available only in the single axis.

 Teach 0.00 SV 	MOVE PEND		Axis No. 0 000 AL	MOVE STOP
Position No.	0 Clear	Page Up	Page Dn	HOME SERVO
Position(mm)]		Axis 0 Axis 0 SERVO OFF SERVO ON
Vel(mm/s)				
Acc(G)				
Push(%)				
Range(mm)]	Alarm Reset	
⊙Jog ⊖Inc	0.01 Inp	0.01	Cont.	
Back	Scan	Write	Keyboard	
Clear	Scan	Inc Alm f	Reset ->	

Touch SERVO ON/OFF button. After the background color of SERVO ON/OFF button has changed, touch the Oth axis servo-on button to turn the servo on. (To turn the servo off, touch SERVO ON/OFF button and confirm that the background color of SERVO ON/OFF button has changed, and then touch the Oth axis servo-off button.) The condition of servo-on/off can be checked on the axis status display "SV", which turns on when the servo is on and turns off when the servo is off.

(2) Home Return Operation

In the case of the incremental encoder applicable RC actuator, it is required to perform the home return operation after the power is turned on, or after the software reset and before the teaching operation.

This operation is available only in the single axis.

🔶 Teach	Axis No. 0	MOVE
0.00 SV MOVE PEND Position No. 0 Clear		HOME SERVO
Position(mm)		Axis 0 Axis 0 MOVE MOVE
Vel(mm/s) Acc(G)	-	MOVE MOVE
Push(%)		
Range(mm)	0.01 Cont.	
Jog O Inc 0.01 Inp Back Scan	0.01 Cont. Write Keyboard	All Axes All Axes
Clear Scan	Inc Alm Reset ->	MOVE MOVE

Turn the servo-motor ON.

Press HOME button.

After the background color of HOME button has changed, touch the <u>Oth axis movement</u> button to conduct home-return operation. The axis status display "HEND" turns on when the home-return operation is finished.





- (3) Actuator Movement
- 1) Jog operation

Perform the jog operation of the RC actuator. This operation is available only in the single axis.

← Teach		Axis No. Ø	MOVE	STOP
20.00 SV MOVE		EMG 000 AL	HOME	SERV0 0N/0FF
Position No. 0	Clear Pa	age Up Page Dn	Axis 0	ON/OFF
Position(mm) Vel(mm/s)			J06 -	J06 +
Acc (G)				
Push(%) Range(mm)		Alarm Reset		
● Jog ○ Inc 0.0	1 Inp 0,01			
	can Writ			
Clear Scar	1 Inc	Alm Reset ->		

Turn the servo-motor ON.

Touch Axis 0 JOG + or Axis 0 JOG - button to move the actuator to the specific position. ("+" means the movement to the plus direction on the coordinates and "-" means the movement to the minus direction on the coordinates).

2) Inching operation

Perform the RC actuator inching operation. This operation is available only in the single axis.

- Teach			Axis No. 0	MOVE
20.00 SV	MOVE PEND	HEND EMG	000 AL	
Position No.	0 Clear	Page Up	Page Dn	HOME SERVO ON/OFF
Position(mm)				Axis 0 Axis 0 J06 - J06 +
Vel(mm/s)				
Acc(G)				
Push(%)				
Range(mm)			Alarm Reset	
⊖Jog ⊙Inc	0.01 Inp	0.01	Cont.	
Back	Scan	Write	Keyboard	
Clear	Scan	Inc Alm I	Reset ->	

Touch Inc button directly to make Inc button	
selected.	

🔶 Teach			Axis No. 0	MOVE	STOP
20.00 SV Position No.	MOVE PEND	HEND EM		HOME	SERV0 0N/0FF
Position(mm)				Axis 0 _J06 -	Axis 0
Vel(mm/s) Acc(G)					
Push(%)			Alexa Decet		
Range(mm) OJog ©Ind	1.00 Inp	0.01	Alarm Reset Cont.		
Back	Scan	Write	Keyboard		
Clear	Scan	Inc Alm	Reset ->		

Set the inching distance (travel distance for each touching of the JOG button).

Show the cursor to the input part beside "Inc" and touch keyboard button to open the touch panel numeric keys to input a value and touch ENT. The numerical value input range is from 0.00 to 1.00 (Unit: mm).





	Axis No. 0	MOVE STOP
20.00 SV MOVE PEND Position No. 0 Clear	HEND EMG 000 AL Page Up Page Dn	HOME SERVO ON/OFF
Position(mm)		Axis 0 Axis 0 + 20L - 20L
Vel(mm/s)		
Acc(G) Push(%)		
Range(mm)	Alarm Reset	
⊖Jog ⊙Inc 1.00 Inp	0.10 Cont.	
Back Scan	Write Keyboard	
Clear Scan 1	Inc Alm Reset ->	

20.00 SV MOVE PEND HEND EMG 000 AL

0 Clear

Axis No. 0

Alarm Reset

Cont.

Keyboard

->

Page Up Page Dn

Alm Reset

MOVE

HOME SERVO 0N/0FF

Axis Ø

J06 4

Teacl

⊖Jog ●Inc 1.00 Inp

Scan

Scan

Position No.

Position(mm)

Vel(mm/s) Acc(G) Push(%) Range(mm)

Back

Clear

Set the positioning band (to set how much in front of the inching movement amount the positioning should complete).

Show the cursor to the input part beside "Inp" and touch keyboard button to open the touch panel numeric keys to input a value and touch $\boxed{\text{ENT}}$. The numerical value input range is from 0.01 to 9999.99 (Unit: mm).

Turn the servo-motor ON.

The condition of servo-on/off can be checked on the axis status display "SV", which turns on when the servo is on and turns off when the servo is off.

🔶 Teach			Axis No. Ø	MOVE
21.00 SV	MOVE PEN	HEND EM	G 000 AL	
Position No.	0 Clea	r Page U	p Page Dn	HOME SERVO ON/OFF
Position(mm)				Axis 0 Axis 0
Vel(mm/s)				
Acc(G)				
Push(%)				
Range(mm)			Alarm Reset	
⊖Jog ⊙Inc	1.00 Inp	0.10	Cont.	
Back	Scan	Write	Keyboard	
Clear	Scan	Inc Alm	Reset ->	

0.10

Write

Inc

Touch Axis 0 JOG + or Axis 0 JOG - button to move the actuator to the specific position. ("+" means the movement to the plus direction on the coordinates and "-"means the movement to the minus direction on the coordinates).





3) Manual Movement (direct teaching) with the servo-motor turned OFF

Teach O.00 SV MOVE PEND Position No. 0 Clear Position (mm)		MOVE STOP HOME SERVO ON/OFF Axis 0 Axis 0
Vel(mm/s) Acc(G) Push(%)	-	SERVO OFF SERVO ON
Range(mm) GJog OInc 0.01 Inp Back Scan	0.01 Cont. Write Keyboard	
Clear Scan	Inc Alm Reset ->	

Touch SERVO ON/OFF button.

After the background color of SERVO ON/OFF button has changed, touch the Axis 0 SERVO OFF button to turn the servo off.

The condition of servo-on/off can be checked on the axis status display "SV", which turns on when the servo is on and turns off when the servo is off. Move the RC actuators to the designated position via manual mode.

The background color in the screen turns to red during the emergency stop.

Pressing the EMERGENCY STOP button switches the display to the emergency stop screen.

Touch Back button to return to Teaching screen.



Message No. BE0

/ Warning:

Be sure to execute manual movement when EMERGENCY STOP button is pressed.





(4) Current Position captured as the Data

The chosen RC actuator position is taken in the teaching window as the position data.

🔶 Teach			Axis No. 0	MOVE STOP
27.45 SV	MOVE PEND	HEND EMG	000 AL	
Position No.	0 Clear	Page Up	Page Dn	HOME SERVO ON/OFF
Position(mm)				Axis 0 Axis 0
Vel(mm/s)				
Acc(G)				
Push(%)				
Range(mm)			Alarm Reset	
⊙Jog ○Inc	0.01 Inp	0.01	Cont.	
Back	Scan	Write	Keyboard	
Clear	Scan	Inc Alm	Reset ->	

Set the position number from which the current position is to be loaded.

🔶 Teach			Axis No. 0	MOVE STOP
27.45 SV	MOVE PEND	HEND EMG	000 AL	
Position No.	0 Clear	Page Up	Page Dn	HOME SERVO ON/OFF
Position(mm)	27.45]		Axis 0 Axis 0
Vel(mm/s)				
Acc(G)				
Push(%)				
Range(mm)			Alarm Reset	
●Jog ○Inc	0.01 Inp	0.01	Cont.	
Back	Scan	Write	Keyboard	
Clear	Scan	Inc Alm	Reset ->	

Touch Scan button to load the current position to the target position from with the data is loaded.

Caution: In order to capture the current position data in the target position data section, the home return operation has to be completed. Execute it after it is confirmed that "HEND" in the axis status display is turned on. If it is executed before the home return operation, the [(9E2) Not yet Homed TEACH] message is displayed and the current position cannot be captured.

• Writing to the controller would not be executed unless you touch Write.





(5) Data Transfer to the Controller

← Teach			ANT NO D		
			Axis No. 0	MOVE	STOP
0.00 SV	_ '	HEND		HOME	SERV0
Position No.	0 Clear	Page Up	Page Dn		ON/OFF
Position(mm)	50.00			Axis 0 JOG -	Axis 0
Vel(mm/s)	20.00	-			
Acc(G)	0.20				
Push(%)	0				
Range(mm)	0.10		Alarm Reset		
⊙Jog ◯Inc	0.01 Inp	0.01	Cont.		
Back	Scan	Write	Keyboard		
Clear	Scan	Inc Alm	Reset ->		

After data input is complete, touch Write button on the touch panel keys to transfer the data to the controller.

← Teach 0.00 SV Position No. Position(mm) Vel(mm/s) Acc(G) Push(%) Range(mm)	MOVE PEND 1 Clear	Page Up Pag	o. 0 MOVE STOP M0 AL HOME SERVO HOME DN/OFF Axis 0 JOS + JOS Axis 0 JOS + JOS + Reset Image: Control of the second sec
Jog O Inc Back Clear	0.01 Inp Scan Scan	0.01 Con Write Keyb Inc Alm Reset	nt. oard ->

Once the transfer to the controller is complete, the position number gets incremented and the next data input screen is shown.





(6) Position Check

When the RC actuator is moved to the place corresponding to the taught position data, the position check can be performed.

1) Movement

Move the RC actuator to the position corresponding to the position data transferred to the controller.

🔶 Teach			Axis No. 0	MOVE	STOP
0.00 SV	MOVE PEND	HEND EMG	000 AL	MOVE	
Position No.	0 Clear	Page Up	Page Dn	HOME	SERV0 0N/0FF
Position(mm)	50.00			Axis 0	Axis 0
Vel(mm/s)	20.00				
Acc(G)	0.20				
Push(%)	0				
Range(mm)	0.10		Alarm Reset		
⊙Jog ○Inc	0.01 Inp	0.01	Cont.		
Back	Scan	Write	Keyboard		
Clear	Scan	Inc Alm	Reset ->		

🔶 Teach		A	xis No. 0	MOVE STOP
50.00 SV	MOVE PEND	HEND EMG	000 AL	
Position No.[0 Clear	Page Up	Page Dn	HOME SERVO ON/OFF
Position(mm)	50.00			Axis 0 Axis 0
Vel(mm/s)	20.00			
Acc(G)	0.20			
Push(%)	0			
Range(mm)	0.10		Alarm Reset	
⊙Jog ⊖Inc	0.01 Inp	0.01	Cont.	
Back	Scan	Write	Keyboard	
Clear	Scan	Inc Alm R	eset ->	

Set the position number you want to move to.

Turn the servo-motor ON. Perform the home return operation.

Touch the MOVE button.

Touch the Axis 0 MOVE (-) button after the background color in the movement button has changed, and the axis starts moving. When it is stopped on the way, touch the STOP button.





2) Continuous Movement

The RC actuator automatically follows the position corresponding to the position data transferred to the controller.

Teach 0.00 SV	MOVE PEND	HEND EMG	Axis No. 0	MOVE STOP
Position No.	0 Clear	Page Up		HOME SERVO ON/OFF
Position(mm) Vel(mm/s)	50.00 20.00			J0G - J0G +
Acc(G) Push(%)	0.20			
Range(mm)	0.10 0.01 Inp	0. 01	Alarm Reset Cont.	
Back	Scan	Write	Keyboard Reset	

Touch Cont. button to switch to the continuous operation mode.

🗧 Teach			Axis No. Ø	MOVE STOP
0.00 SV	MOVE PEND	HEND EMG	000 AL	SERVO
Position No.	0 Clear	Page Up	Page Dn	HOME SERVO ON/OFF
Position(mm)	50.00			Axis 0 Axis 0
Vel(mm/s)	20.00			
Acc(G)	0.20			
Push(%)	0			
Range(mm)	0.10		Alarm Reset	
●Jog ●Inc	0.01 Inp	0.01	Cont.	
Back	Scan	Write	Keyboard	
Cont		Alm F	Reset	

MOVE 33.89 SV MOVE PEND HEND EMG 000 AL SERV0 0N/0FF HOME Position No. 3 Clear Page Up Page Dn Position(mm) 50.00 50.00 Acc(G) 0.04 0 Push(%) e(mm) 0.10 Alarm Reset ● Jog ○ Inc 0.01 Inp 0.01 Write Keyboard Scan Alm Reset Cont

Set the position number you want to move to first.

Turn the servo-motor ON. Perform the home return operation.

Touch MOVE button.

Touch the Axis 0 MOVE (+) or Axis 0 MOVE (-) button after the background color in MOVE button has changed, and the axis starts moving. When it is stopped on the way, touch STOP button.

Caution: Be careful as it may take a few seconds before start moving after touching the Axis 0 MOVE (+) or Axis 0 MOVE (-) button. (The time interval for movement start varies depending on the number of registered position data items).





17.1.3 RC Position Data Deletion

Position Data with the selected Axis No. and Position No., is deleted.

Menu		Touch RC button in the menu screen.
Edit	File	
Play	RC	
Monitor	Environment Set	
Controller	Next	
Edit Play	Monitor Control ->	
C RC		Touch Edit button.
Edit		
Monitor		
	Back	
Edit Monitor		
Edit		Touch Clear button.
Teach		
Clear		
	Back	
Treat		
Teach	Clear	

INTELLIGENT ACTUATOR	
<pre> Clear Axis No.</pre>	Input the axis number to have the position delete and the range of the position number, and touch <u>Clear</u> button. When you want to delete all the position data, touch <u>All Clear</u> button. If you touch <u>Cancel</u> button, the display returns to the RC edit menu screen.
Clear All Clear Cancel Keyboard	

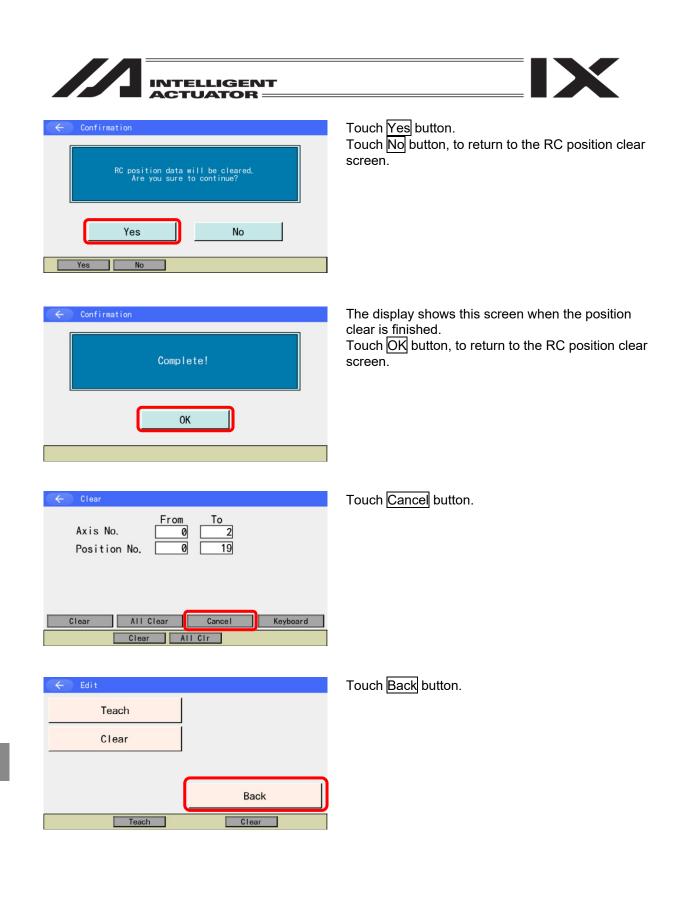
Clear				
Axis No. From To Position No. 0 19	2			
	7	8	9	2 ESC
	4	5	6	BS
	1	2	3	CLR
Clear All Clear Cance	0		+/-	ENT
Clear All Cir				

If you touch in the input area on "Axis No." or "Position No.", the cursor will be shown on the touched item.

Input the position number by displaying the numeric keys on the touch panel by touching Keyboard button.

Touch on the numeric part if you want to input on the touch panel numeric keys. The contents of input will be shown in the box above the touch panel numeric keys. When confirming the input number, touch ENT. The touch panel numeric key close and the cursor moves to the next input box.

When redoing the input, touch ESC. When it is desired to cancel the input, touch ESC again, and the touch panel numeric keys will close.



INTELLIGENT ACTUATOR	
RC	Touch Back button.
Edit	
Monitor	
Back Edit Monitor	
Confirmation	To write the data to the flash ROM, touch <u>Yes</u> button. When it is not necessary to write the data to the flash ROM, touch <u>No</u> button.
Yes No	
Elash ROM writing	"Flash ROM writing" flashes during the flash ROM writing.
Flash ROM writing Please Wait	<i>Never turn off the power to the Controller at this time.</i>
Confirmation	The display shows this screen when the flash ROM writing is finished. Touch OK button, to return to the RC menu screen.
ОК	





17.2 RC Actuator Monitoring

The RC actuator's status, current position and alarm code are displayed.

(🔶 Menu	
Edit	File
Play	RC
Monitor	Environment Set
Controller	Next
Edit Play	Monitor Control ->



Touch Monitor button.

Touch RC button in the menu screen.

Select the RC axis number to monitor by touching the appropriate button. The display returns to the RC menu screen if you

touch Back button.

INTELLIGENT
ACTUATOR ===

	1)	2)				
÷	Monitor	V			Axis No. 0	3)
	0.00 SV MOVE	PEND	HEND	EMG	000 AL	
No.	Status Name		Status		Page Up	
1	Can't continue alar	m	NON		Page Dn	_ 4)
2	Pos. complete		CMPLT		Tage bit	
3	Home complete		CMPLT		7)	
4	Moving		NON			
5	Servo ON stat		ON		Alarm Reset	_ 5)
6	Ctrl ready		CMPLT			,
7	Push fault		NON		All Axes Rst	L 6)
8	Emergency stop stat	us	NON	J	Back	90
AI	m Reset	ALIA	lm Rst			

- 1) The current position [mm] is displayed.
- 2) The status of the actuator is displayed.
 - SV : Turns on when the servo is on
 - MOVE : Turns on during operation
 - PEND : Turns on when positioning is finished
 - HEND : Turns on when home-return operation is finished
 - EMG : Turns on during emergency stop
- 3) An alarm code is displayed.
- If you touch AL button, an alarm reset is held on the axis in display.
- 4) Touch Page Up/Page Dn buttons and the status displayed in (7) switches.
- 5) Touch the alarm reset button and the RC alarm reset window opens.
- 6) Touch All Axes Rst button, and an alarm reset is held on all the axes.
- 7) The status of the actuators and RC controllers are displayed.





[Alarm Reset]

	0.00 SV MOVE PEND	HEND	EMG 000 AL
No.	Status Name	Status	Page Up
1	Can't continue alarm	NON	Page Dn
2	Pos. complete	CMPLT	1 480 011
3	Home complete	CMPLT	
4	Moving	NON	
5	Servo ON stat	ON	Alarm Reset
6	Ctrl ready	CMPLT	Ararın Neser
7	Push fault	NON	All Axes Rs
8	Emergency stop status	NON	Back

If you want to have an alarm reset on the axis in display, touch AL button.

When you want to have an alarm reset on the RC axes you want to choose, touch Alarm Reset button.

If you want to have an alarm reset on all the axes, touch All Axes Rst button.



RC alarm reset screen is displayed if <u>Alarm Reset</u> button is touched in RC Monitor screen.

Select the axis number you want to have an alarm reset, and touch One Axis button.

Touch All Axes button, and an alarm reset is held on all the RC axes.

RC axis Alarm w Are you sure	ill be cleared. to continue?	
Yes	No	

Touch Yes button.

Touch No button, to return to the RC monitor screen.



The display shows this screen when the alarm reset is finished. Touch OK button, to return to the RC monitor screen.





17.3 User Data Hold Memory Initialization

17.3.1 Description

(6A1) "UBM Data Construction Change Error" will be generated if changes are made in I/O Parameter No. 502 "RC Gateway Position Data Definition Max. Axis Number" and 503 "RC Gateway Position Data Definition Position Data Points", and software reset is held after the flash ROM writing. When the error occurs, the initialization of the user data hold memory is required.

Caution: When the user data hold memory is initialized, all the RC-axis position data items are cleared. Backup the RC position data items using the personal computer (PC) application software for XSEL or TB-02.

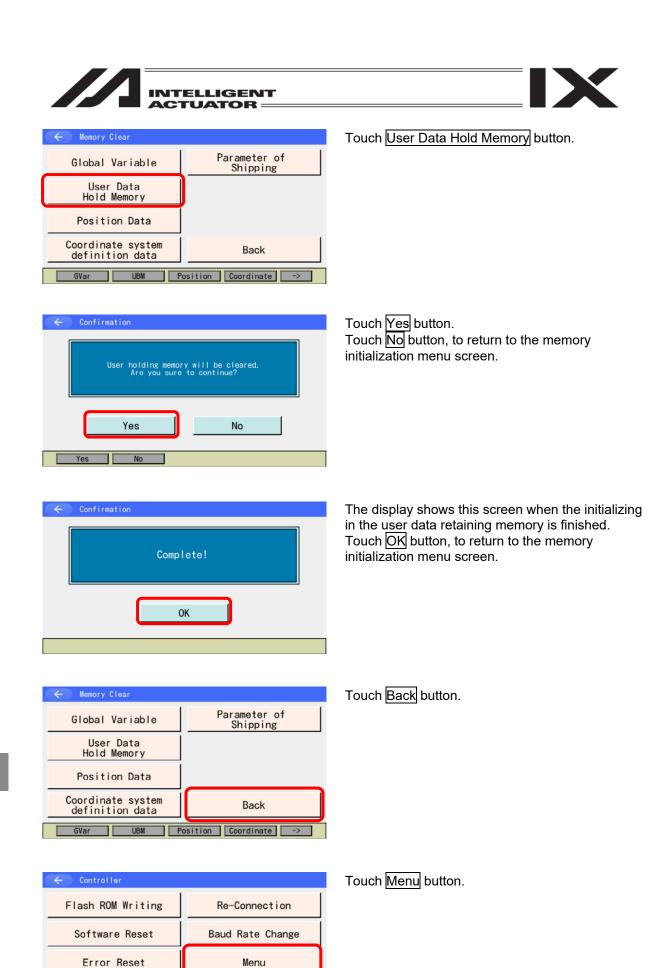
17.3.2 Operation Procedure

🧼 Menu	
Edit	File
Play	RC
Monitor	Environment Set
Controller	Next
Edit Play M	Monitor Control ->

Controller	
Flash ROM Writing	Re-Connection
Software Reset	Baud Rate Change
Error Reset	Menu
Memory Clear	Next
FROM S Reset E	Reset M Clear ->

Touch Controller button.

Touch Memory Clear button.

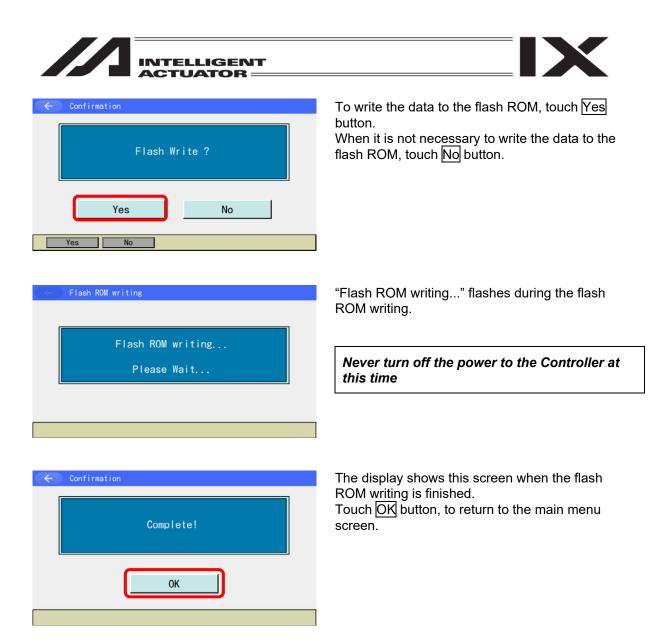


Memory Clear

FROM

Next

S Reset E Reset M Clear ->











18. Extended Motion Control Function

In the case of the XSEL-RA/SA/RAX/SAX/RAXD/SAXD controllers, the following operations are available.

- Extended Motion Control Position Data Editing
- Extended Motion Control Axis Monitoring

18.1 Extended Motion Control Position Data Editing

18.1.1 Extended Motion Control Position Data Creation

The extended motion control position data is to be edited.

Menu		
Edit	File	
Play	Ex Motion	
Monitor	Environment Set	
Controller	Next	
Edit Play Monitor Control -> 104		

Touch Ex Motion button in the menu screen.

← Ex Motion	
Edit	
Monitor	
	Back
Edit Monitor	10:00

Touch Edit button in the Ex Motion menu screen.

INTELLIGENT ACTUATOR				
🧲 Edit				
Teach				
Clear				
	Back			
Teach	Clear 10:00			

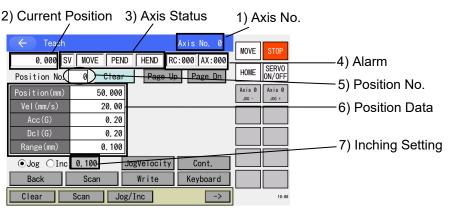
← Selec	t Ex Motion	Axis No.		
Axis0	Axis8	Axis16	Axis24	
Axis1	Axis9	Axis17	Axis25	
Axis2	Axis10	Axis18	Axis26	
Axis3	Axis11	Axis19	Axis27	
Axis4	Axis12	Axis20	Axis28	
Axis5	Axis13	Axis21	Axis29	
Axis6	Axis14	Axis22	Axis30	
Axis7	Axis15	Axis23	Axis31	Back
				10:00

Touch Teach button in the Ex Motion Edit menu screen.

Select the extended motion control axis number to have the position edit by touching the appropriate button.

The display returns to the Ex Motion Edit menu screen if you touch Back button.

[Display Items in the Extended Motion Teaching Screen]



1) Axis No.

The axis number in edit is displayed.

- 2) Current Position
 - The current position [mm] of the actuator is displayed.
- 3) Axis Status
 - The status of the actuator is displayed.
 - SV : Turns on when the servo is on
 - MOVE : Turns on during operation
 - PEND : Turns on when positioning is finished
 - HEND : Turns on when home-return operation is finished
 - EMG : Turns on during emergency stop





4) Alarm

An alarm code is displayed.

RC: RC-Axis Alarm Code

(Alarm code for the alarm generated in the RC controller is displayed).

AX : Àxis Related Alarm Code

(Alarm code for the alarm generated in the XSEL controller is displayed).

5) Position No.

The position number is shown.

6) Position Data

Position (mm)

The target position for the actuator to be moved is indicated.

<u>Vel (mm/s)</u>

The velocity of the actuator in operation is indicated.

<u>Acc (G)</u>

The acceleration of the actuator in operation is indicated.

<u>Dcl (G)</u>

The deceleration of the actuator in operation is indicated.

Range (mm)

Indication made to determine how much before the target position the positioning should finish. 7) Inching setting

The distance in the inching operation (distance of movement in each press of the jog button) is indicated. [Unit: mm]

[Explanation on each Touch Panel Button]

Clear

: Clears the displayed position data.

Caution: At the time when this function is executed, the position data is cleared. Please take care.

Scan: Inputs the current position in the target position data section.Jog/Inc: Operation is switched during jog execution (jog/inching).JogVelocity: The velocity at the time of jog feeding execution is designated.Cont.: Execute continuance operation.





[Addition and Change of Position Data]

First, indicate the position number that an addition or a change is required. When the screen is opened for the first time, a cursor is flashing in the position number input box. (When no flashing is confirmed, touch in the position number input box.)

🔨 Caution: The position data starts from No. 0 unlike XSEL.

C Teach		Axis No. 0	MOVE
0.000 SV MOVE PEN	ID HEND RO	:000 AX:000	
Position No. 5 Clear	r Page Up	Page Dn	HOME SERVO
Position(mm) 5.000]		Axis Ø Axis Ø J0G - J0G +
Vel(mm/s)			
Acc(G)	-		
Dcl(G) Range(mm)	-		
● Jog ○ Inc 0.100	JogVelocity	Cont.	
Back Scan	Write	Keyboard	
Clear Scan Jo	og/Inc	_>	10:00

 Teach 0.000 SV MOVE PEN 		s No. 0 AX:		MOVE	STOP
Position No. 0 Clear	r Page Up	, Page I	Dn	HOME	SERV0 0N/0FF
Position(mm) 5.000				Axis 0	Axis 0
Vel(mm/s)					0
Acc(G)		7	8	9	ESC
Dcl(G) Range(mm)	-	4	5	6	BS
⊙Jog ○Inc 0.100	JogVelocity	1	2	3	CLR
Back Scan	Write K	0		+/-	ENT
Clear Scan Jo	og/Inc		->		10:00

Input the position number by displaying the numeric keys on the touch panel by touching Keyboard button.

Touch the numerical part when it is desired to input number on the touch panel numeric keys when inputting the position number. The contents of input will be shown in the box above the touch panel numeric keys. When confirming the input number, touch \boxed{ENT} . The touch panel numeric keys close and the data of the indicated position number is displayed. When redoing the input, touch \boxed{ESC} . When it is desired to cancel the input, touch \boxed{ESC} again, and the touch panel numeric keys will close.

* The position number can also be changed on Page Up/Page Dn buttons in the screen.

Next, show the cursor to the input part in the item you want to make an input. To show the cursor, touch on the input part in the item you want to make an input.

← Teach		Axis No. 0	
0.000 SV MOVE	PEND HEND RC	:000 AX:000	MOVE STOP
			LIONE SERVO
Position No. 0	Clear Page Up	Page Dn	HOME ON/OFF
Position(mm)			Axis Ø Axis Ø J0G - J0G +
Vel(mm/s)			
Acc(G)			
Dcl(G)			
Range(mm)			
●Jog ○Inc 0.100	JogVelocity	Cont.	
Back Scar	Write	Keyboard	
Clear Scan	Jog/Inc	->	10:0

When the target position (mm) is to be input, touch the section inside the red frame.

18. Extended Motion Control Function





C Teach	Axis No. 0 ID HEND RC:000 AX:000	MOVE STOP
Position No. 0 Clear		HOME SERVO ON/OFF
Position(mm)]	Axis 0 Axis 0 J0G - J0G +
Vel(mm/s)		300
Acc(G)		
Dcl(G)		
Range(mm)		
⊙Jog ○Inc 0.100	JogVelocity Cont.	
Back Scan	Write Keyboard	
Clear Scan Jo	og/Inc ->	10:00

With the cursor shown in the appropriate area, touch Keyboard button to make the touch panel numeric keys appear on the screen to input a number.

← Teach				C:000	s No.	000	MOVE	STOP SERVO
Position No.	0	Clear	Page U		^D age	Dn	Axis 0	ON/OFF
Vel(mm/s)		50					100 -	<u>5</u> 0
Acc(G)					7	8	9	ESC
Dcl(G) Range(mm)					4	5	6	BS
• Jog OInc	0. 100		JogVelocity		1	2	3	CLR
Back	Scar	ו 🗌	Write	K	0	•	+/-	ENT
Clear	Scan	Jo	g/Inc			->	-	10:00

If you want to input 50 to Position (mm), touch Keyboard button to show the touch panel numeric keys, and touch **5 ENT** on the touch panel numeric keys.

C Teach		Axis No. 0	MOVE
0.000 SV	MOVE PEND HEND	RC:000 AX:000	
Position No.	0 Clear Pa	ge Up Page Dn	HOME SERVO ON/OFF
Position(mm)	50.000		Axis 0 Axis 0 JOG - JOG +
Vel(mm/s)			300
Acc(G)			
Dcl(G)			
Range(mm)			
●Jog ○Inc	0.100 JogVeloc	ity Cont.	
Back	Scan Write	Keyboard	
Clear	Scan Jog/Inc	->	10:00

If the input is accepted, the cursor moves to the input box for Vel (mm/s). Then, input values for Vel (mm/s), Acc (G), Push (%) and Range (mm).

Caution: In the TB-02, the input range check is not performed. Confirm the specifications for the axis to be used, input the data.

Teach 0.000 Position No.	MOVE PEN	D HEND RC:000	s No. Ø (AX:) Page (000	MOVE HOME	STOP SERVO ON/OFF
Position(mm) Vel(mm/s)	50.000				Axis 0	Axis 0
Acc(G) Dcl(G)			7	8	9	ESC
Range(mm)	_		4	5	6	BS
●Jog ○Inc	0. 100 Scan	JogVelocity Write K	1	2	3	CLR
		g/Inc		->		10:00

When you want to erase the data that is already input, touch CLR ENT on the touch panel numeric keys to delete what you want.





[Data Transfer]

<u>k</u>				
🔶 Teach			Axis No. 0	MOVE STOP
0.000 SV	/ MOVE PEN	D HEND RO	:000 AX:000	
Position No.	0 Clear	Page Up	Page Dn	HOME SERVO ON/OFF
Position(mm)	50.000			Axis Ø Axis Ø JOG - JOG +
Vel(mm/s)	20.00			
Acc(G)	0.20			
Dcl(G)	0.20			
Range(mm)	0. 100			
⊙Jog ⊖Inc	0. 100	JogVelocity	Cont.	
Back	Scan	Write	Keyboard	
Clear	Scan Jo	g/Inc	->	10:00

After data input is complete, touch Write button on the touch pane to transfer the data to the controller.

Caution: The input data would not be written to the controller unless the operation above is conducted. When the position No. is changed without performing the above operation, the input

🔶 Teach	Axis No. 0	MOVE STOP
0.000 SV MOVE PEN	D HEND RC:000 AX:000	
Position No. 1 Clear		HOME SERVO ON/OFF
Position(mm)		Axis 0 Axis 0 J0G - J0G +
Vel(mm/s)		
Acc(G)		
Dcl(G)		
Range(mm)		
⊙Jog ○Inc 0.100	JogVelocity Cont.	
Back Scan	Write Keyboard	
Clear Scan Jo	g/Inc ->	10:00

data is cleared.

Once the transfer to the controller is complete, the position number gets incremented and the next data input screen is shown.

[Data Clear]

[Bata biba	•		
🔶 Teach		Axis No. 0	MOVE STOP
0.000 SV	/ MOVE PEND	HEND RC:000 AX:000	
Position No.	0 Clear	Page Up Page Dn	HOME SERVO ON/OFF
Position(mm)	50.000		Axis Ø Axis Ø J0G - J0G +
Vel(mm/s)	20.00		
Acc(G)	0.20		
Dcl(G)	0.20		
Range(mm)	0.100		
●Jog ○Inc	0.100 Jo	ogVelocity Cont.	
Back	Scan	Write Keyboard	
Clear	Scan Jog/	′Inc →	10:00

When you want to delete the data in the position number being displayed, touch Clear button in the touch panel.

← Teach 0.000 SN Position No.[MOVE PEND) Hend RC	Axis No. :000 AX:		MOVE	STOP SERVO ON/OFF
Position(mm) Vel(mm/s)	50.000 20.00			=1	Axis 0 JOG -	Axis 0 JOG +
	Do you want f this positio					
	Yes	No No				10:00

Touch $\underline{\text{Yes}}$ button on the touch panel and the data gets transferred to the controller.





Teach 0,000 SV	Axis No.	MOVE STOP
Position No.	0 Clear Page Up Page	Dn HOME SERVO
Position(mm) Vel(mm/s)		Axis 0
Acc(G) Dcl(G)		
Range(mm) • Jog OInc	0.100 JogVelocity Cont	
Back	Scan Write Keyboa	ard
Clear	Scan Jog/Inc	-> 10:00

Once the clear is succeeded, the data in the same position number (after cleared) is displayed.



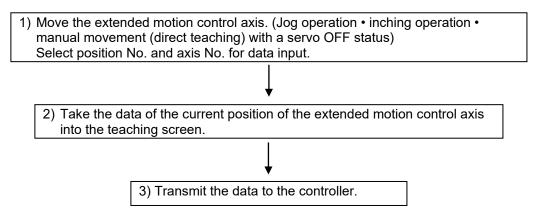


18.1.2 Extended Motion Control Position Data Input using the Teaching Operation

One of the extended motion control position data input method, is teaching (moving the extended motion control axis to the appropriate position and such extended motion control axis current position is captured as data).

The methods of moving the extended motion control axis to the appropriate position, are jog feeding/inching operation and manual movement (direct teaching) with the servo turned off.

The basic flow of teaching is as follows:







(1) Servo ON/OFF Operation

Using this operation, the extended motion control axis servo-motor is turned ON/OFF. This operation is available only in the single axis.

C Teach Axis No. 0	MOVE
0.000 SV MOVE PEND HEND RC:000 AX:000	
Position No. 0 Clear Page Up Page Dn	HOME SERVO
Position(mm)	Axis Ø Axis Ø SERVO OFF SERVO ON
Vel(mm/s)	
Acc(G)	
Dcl(G)	
Range(mm)	
●Jog ○Inc 0.100 JogVelocity Cont.	
Back Scan Write Keyboard	
Clear Scan Jog/Inc ->	10:00

Touch SERVO ON/OFF button.

After the background color of SERVO ON/OFF button has changed, touch the 0th axis servo-on button to turn the servo on.

(To turn the servo off, touch SERVO ON/OFF button and confirm that the background color of SERVO ON/OFF button has changed, and then touch the 0th axis servo-off button.)

The condition of servo-on/off can be checked on the axis status display "SV", which turns on when the servo is on and turns off when the servo is off.

(2) Home Return Operation

In the case of the incremental encoder type extended motion control axis, after the power is turned ON or software is reset, home return operation is required before the teaching operation. This operation is available only in the single axis.

← Teach		Axis No. 0	MOVE STOP
0.000 SV Position No.	MOVE PEND HEND 0 Clear Page	RC:000 AX:000 Up Page Dn	HOME SERVO ON/OFF
Position(mm)			Axis Ø Axis Ø MOVE MOVE
Vel(mm/s)			
Acc(G) Dcl(G)			
Range(mm)			
⊙Jog ⊖Inc 0	.100 JogVelocit	y Cont.	
Back	Scan Write	Keyboard	
Clear Sc	can Jog/Inc	->	10:00

Turn the servo-motor ON. Touch HOME button. After the background color of HOME button has changed, touch the <u>Oth axis movement</u> button to conduct home-return operation. The axis status display "HEND" turns on when the home-return operation is finished.





- (3) Actuator Movement
- 1) Jogging Operation

Perform the jog feeding operation for the extended motion control axis. This operation is available only in the single axis.

🔶 Teach	Axis No. 0	MOVE STOP
20.000 SV MOVE PE Position No. 0 Clea	AND HEND RC:000 AX:000 Ar Page Up Page Dn	HOME SERVO
Position(mm)]	Axis 0 Axis 0 J0G - J0G +
Vel(mm/s) Acc(G)	-	
Dcl(G)		
Range(mm) • Jog OInc 0.100	JogVelocity Cont.	
Back Scan	Write Keyboard	
Clear Scan .	log/Inc ->	10:00

Turn the servo-motor ON.

Touch Axis 0 JOG + or Axis 0 JOG - button to move the actuator to the specific position. ("+" means the movement to the plus direction on the coordinates and "-" means the movement to the minus direction on the coordinates).

The actuator movement speed, etc., at the time of jog feeding, can be changed using the JogVelocity button.

C Teach			Axis No. 0	MOVE STOP
0.000 SV MOVE PEN		ND HEND RC	:000 AX:000	
Position No.	0 Clea	r Page Up	Page Dn	HOME SERVO ON/OFF
Position(mm)		1		Axis 0 Axis 0 J0G - J0G +
Vel(mm/s)				300 - 300 +
Acc(G)				
Dcl(G)				
Range(mm)				
●Jog ○Inc	0.100	JogVelocity	Cont.	
Back	Scan	Write	Keyboard	
Clear	Scan Jo	og/Inc	->	10:00

← Jog/Move Velocity	(Ex Motion)
Vel[mm/sec] 10.00 Acc[G] 0.30 Dcl[G] 0.30	
Back	Keyboard 18:00

Touch JogVelocity button

Input the parameters for the Vel (Velocity), Acc (Acceleration) and Dcl (Deceleration) at the time of jog feeding, using the touch panel ten-key pad. The touch panel ten-key pad is opened by means of touching the Keyboard button. Touch the Return button to return to the extended motion teaching screen and perform the jog feeding operation.





2) Inching Operation

Perform the inching operation for the extended motion control axis. This operation is available only in the single axis.

← Teach 20. 000 SI	MOVE PEND H	Axis No. HEND RC:000 AX:	000 MOVE STOP
Position No.	0 Clear	Page Up Page	Dn HOME ON/OFF
Position(mm)			Axis 0 Axis 0 JOG - JOG +
Vel(mm/s)			
Acc(G)			
Dc1(G)			
Range(mm)			
⊙Jog OInc	0. 100 JogVe	elocity Cont.	
Back	Scan Wr	ite Keyboa	ird
Clear	Scan Jog/Inc		-> 10:00

Touch Inc button directly to make Inc button selected.

← Teach 20,000 SV	MOVE		xis No. 0 000 AX:000	MOVE	STOP
Position No.	0 Clear	Page Up	Page Dn	HOME	SERV0 0N/0FF
Position(mm)				Axis Ø JOG -	Axis Ø JOG +
Vel(mm/s)					
Acc(G)					
Dcl(G)					
Range(mm)					
⊖Jog ⊙Inc	0. 100 Jog	Velocity	Cont.		
Back	Scan	Write	Keyboard		
Clear	Scan Jog/I	nc	->		10:00

Set the inching distance (travel distance for each touching of the JOG button).

Show the cursor to the input part beside "Inc" and touch <u>Keyboard</u> button to open the touch panel numeric keys to input a value and touch <u>ENT</u>. The numerical value input range is from 0.00 to 1.00 (Unit: mm).

C Teach	Axis No. 0	MOVE STOP
20.000 SV MOVE	PEND HEND RC:000 AX:000	
Position No. 0	Clear Page Up Page Dn	HOME SERVO
Position(mm)		Axis 0 Axis 0 J0G - J0G +
Vel(mm/s)		
Acc(G)		
Dcl(G)		
Range(mm)		
⊖Jog ⊙Inc 1.000	JogVelocity Cont.	
Back Scan	Write Keyboard	
Clear Scan	Jog/Inc ->	10:00

Turn the servo-motor ON.

Touch Axis 0 JOG + or Axis 0 JOG - button to move the actuator to the specific position. ("+" means the movement to the plus direction on the coordinates and "-"means the movement to the minus direction on the coordinates).





3) Manual Movement with the servo-motor turned OFF

🗧 🗧 Teach			Axis No. 0	MOVE	STOP
0.00 SV	MOVE PEND	HEND	G 000 AL		SERVO
Position No.	0 Clear	Page Up	Page Dn	HOME	SERVO ON/OFF
Position(mm)]		Axis Ø SERVO OFF	Axis Ø SERVO ON
Vel(mm/s)				SCALE OF	30110 01
Acc(G)					
Push(%)					
Range(mm)			Alarm Reset		
⊙Jog ◯Inc	0.01 Inp	0.01	Cont.		
Back	Scan	Write	Keyboard		
Clear	Scan	Inc	Reset ->		

Touch SERVO ON/OFF button.

After the background color of SERVO ON/OFF button has changed, touch the <u>0th axis servo-off</u> button to turn the servo off.

The condition of servo-on/off can be checked on the axis status display "SV", which turns on when the servo is on and turns off when the servo is off. Move the RC actuators to the designated position via manual mode.



Pressing the EMERGENCY STOP button switches the display to the emergency stop screen. Touch Back button to return to Teaching screen.

← Teach				Axis No. 0		
					MOVE	STOP
0. 000 S	/ MOVE	PEND	HEND RC	:000 AX:000		SERV0
Position No.	0 C I	ear	Page Up	Page Dn	HOME	ON/OFF
Position(mm)					Axis Ø J0G -	Axis Ø JOG +
Vel(mm/s)					300	300 1
Acc(G)						
Dcl(G)						
Range(mm)						
●Jog ○Inc	0. 100	Jog	Velocity	Cont.		
Back	Scan		Write	Keyboard		
Clear	Scan	Jog/I	nc	->		10:00

Move the actuator manually to an appropriate position.

Narning:

Be sure to execute manual movement when EMERGENCY STOP button is pressed.





(4) Current Position captured as the Data The chosen RC actuator position is taken in the teaching window as the position data.

← Teach	Axis No. 0	MOVE
27. 460 SV MOVE PE	ND HEND RC:000 AX:000	LIONE SERVO
Position No. 0 Clea	r Page Up Page Dn	HOME ON/OFF
Position(mm)]	Axis 0 Axis 0 JOG - JOG +
Vel(mm/s)		
Acc(G)		
Dcl(G)		
Range(mm)		
⊙Jog ○Inc 0.100	JogVelocity Cont.	
Back Scan	Write Keyboard	
Clear Scan Jo	og/Inc ->	10:00

Set the position No. for the import destination.

🔶 Teach			Axis No. 0	MOVE STOP
27.460 5	MOVE PEN	ID HEND RO	C:000 AX:000	
Position No.	0 Clear	Page U	p Page Dn	HOME SERVO ON/OFF
Position(mm)	27.460]		Axis 0 Axis 0 JOG - JOG +
Vel(mm/s)				
Acc(G)				
Dcl(G)]		
Range(mm)				
⊙Jog ⊖Inc	0. 100	JogVelocity	Cont.	
Back	Scan	Write	Keyboard	
Clear	Scan Jo	g/Inc	->	10:00

Touch Scan button to load the current position to the target position from with the data is loaded.

/ Caution: • In order to capture the current position data in the target position data section, the home return operation has to be completed. Execute it after it is confirmed that "HEND" in the axis status display is turned on. If it is executed before the home return operation, the [(9E2) Not yet Homed TEACH] message is displayed and the current position cannot be captured. • Writing to the controller would not be executed unless you touch Write.





(5) Data Transfer to the Controller

← Teach			Axis No. 0	
0.000 SV	/ MOVE PE		:000 AX:000	MOVE STOP
Position No.	0 Clea	1	-	HOME SERVO ON/OFF
Position(mm)	50.000	7		Axis 0 Axis 0 J06 - J06 +
Vel(mm/s)	20.00	2		300 1
Acc(G)	0.20)		
Dcl(G)	0.20)		
Range(mm)	0. 100)		
⊙Jog ⊖Inc	0. 100	JogVelocity	Cont.	
Back	Scan	Write	Keyboard	
Clear	Scan Jo	og/Inc	->	10:00

After data input is complete, touch Write button on the touch panel keys to transfer the data to the controller.

← Teach 0.000 S Position No.	V MOVE PE		Axis No. 0 C:000 AX:000 Page Dn	MOVE STOP HOME SERVO
Position(mm) Vel(mm/s) Acc(G) Dcl(G)				Axis 0 JOG - JOG +
Range(mm) Jog Inc Back Clear	Scan	JogVelocity Write og/Inc	Cont. Keyboard ->	10:00

Once the transfer to the controller is complete, the position number gets incremented and the next data input screen is shown.





(6) Position Check

When the extended motion control axis is moved to the place corresponding to the taught position data, the position check can be performed.

1) Movement

Move the extended motion control axis to the position corresponding to the position data transferred to the controller.

🔶 Teach		A	xis No. 0	MOVE STOP
0. 000 SV	MOVE PEND	HEND RC:	000 AX:000	
Position No.	0 Clear	Page Up	Page Dn	HOME SERVO ON/OFF
Position(mm)	50.000			Axis 0 Axis 0 J0G - J0G +
Vel(mm/s)	20.00			300
Acc(G)	0.20			
Dcl(G)	0.20			
Range(mm)	0. 100			
⊙Jog ○Inc	0. 100 Jo	gVelocity	Cont.	
Back	Scan	Write	Keyboard	
Clear	Scan Jog/	Inc	->	10:00

🔶 Teach			Axis No. 0	MOVE STOP
0.000 SV	MOVE PEN	D HEND RC	:000 AX:00	
Position No.	0 Clear	Page Up	Page Dn	HOME SERVO
Position(mm)	50.000			Axis 0 Axis 0 MOVE MOVE
Vel(mm/s)	20.00			
Acc(G)	0.20			
Dcl(G)	0.20			
Range(mm)	0.100			
●Jog ○Inc	0.100	JogVelocity	Cont.	
Back	Scan	Write	Keyboard	
Clear	Scan Jog	g/Inc	->	10:00

Set the position number you want to move to.

Turn the servo-motor ON. Perform the home return operation.

Touch the MOVE button.

Touch the Axis 0 MOVE button after the background color in the MOVE button has changed, and the axis starts moving. When it is stopped on the way, touch the STOP button.



2) Continuous Movement

The RC actuator automatically follows the position corresponding to the position data transferred to the controller.

← Teach 0.000 S Position No.	/ MOVE PEN Ø Clea		Axis No. 0 C:000 AX:000 Page Dn	MOVE STOP HOME SERVO
Position(mm) Vel(mm/s) Acc(G) Dcl(G) Range(mm)	50.000 20.00 0.20 0.20 0.20 0.100			Axis 0 JOG - JOG +
Jog O Inc Back Clear	0. 100 Scan	JogVelocity Write og/Inc	Cont. Keyboard ->	10:00

Touch Cont. button to switch to the continuous operation mode.

🔶 Teach			Axis No. 0	MOVE STOP
0.000 SI	MOVE PEN	D HEND RO	:000 AX:000	
Position No.	0 Clear	Page Up	Page Dn	HOME SERVO ON/OFF
Position(mm)	50.000			Axis 0 Axis 0 JOG - JOG +
Vel(mm/s)	20.00			300
Acc(G)	0. 20			
Dcl(G)	0. 20			
Range(mm)	0. 100			
€Jog €Inc	0.100	JogVelocity	Cont.	
Back	Scan	Write	Keyboard	
Cont	JVel			10:00

C Teach		Axis No. 0	MOVE STOP
21. 287 5	MOVE PEN	D HEND RC:000 AX:000	
Position No.	3 Clear	Page Up Page Dn	HOME SERVO ON/OFF
Position(mm)	50.000		Axis 0 Axis 0 MOVE (-) MOVE (+)
Vel(mm/s)	50.00		
Acc(G)	0. 04		
Dcl(G)	0. 04		
Range(mm)	0. 100		
●Jog ●Inc	0.100	JogVelocity Cont.	
Back	Scan	Write Keyboard	
Cont	JVel		10:00

Set the position number you want to move to first.

Touch MOVE button. Perform the home return operation.

Touch the Axis 0 MOVE (+) or Axis 0 MOVE (-) button after the background color in MOVE button has changed, and the axis starts moving. (+ is Position No. order, - is position No. inverse order) When it is stopped on the way, touch the STOP button.

Caution:	Be careful as it may take a few seconds before start moving after touching the
	Axis 0 MOVE button. (The time interval for movement start varies depending on
	the number of registered position data items).



18.1.3 Extended Motion Control Axis Position Data Deletion

Delete the position data within the designated range.

Menu			
Edit	File		
Play	Ex Motion		
Monitor	Environment Set		
Controller	Next		
Edit Play Monitor Control -> 10.00			

Edit Back

Edit
 Teach
 Clear
 Back
 Teach
 Clear

 Touch Ex Motion button in the menu screen.

Touch Edit button.

Touch Clear button.

Input the axis number to have the position delete and the range of the position number, and touch Clear button.

When you want to delete all the position data, touch All Clear button.

If you touch <u>Cancel</u> button, the display returns to the Ex Motion Edit menu screen.

INTELLIGENT ACTUATOR	
← Clear	
Axis No. 0 2 Position No. 0 10	
7 8 9 ESC 4 5 6 BS 1 2 3 CLR	
Clear All Clear Cance 0 +/- ENT Clear All Clr 10.00	

If you touch in the input area on "Axis No." or "Position No.", the cursor will be shown on the touched item.

Input the position number by displaying the numeric keys on the touch panel by touching Keyboard button.

Touch on the numeric part if you want to input on the touch panel numeric keys. The contents of input will be shown in the box above the touch panel numeric keys. When confirming the input number, touch $\overline{\text{ENT}}$. The touch panel numeric key close and the cursor moves to the next input box. When redoing the input, touch $\overline{\text{ESC}}$. When it is desired to cancel the input, touch $\overline{\text{ESC}}$ again, and the touch panel numeric keys will close.

← Cor	firmation		
	Ex Motion pos will be c Are you sure t	leared.	
(Yes	No	
Yes	No		10:00

Touch Yes button.

When the No button is touched, the Extended Motion Control Position Data Clear Screen is returned.

← Confirmat	ion	
	Complete!	
	ОК	
		10:00

The display shows this screen when the position clear is finished.

When the OK button is touched, the Extended Motion Control Position Data Clear Screen is returned.





18.2 Extended Motion Control Axis Monitoring

The extended motion control axis's status, current position and alarm code are displayed.

Menu			
Edit	File		
Play	Ex Motion		
Monitor	Environment Set		
Controller	Next		
Edit Play Monitor Control -> 10.00			

Edit Back

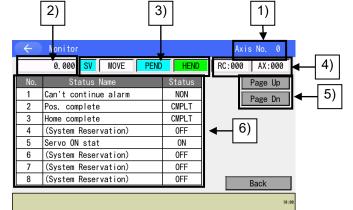
Axis0 Axis8 Axis16 Axis24 Axis9 Axis17 Axis25 Axis1 Axis2 Axis18 Axis26 Axis10 Axis27 Axis3 Axis11 Axis19 Axis4 Axis12 Axis20 Axis28 Axis5 Axis13 Axis21 Axis29 Axis6 Axis30 Axis14 Axis22 Axis7 Axis15 Axis23 Axis31 Back 10:00

Select the extended motion control axis No. to be monitored, by means of touching the corresponding button. The display returns to the Ex Motion menu screen if you touch Back button.

Touch Ex Motion button in the menu screen.

Touch Monitor button.

INTELLIGENT ACTUATOR



1) Axis No.

The axis No. that is being monitored is displayed.

2) Current position

The actuator current position [mm] is displayed.

- 3) Axis Status
 - The status of the actuator is displayed.
 - SV : Turns on when the servo is on
 - MOVE : Turns on during operation
 - PEND : Turns on when positioning is finished
 - HEND : Turns on when home-return operation is finished
- 4) Alarm
 - An alarm code is displayed.
 - RC : RC-Axis Alarm Code
 - (Alarm code for the alarm generated in the RC controller is displayed).
 - AX : Axis Related Alarm Code
 - (Alarm code for the alarm generated in the XSEL controller is displayed).
- 5) Page Up / Page Dn button
 - When touched, the items displayed in (6) are changed.
- 6) Status Display
 - The status of the actuators and RC controllers are displayed.





18.3 User Data Hold Memory Initialization

18.3.1 Description

When the I/O Parameter No. 531 "Extended Motion Control Position Data Defined Max. Axis No.", and 532 "No. of Defined Extended Motion Control Position Data Items" are changed and software is reset after the Flash ROM writing, (6A1) "UBM Data Configuration Change Error" occurs. When the error occurs, the initialization of the user data hold memory is required.

Caution: When the user data hold memory is initialized, all the extended motion control axis position data items are cleared. Backup the extended motion control axis position data items using the personal computer (PC) application software for XSEL or TB-02.

18.3.2 Operation Procedure

For the operation procedure, refer to [17.3.2 Operation Description].





IX





19. ELECYLINDER, ROBO PUMP Operation Function

When the EC Interface (RCON-EC or ELECYLINDER connection module board) (hereinafter described as "EC Interface") is connected to the RSEL or XSEL2-T/TX controller, it should be available to indicate an axis on ELECYLINDER or ROBO PUMP and to operate, show data, change settings and so on.

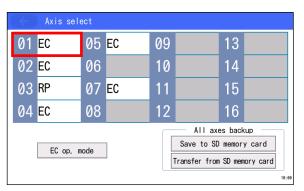
The EC button should not be shown if EC Interface is not activated.

Menu			
Edit	File		
Play	EC		
Monitor	Environment setting		
Controller	Next		
Edit Play Monitor Control -> 10:00			

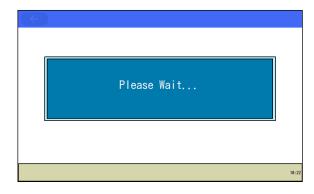
Touch the EC button in the main menu window and the screen goes to the axis select window.

19.1 Changing Operating Axis

The axis select window should appear by touching the \boxed{EC} button in the main menu window or touching the Change operating axis button in EC menu 2 window.



Select the axis to be operated in the touch panel teaching pendant and touch it. (Axes enabled for EC should show "EC" or "RP" in the axis name display column or an axis name should be displayed and the background should be shown in white.)



Acquirement of data for the selected ELECYLINDER or ROBO PUMP should start.





<) 🎯 EC menul	um Axis No. Ø1
Monitor	Test run
🖌 Simple data setting	🔺 Alarm list
Edit parameter	1 Information
SD memory card	Troubleshooting
To main menu	To EC menu2
	10:0

Once the data acquiring process for the ELECYLINDER or ROBO PUMP is complete, EC menu 1 window should show up.

19.1.1 EC Operation Mode

The ELECYLINDER, ROBO PUMP operation mode setting in the manual mode (MANU) should be established.

$\left(\leftarrow \right)$	Axis sele	ect					
01	EC	05	EC	09		13	
02	EC	06		10		14	
03	RP	07	EC	11		15	
04	EC	08		12		16	
					All ax	es bacł	kup
	EC op. mode						
	EC 0p. 1	loue		1	Fransfer from	n SD men	nory card
							10:00

Touch the EC op. mode button in the axis select window and the EC operation mode change window should be displayed.

CEC operation mode				
Teach1	PIO movement prohibit velocity valid	ion, Safety		
Teach2	PIO movement prohibit velocity invalid	ion, Safety		
Monitor	PIO movement permissi velocity invalid OK	on, Safety		
		10:00		

Touch any button such as the Teach1 to select the preferable mode, and touch the OK button.

The EC operation mode should be selected from the three types of menus as described below.

• Teach1 (PIO movement prohibition / Safety velocity valid)

PIO movement prohibition	:	Data writing to ELECYLINDER or ROBO PUMP (for such as simple data settings and parameters) and indications in the actuator operation system are available.
Safety velocity valid	:	The maximum velocity should be the safety velocity [100mm/s] regardless of the velocity indication in the simple data setting window.
		(Note) As there is no safety velocity equipped in ROBO PUMP,

te) As there is no safety velocity equipped in ROBO PUMF the safety velocity should not activate.





• Teach2 (PIO movement prohibition / Safety velocity invalid)

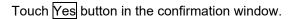
PIO movement prohibition : D	Data writing to ELECYLINDER or ROBO PUMP (for such as
	simple data settings and parameters) and indications in the
ä	actuator operation system are available.

- Safety velocity invalid : Operation in the velocity set in the simple data setting window (higher than the safety velocity) becomes available.
- Monitor (PIO movement permission / Safety velocity invalid)

PIO movement permission : Control should be made with I/O commands. Data writing to ELECYLINDER or ROBO PUMP (for such as simple data settings and parameters) and indications in the actuator operation system are not available. Operation commands (jog, home return, etc.) cannot be issued from the touch panel teaching pendant.

Safety velocity invalid : Operation in the velocity (higher than the safety speed) commanded from a host device (such as PLC) or the SEL program should be available.

Confirmation			
Change	EC oper	ation mode?	
Yes		No	
			10:00



\leftarrow	Confirmation	
	EC operation mode has been changed. Mode : Teach Safety velocity: Disable	
	ОК	I

The changed modes and the safety speed setting should be displayed. Touch OK button.

(Note) As there is no safety velocity equipped in ROBO PUMP, the safety velocity should not activate.

19.1.2 Backup for All Axis

$(\in$	Axis sele	ect					
01	EC	05	EC	09		13	
02	EC	06		10		14	
03	RP	07	EC	11		15	
04	EC	80		12		16	
					— All ax	es back	(up
EC op. mode							
			1		Transfer from	n SD men	nory card
							10:00

Backup (saving to a Secure Digital memory card) and restoring (transfer from a Secure Digital memory card) for all ELECYLINDER and ROBO PUMP data should be conducted. For details, refer to [19.13 ELECYLINDER, ROBO PUMP Data Backup].



19.2 Menu Selection

EC me	nu 1		EC me	enu 2
(←) @ EC menu1	din Axis No. 01		EC menu2	dus Axis No. 01
Monitor	Test run	T- 50	Change operating axis	
🖌 Simple data setting	Alarm list	To EC menu2		Easy programming
Edit parameter	1 Information		Environment setting	
SD memory card	Troubleshooting	To EC menu1	Elecylinder reset	
C To main menu	To EC menu2 >		Other setting	To EC menu1 >
	10:00			10.00

There are two windows, EC Menu 1 and EC Menu 2, in the EC menu window. Touch the To EC menu2 button in EC Menu 1 and the screen switches to the EC Menu 2 window, and touch the To main menu button and it returns to the main menu window. Touch the To EC menu1 button in EC Menu 2 and the screen switches to the EC Menu 1 window.

In EC menu 1, EC menu 2 there are have the following menus. Select either of them and touch it. The screen should go to the selected feature.

(If the EC operation mode is in the monitoring mode, some of the menus would not be available to select. In order to select them, set the mode to the teaching mode. Refer to [19.1.1 EC Operation Mode].)

[EC menu 1]

• Monitor	Displays the ELECYLINDER or ROBO PUMP status, I/O signal status, maintenance information and manufacturing information. Refer to [19.3 Monitor]
 Simple data setting 	The setting of position, velocity, acceleration/deceleration, etc. should be established to make operation of an actuator. Refer to [19.4 Simple Data Setting (Position Editing)]
ROBO PUMP setting	Setting of suction, release and monitoring display of ROBO PUMP should be established. Refer to [19.5 ROBO PUMP setting]
• Edit parameter	Adjustment of the operation range and home position or change in direction of the home-return operation should be conducted. Refer to [19.6 Edit Parameter]
 SD memory card 	Backup / restoring of position data and parameters or backup of the alarm list should be conducted. Refer to [19.13 Data Backup of ELECYLINDER, ROBO PUMP]
• Test run	Manual operations such as jog, inching, position operation and numerical indication movement and the operation test of I/O should be conducted. Refer to [19.7 Test Run] As there should only be I/O operation test conducted for ROBO PUMP, the menu should show "I/O Test".
• Alarm list	Shows a list of alarms and the time when they occurred. Refer to [19.8 Alarm List]
Information	Shows the software version, manufacturing information, maintenance information and inquiry for connection. Refer to [19.11 Information Display]
Troubleshooting	Shows the contents of an alarm and the countermeasure when an alarm has been generated.





[EC menu 2]

Change operating axis	Select ELECYLINDER or ROBO PUMP to operate Refer to [19.1 Changing Operating Axis]
 Environment setting 	Conduct settings for data input warning, axis name display, ripple compensation and initial window setting at startup. Refer to [19.12 Environment Setting]
 ELECYLINDER, 	Restart ELECYLINDER or ROBO PUMP.
ROBO PUMP restart	Refer to [19.9 Restarting ELECYLINDER, ROBO PUMP]
Other setting	Initialization of a parameter or adjustment of operation sound should be conducted.
	Refer to [19.10 Other Setting]
 Easy programming 	It is a window that enables setting of movement between positions, timer and repeated operation by indicating number, and to have continuous operation manually. Refer to [19.14 Easy Programming]

[About Buttons at Top Belt in Window]

	3)	4)
← 100 Troubleshooting	db	Axis No. 01
Alarm display Alarm list Check model num. Inc	quiry	
•Alarm list		
Touch the alarm No. to check the alarm description and per	form troubles	hooting.
No. Code Name Ad	ldress Detail	Time (bb:mm:ss)
1) 🤆 Return Button : Returns to Pr	evious window	/
2) 📧 EC Home Button : Returns to EC	C Menu 1 wind	ow
3) 💿 Monitor Button : Opens the Mo	onitor window	
4) Axis No. 01 Change operating axis Button : Displays the o	operation axis	change window.

[When Alarm Occurred]



While an alarm is generated, the alarm group (Alarm code for ROBO PUMP) and the alarm name should be displayed at the bottom of the window, and the background should turn into orange.

Touch the gray area that the alarm information is displayed, and the screen switches to the window to display the alarm details.



19.3 Monitor

The I/O statuses, current position and other information of ELECYLINDER or ROBO PUMP connected are displayed.

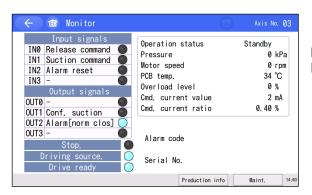
(🔶) 🍘 EC menu1	ulu Axis No. 01
Monitor	Test run
🖌 Simple data setting	Alarm list
Edit parameter	i Information
SD memory card	Troubleshooting
To main menu	To EC menu2
	10:00

Touch Monitor button on the EC menu 1 window.

The monitoring window for ELECYLINDER or ROBO PUMP should show up

← 😰 Monitor	(in) Axis No. 01
Input signals	Cur.pos. 17.80 mm
INO Backward	Cur.vel. 0.00 mm/s
IN2 Alarm reset	Cycle time 0.00 sec
Output signals OUT0 Bwd. End[LS0] OUT1 Fwd. End[LS1]	Cur.ratio 44.83 % Ripple compensation *Yes No Overload level 12 %
OUT2 Alarm[norm clos] 🔘	PCB temp. 41 °C Alarm group
Servo-on status 📿 Home comp status 📿	Actuator S/N
	Production info Maint. 10:

Monitoring Window for ELECYLINDER Refer to [19.3.1 Monitor Window (ELECYLINDER)]



Monitoring Window for ROBO PUMP Refer to [19.3.2 Monitor Window (ELECYLINDER)]





19.3.1 Monitor Window (ELECYLINDER)

(Applicable for Rip	ple Compensation)	(NOL Applicabl
🔶 😰 Monitor	Axis No. 01	🔶 î Monitor
Input signals IN0 Backward IN1 Forward IN2 Alarm reset Output signals OUT0 Bwd. End[LS0] OUT1 Fwd. End[LS1] OUT2 Alarm[norm clos] Servo-on status	Cur.pos. 17.80 mm Cur.vel. 0.00 mm/s Cycle time 0.00 sec Cur.ratio 44.83 % Ripple compensation ●Yes No Overload level 12 % PCB temp. 41 °C Alarm group	Input signals IN0 Backward IN1 Forward IN2 Alarm reset Output signals OUT0 Bwd. End[LS0] OUT1 Fwd. End[LS1] OUT2 Alarm[norm clos] Servo-on status
Home comp status	Actuator S/N	Home comp status
	Production info Maint. 10:00	

(Not Applicable for Ripple Compensation)

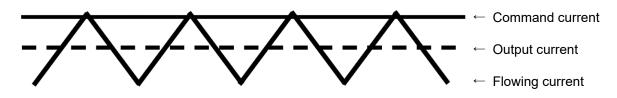
01	← 12 Monitor	(iii)	Axis No. 01
	Input signals IN0 Backward IN1 Forward IN2 Alarm reset	Cur.vel. 0	.80 mm .00 mm/s .00 sec
	Output signals OUT0 Bwd. End[LS0] OUT1 Fwd. End[LS1] OUT2 Alarm[norm clos]	Cur.ratio 44 Overload level PCB temp.	. 83 % 12 % 41 °C
	Servo-on status O Home comp status O	Alarm group Actuator S/N	
10:00		Production info	Maint. 10:00

Touch Production info button and the production information window will be displayed. Refer to [19.11 Information Display] Touch Maint. button and the maintenance information window will be displayed.

Refer to [19.3.3.1 Maintenance Information Window (ELECYLINDER)]

[Displayed Items]

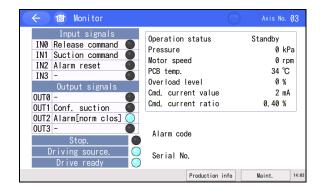
- Input signals The status of each input signal is shown. ON is lit. OFF is unlit. The status of each output signal is shown. ON is lit. OFF is unlit. Output signals It displays the status of servo-on. The servo is on when it is lighted on Servo-on status and off when lighted off. It displays the status of the home-return completion. Completed when it is Home comp status lighted on and incomplete when lighted off. • Cur. pos. The current position is shown. • Cur. vel. The current speed is shown. Cycle time The cycle time calculated from the velocity and acceleration / deceleration set for the way forth and the way back is shown. • Cur. ratio The value of electrical current is shown as a percentage of the rated current. It can be chosen with the radio button whether to display the current/ Ripple compensation (Note 1) current ratio with ripple compensation or without ripple compensation. • Yes : Shown in command current (Note 2) • No : Shown in output current (Note 3) Overload level The overload level is shown in the rate that the motor raising temperature assumed to generate the overload alarm set as 100%. • PCB temp. Temperature of the control PC board in the actuator is shown. • Alarm group The applicable alarm group is shown. Actuator S/N Shows the manufacturing number of the actuator. The selection of the ripple compensation should only be displayed in ELECYLINDER Note 1
- with its version V0006 or later. For those models with no selections, calculations should be performed in command current^(Note 2).
- Note 2 The command current should compensate for the amount of current ripple considering transistor switching.
- Note 3 In ELECYLINDER, output current close to the effective value should be figured out by calculation as it will not acquire the output current.







19.3.2 Monitor Window (ROBO PUMP)



Touch Production info button and the production information window will be displayed. Refer to [19.11 Information Display] Touch Maint. button and the maintenance information window will be displayed. Refer to [19.3.3 Maintenance Information Window]

[Displayed Items]

- Input signals The status of each input signal is shown. ON is lit. OFF is unlit.
- Output signals The status of each output signal is shown. ON is lit. OFF is unlit.
- Stop. It displays the status of emergency stop. ON is lit. OFF is unlit.
- Driving source. It displays the status of driving source. ON is lit. OFF is unlit.
- Drive ready It displays the status of servo-on. ON is lit. OFF is unlit.
- Operation status It displays the of ROBO PUMP operation status.
- Pressure The pressure of the vacuum pump should be displayed.
- Moror speed The revolution count of the motor should be displayed.
- PCB temp. Temperature of the control PC board in the ROBO PUMP is shown.
- Over load level The overload level is shown in the rate that the motor raising temperature assumed to generate the overload alarm set as 100%.
- Cmd. Current value The command current should be displayed.
- Cmd. Current ratio The ratio of the command current and the rating should be displayed.
- Alarm code The applicable alarm code is shown.
- Serial No. The serial number of ROBO PUMP should be displayed.





- 19.3.3 Maintenance Information Window
- 19.3.3.1 Maintenance Information Window (ELECYLINDER)
- [1] Total travel count and total travel distance

A warning should get output when the total travel count or total travel distance has exceeded each setting.

Touch $m \Leftrightarrow km$ and the display of unit for the total travel distance (current value) can be switched between m and km. (Rotary type excluded)

(Display in m fo	or distance)		(Display in km for distance)		
🗧 🔶 🎁 Maintenance information	uho Axis No.	01	←	(the Ax	is No. 01
Total travel count Total travel count threshold Total travel distance Total travel distance threshold Overload warning level	123, 456 1, 000, 000 Edit 756, 643 m eek 1, 250, 000 m Edit 70 % Edit		Total travel count Total travel count threshold Total travel distance Total travel distance threshold Overload warning level	123, 456 1, 000, 000 756 km 1, 250, 000 m 70 %	Edit m⇔km Edit Edit
Actuator replacement time	2020/12/31 11:50:27	m ⇔ km	Actuator replacement time	2020/12/31 11:50:27	LUIT
Replace Act Clear PairID		10:00	Replace Act Clear PairID		18:00

[Contents of Display]

- Total travel count The cumulative total number of actuator movements is shown.
- Total travel distance The cumulative total distance travelled by the actuator is shown. (Rotary type: Travel count for round trip between 0 and 180deg (To be figured out from total drive distance))

[Items of Setting]

- Total travel count threshold Set the total travel count to output a warning.
- Total travel distance threshold Set the total travel distance to output a warning.

(Dotony typo)	setting of travel count for round trip between 0	and 10()dod)

🗧 🔶 🔯 Maintenance information	the Ax	is No. 01
Total travel count	123, 456	
Total travel count threshold	1,000,000	Edit
Total travel distance	756,643 m	m⇔km
Total travel distance threshold	1,250,000 m	Edit
Overload warning level	70 %	Edit
Actuator replacement time	2020/12/31 11:50:27	
Replace Act Clear PairID		
		10:00

Touch Edit button on the right of Total travel count threshold to change the setting for the total travel count threshold.

← ☎ Maintenance information	dn Axi	s No. 01
Total travel count	123, 456	1
Total travel count threshold	1, 000, 000	Edit
Total travel distance	756,643 m	m⇔km
Total travel distance threshold	1,250,000 m	Edit
Overload warning level	70 %	Edit
Actuator replacement time	2020/12/31 11:50:27	
		_
Replace Act Clear PairID		
		10:0

Touch Edit button on the right of Total travel distance threshold to change the setting for the total travel distance threshold.





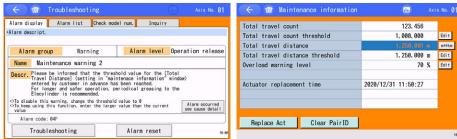
When Total Travel Count has Exceeded Total Travel Count Threshold

C Troubleshooting Axis No. 01	🗲 🍘 Maintenance information	uto Axis No. 01	●/● flash in turn
Alarm display Alarm list Check model num. Inquiry Alarm descript.	Total travel count	1, 893, 891	
-kialii descript.	Total travel count threshold	1,000,000 Edit	
Alarm group Warning Alarm level Operation release	Total travel distance	756, 643 m meekm	ATL SER CANTER
	Total travel distance threshold	1,250,000 m Edit	The advanced of the second of
Name Maintenance warning 1	Overload warning level	70 % Edit	
Descr. Please be informed that the threshold value for the [Total Travel Court) (setting in "maintenace information" window) entered by customer in advance has been reached. For longer and safer operation, periodical greasing to the Ellevy inder is recommended.	Actuator replacement time	2020/12/31 11:50:27	
OTo disable this warning, change the threshold value to 0 OTo keep using this function, enter the larger value than the current value alse cause detail			
Alarm code: 04E	Replace Act Clear PairID		
Troubleshooting Alarm reset		18:	

You will be notified in Maintenance warning 1 window. The number in total travel count blinks in maintenance information window.

LED lamps on **ELECYLINDER** flash red and green in turn in all of Maintenance Warning 1, 2 and 3.

When Total Travel Distance has Exceeded Total Travel Distance Threshold



You will be notified in Maintenance warning 2 window.

The number in total travel distance blinks in maintenance information window.

entry window.

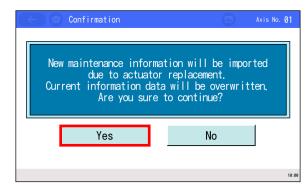
Total travel count	123, 456	
Total travel count threshold	1, 000, 000	Edit
Total travel distance	756,643 m	m⇔km
Total travel distance threshold	1,250,000 m	Edit
Overload warning level	70 %	Edit
Actuator replacement time	2020/12/31 11:50:27	_

[Resetting Total travel count and Total travel distance]

The actuator replacement confirmation window appears. Touch Yes button. The Total travel count and Total travel distance are reset to 0.

Touch Replace Act button to display the password

Input '5119' and touch ENT button.







[2] Over Load Warning

With the motor rising temperature estimated to generate an overload alarm set as 100%, an overload warning can get output when the temperature has exceeded the rate of the motor temperature set in this window.

🔶 🎯 Maintenance information	du Axi	s No. 01
Total travel count	123, 456	
Total travel count threshold	1, 000, 000	Edit
Total travel distance	756,643 m	m⇔km
Total travel distance threshold	1,250,000 m	Edit
Overload warning level	70 %	Edit
Actuator replacement time	2020/12/31 11:50:27	1
		_
Replace Act Clear PairID		
		10:00

Touch Edit button on the right of Over load warning level to change the setting for the over load warning level.

[Items of Setting]

Overload warning level

Set the level to generate the over load warning alarm. Set to 100, and a warning should be generated.

When Over load Level has Exceeded Setting Rate

🔶 😰 Trou	bleshooting				Axis No. 01
Alarm display Al	arm list Check mod	el num.	Inquiry		
•Alarm descript.					
Alarm group	Warning	Ala	m level	0perat	ion release
Name Maintena	nce warning 3				
(setting in has been rea Before the E maintenance * To disable warning leve	formed that the thress "maintenace informatic ched. lecylinder stops with by following the troud this warning, change I" in "Maintenance in	on" window "Overload bleshootir the setti) entered b alarm", vi ng are recom ng of "Oven	by custom isual ins nmended. rload	er in advance
Alarm code: 048					
Troublesho	oting	Alar	n reset		10:0

You will be notified as an overload warning in Maintenance warning 3 window. LED lamps on ELECYLINDER flash red and green in turn.





19.3.3.2 Maintenance Information Window (ROBO PUMP)

[1] Total suction count, Total motor rotation time

A warning should get output when the total suction count or total motor rotation time has exceeded each setting.

← ☆ Maintenance information		Axis No. Ø3
Total suction count Total suction count threshold Total motor rotation time Total motor rotation time threshold Overload warning level	27 234,567,890 0:00:02 d:H 1234:12:34 d:H 90 %	Edit
		10:00

[Contents of Display]

- Total suction count
- Total motor rotation time

The cumulative of suction count for ROBO PUMP should be displayed. The cumulative of motor revolution time for ROBO PUMP should be displayed.

[Items of Setting]

- Total suction count threshold
- Total motor rotation time threshold

The setting for suction count of ROBO PUMP to output warnings should be established.

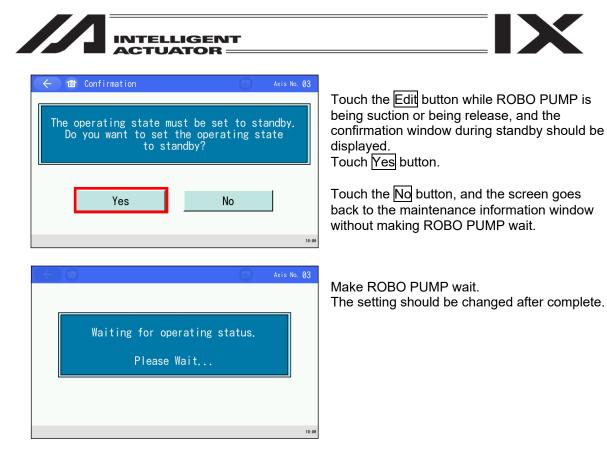
The setting for motor revolution time of ROBO PUMP to output warnings should be established.

🔶 🎯 Maintenance information	Ax i	s No. 03
Total suction count	27	
Total suction count threshold	234, 567, 890	Edit
Total motor rotation time	0:00:02 d:h:m	
Total motor rotation time threshold	1234:12:34 d:h:m	Edit
Overload warning level	90 %	Edit
	·	-
		10:0

Touch Edit button on the right of total suction count threshold to change the setting for the total suction count threshold.

🔶 🎯 Maintenance information	Ax i	s No. 03
Total suction count Total suction count threshold Total motor rotation time Total motor rotation time threshold Overload warning level	27 234,567,890 0:00:02 d:h:m 1234:12:34 d:h:m 90 %	Edit Edit Edit
		10:00

Touch Edit button on the right of total motor rotation time threshold to change the setting for the total motor rotation time threshold.



[2] Over Load Warning

With the motor rising temperature estimated to generate an overload alarm set as 100%, an overload warning can get output when the temperature has exceeded the rate of the motor temperature set in this window.

← 📾 Maintenance information	the Ax	is No. 01
Total travel count	123, 456	
Total travel count threshold	1,000,000	Edit
Total travel distance	756,643 m	m⇔km
Total travel distance threshold	1,250,000 m	Edit
Overload warning level	70 %	Edit
Actuator replacement time	2020/12/31 11:50:27	
Replace Act Clear PairID		
		18

Touch Edit button on the right of Over load warning level to change the setting for the over load warning level.

[Items of Setting]

Overload warning level

Set the level to generate the over load warning alarm. Set to 100, and a warning should be generated.

When Over load Level has Exceeded Setting Rate

Alarm display Al	arm list Check mod	lel num.	Inquiry	
Alarm descript.				
Alarm group	Warning	Aları	n level	Operation releas
Name Maintena	nce warning 3			
Descr. Please be in	formed that the thres	hold value on" window)	for the " entered	Overload warning leve
has been rea Before the E maintenance	ched. lecylinder stops with by following the trou	"Overload bleshooting	are reco	isual inspection and mmended.
has been rea Before the E maintenance * To disable	iched. lecylinder stops with	"Overload bleshooting the settin	are reco	isual inspection and mmended.
has been rea Before the E maintenance * To disable	ched. Hecylinder stops with by following the trou this warning, change	"Overload bleshooting the settin	are reco	isual inspection and mmended. rload

You will be notified as an overload warning in Maintenance warning 3 window. LED lamps on ROBO PUMP flash red and green in turn.





19.4 Simple Data Setting (Position Editing)

Setting and editing of data related to operation such as forward end, backward end, velocity (V), acceleration (A), deceleration (D) and pressing setting can be performed. Also, JOG operation can be performed.

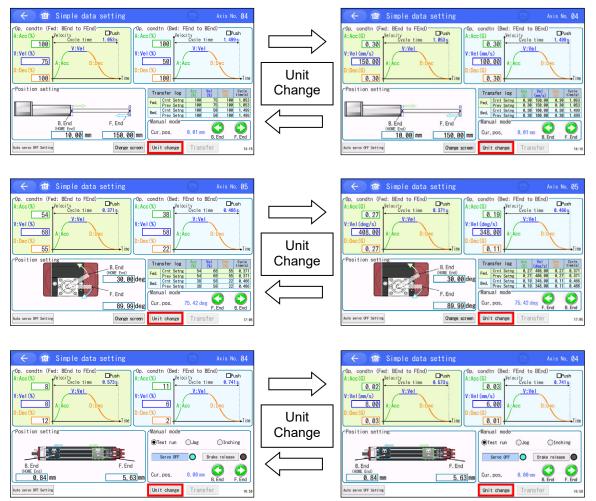
EC menu1	th Axis No. 04
Monitor	Test run
🟒 Simple data setting	Alarm list
Edit parameter	Information
SD memory card	Troubleshooting
< To main menu	To EC menu2 >
	14:18

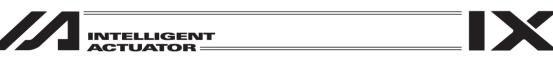
Touch Simple data setting on the Menu 1 screen.

The simple data setting window appears.

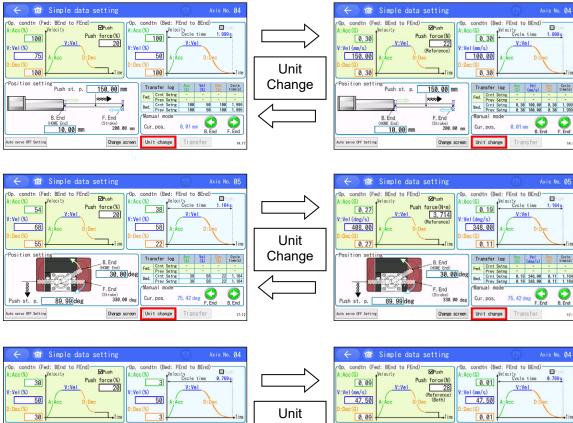
Unit change button switches the unit between % and mm/s [deg/s] for velocity, % and G for acceleration / deceleration and % and N [N·m] for pressing force.

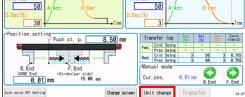
Simple Data Setting window (Positioning Operation) Refer to [19.4.1 Positioning Operation]

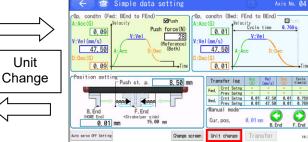


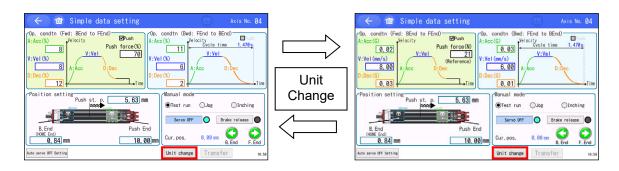


Simple Data Setting window (Pressing Operation) Refer to [19.4.2 Pressing Operation]









Caution: When using the 3-finger gripper (EC-GRTR14) with gripping at the inner 1\ diameter, use the displayed unit in [%], not in [N], for grip force (pressing force).

The 3-finger gripper is different in the grip force for outer diameter grip and inner diameter grip.

- The displayed unit [N] should display the grip force for the outer diameter grip even in use with the inner diameter grip.
- To set up the grip force for the inner diameter grip, refer to the graph shown in [Relation Between Grip Force and Current Limit] in 3-finger gripper Instruction Manual (ME3829) to set it up in [%].

C F, End

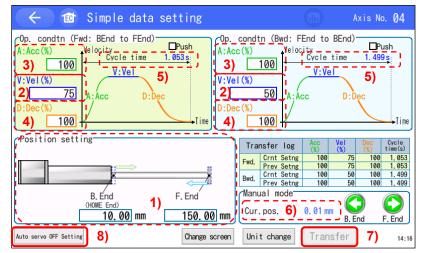
0, 01 mm





19.4.1 Positioning Operation

Shown below is the content of setting for the position data for the positioning operation. (Other than Rotary and Wire Cylinder)



1) Position setting [mm]	:	Input the positions of the backward end and forward end. Positioning coordinate value. Enter is as the distance from the home position. The unit is mm and input can be made down to two decimal places.
2) Vel [% or mm/s] N	: lote	Set the velocity of operation. Set a number from 1 to 100%. Also, the unit can be switched to mm/s by pressing Unit change. Input can be made down to the two decimal places for mm/s. Figure out the minimum velocity by using the formula below. Min. Velocity [mm/s] = Lead Length [mm] / 800 / 0.001 [s] (Number of 200V servo motor type encoder pulse: 16384)
3) Acc [% or G]	:	Set the acceleration at start. Set a number from 1 to 100%. Also, the unit can be switched to G by pressing <u>Unit change</u> . Input can be made down to the two decimal places for G.
4) Dec [% or G]	:	Set the deceleration at stop. Set a number from 1 to 100%. Also, the unit can be switched to G by pressing <u>Unit change</u> . Input can be made down to the two decimal places for G.
5) Cycle time [s]	:	The cycle time calculated from the velocity and acceleration / deceleration set is shown.
6) Cur. pos. [mm]	:	Displays the current position.
7) Transfer	:	Once the data setting is complete, press Transfer to transfer the data to the ELECYLINDER.
8) Auto servo OFF Setting	g :	Setting the Auto servo OFF delay time. [Refer to 19.4.5 Auto servo OFF]
A Caution: If moving to	anoth	her window without transferring data, all the data settings will go

Caution: If moving to another window without transferring data, all the data settings will go back to those before. Also, without transferring, operation by the manual operation switch will not be available.





Shown below is the content of setting for the position data for the positioning operation. (Rotary)

🔶 🗃 Simple data s	setting		Axis No. 05
Op. condtn (Fwd: BEnd to FEnd) A: Acc (%) Velopity Cycle time 3) 54 V:Vel V:Vel (%) V:Vel V:Vel D: Dec (%) A: Acc D:Dec	0.371s 3) 38 5) V:Vel (%) 50	Velopity Cycle time V:Vel	0.466s; 5) Dec
Position setting	B. End (HOWE End) 30. 00 deg F. End 89. 99 degy Hannal mo (Cur. pos.	ietng 54 6i ietng 54 6i ietng 54 6i ietng 38 5i ietng 38 5i	55 0.371 8 22 0.466 8 22 0.466
Auto servo OFF Setting 8)	Change screen Unit chang		7) 17:05

1) Position setting [deg]	 Input the positions of the backward end and forward end. Positioning coordinate value. Enter is as the distance from the home position. The unit is deg and input can be made down to two decimal places.
2) Vel [% or deg/s] Note	: Set the velocity of operation. Set a number from 1 to 100%. Also, the unit can be switched to deg/s by pressing <u>Unit change</u> . Input can be made down to the two decimal places for deg/s. <i>Min. Velocity: 20deg/s</i>
3) Acc [% or G]	: Set the acceleration at start. Set a number from 1 to 100%. Also, the unit can be switched to G by pressing <u>Unit change</u> . Input can be made down to the two decimal places for G.
4) Dec [% or G]	: Set the deceleration at stop. Set a number from 1 to 100%. Also, the unit can be switched to G by pressing <u>Unit change</u> . Input can be made down to the two decimal places for G.
5) Cycle time [s]	: The cycle time calculated from the velocity and acceleration / deceleration set is shown.
6) Cur. pos. [mm]	: Displays the current position.
7) Transfer	: Once the data setting is complete, press Transfer to transfer the data to the ELECYLINDER.
8) Auto servo OFF Setting	: Setting the Auto servo OFF delay time. [Refer to 19.4.5 Auto servo OFF]
Caution: If moving to an back to those I	other window without transferring data, all the data settings will go before.

Also, without transferring, operation by the manual operation switch will not be

available.



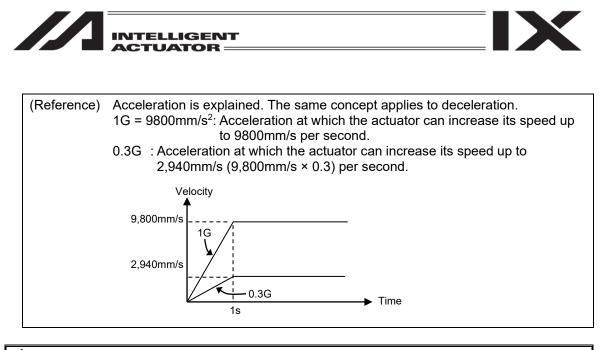


Shown below is the content of setting for the position data for the positioning operation. (Wire Cylinder)

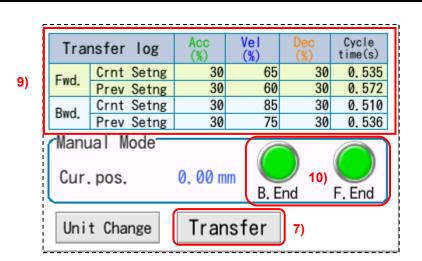
🔶 🗃 Simple data setting	Axis No. 04
Op. condtn (Fwd: BEnd to FEnd) Op. cond A: Acc (%) Velgeity Delgeity 3) 8 V:Vel (%) V:Vel (%) V:Vel 5) V:Vel (%) A: Acc D:Dec D:Dec (%) 4) 12	tn (Bwd: FEnd to BEnd) Velopity 111 V:Vel 0.741s 6 A:Acc D:Dec 2
	ual mode Test run Ojog Oinching Servo OFF O Brake release
B. End (HOWE End) 0. 84 mm 5. 63 mm	<u>6)</u> . pos. 0.00 mm . <u>B, End</u> F. End
Auto servo OFF Setting 8)	it change Transfer 7) 16:58

1) Position setting [mm]	 Input the positions of the backward end and forward end. Positioning coordinate value. Enter is as the distance from the home position. The unit is mm and input can be made down to two decimal places.
2) Vel [% or mm/s]	: Set the velocity of operation. Set a number from 1 to 100%. Also, the unit can be switched to mm/s by pressing <u>Unit change</u> . Input can be made down to the two decimal places for mm/s.
3) Acc [% or G]	: Set the acceleration at start. Set a number from 1 to 100%. Also, the unit can be switched to G by pressing <u>Unit change</u> . Input can be made down to the two decimal places for G.
4) Dec [% or G]	: Set the deceleration at stop. Set a number from 1 to 100%. Also, the unit can be switched to G by pressing <u>Unit change</u> . Input can be made down to the two decimal places for G.
5) Cycle time [s]	: The cycle time calculated from the velocity and acceleration / deceleration set is shown.
6) Cur. pos. [mm]	: Displays the current position.
7) Transfer	: Once the data setting is complete, press Transfer to transfer the data to the ELECYLINDER.
8) Auto servo OFF Setting	: Setting the Auto servo OFF delay time. [Refer to 19.4.5 Auto servo OFF]

Caution: If moving to another window without transferring data, all the data settings will go back to those before. Also, without transferring, operation by the manual operation switch will not be available.



Caution: If the actuator or work part receives impact or generates vibration, lower the acceleration/deceleration. If the system is used continuously with the actuator or work part receiving impact or generating vibration, the life of the actuator may be significantly reduced.



9) Transfer log

Once the data of the velocity and acceleration/deceleration for the way forth and the way back is transferred by pressing Transfer, the old setting parameters will be shown in the previous setting area and the new parameters in the current setting area, and the cycle time calculated from these parameters will be displayed.

10) Manual Mode

At <u>B.End</u> or <u>F.End</u> in the manual operation area, and the actuator can be moved forward or backward. (JOG Operation)

Operation is available when B.End and F.End are activated in green. If they are not activated in green, the setting values are not transferred. Transfer the parameters to the ELECYLINDER by pressing Transfer, first.

(When the home-return operation is incomplete, the button actuates as the home-return button, not forward end and backward end button. Touch it and the home-return operation should be performed.)



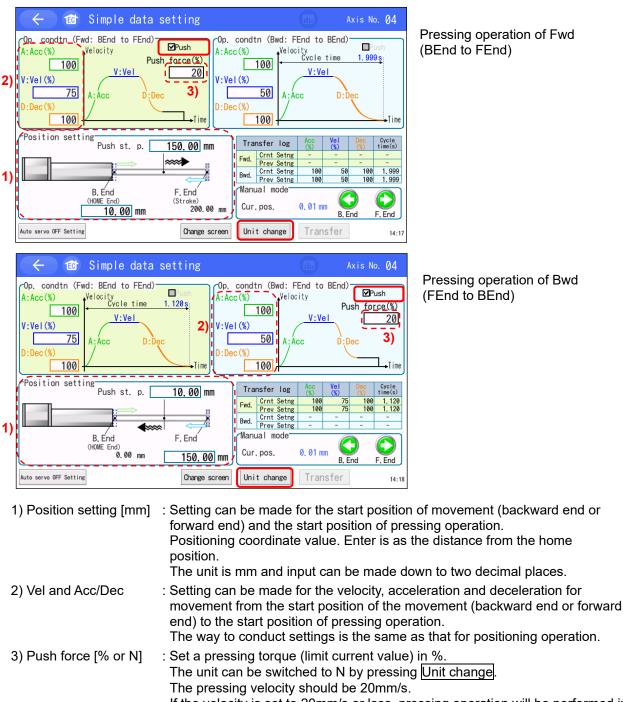


19.4.2 Pressing Operation

Shown below is the content of setting for the position data for the pressing operation. (Other than Rotary and Wire Cylinder)

Touch \Box for pressing and put the check mark \checkmark on, and the screen shows the pressing operation setting window.

(If Push is not shown, the pressing operation should not be available.)



If the velocity is set to 20mm/s or less, pressing operation will be performed in the setting velocity.

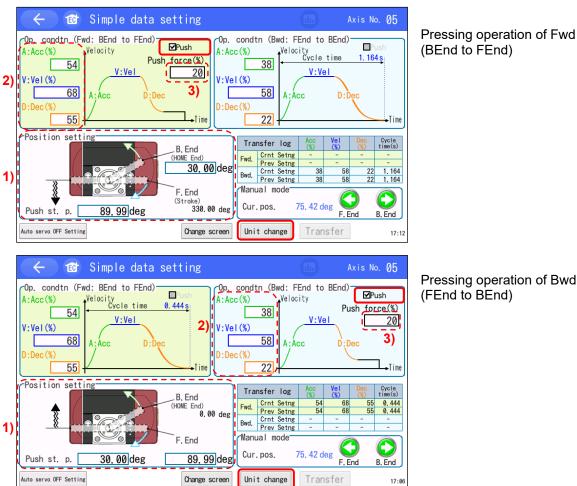
Transfer log : The transfer log will not be displayed in pressing operation.

The transfer operation and manual operation is the same as the positioning operation. [Refer to 19.4.1 Positioning Operation]





Shown below is the content of setting for the position data for the pressing operation. (Rotary) Touch \Box for pressing and put the check mark \checkmark on, and the screen shows the pressing operation setting window.



(BEnd to FEnd)

Pressing operation of Bwd	
(FEnd to BEnd)	

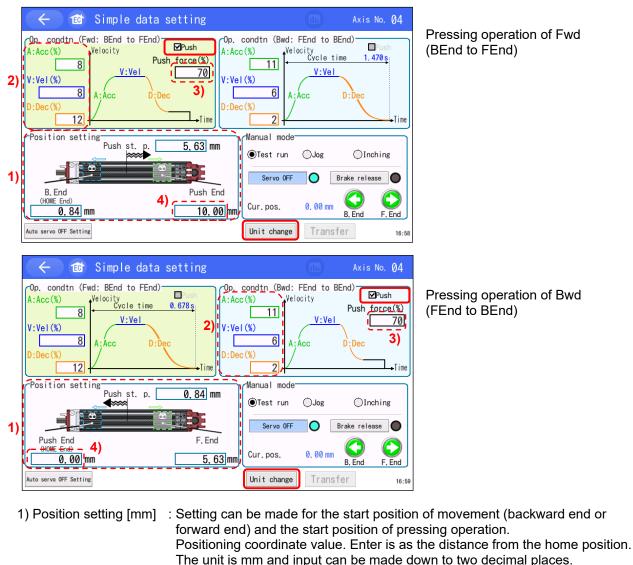
1) Position setting [deg]	: Setting can be made for the start position of movement (backward end or forward end) and the start position of pressing operation. Positioning coordinate value. Enter is as the distance from the home position. The unit is deg and input can be made down to two decimal places.
2) Vel and Acc/Dec	 Setting can be made for the velocity, acceleration and deceleration for movement from the start position of the movement (backward end or forward end) to the start position of pressing operation. The way to conduct settings is the same as that for positioning operation.
3) Push force [% or N•m]	: Set a pressing torque (limit current value) in %. The unit can be switched to N•m by pressing <u>Unit change</u> . The pressing velocity should be 20deg/s. If the velocity is set to 20deg/s or less, pressing operation will be performed in the setting velocity.
Transfer log	: The transfer log will not be displayed in pressing operation.

The transfer operation and manual operation is the same as the positioning operation. [Refer to 19.4.1 Positioning Operation]





Shown below is the content of setting for the position data for the pressing operation. (Wire Cylinder) Touch \Box for pressing and put the check mark \checkmark on, and the screen shows the pressing operation setting window.



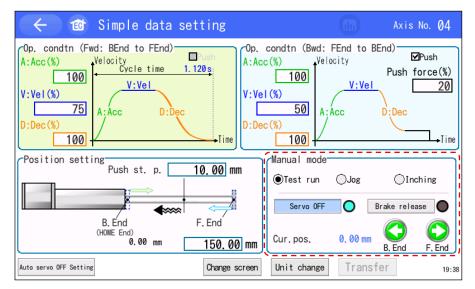
2) Vel and Acc/Dec	 Setting can be made for the velocity, acceleration and deceleration for movement from the start position of the movement (backward end or forward end) to the start position of pressing operation. The way to conduct settings is the same as that for positioning operation.
3) Push force [% or N]	 Set a pressing torque (limit current value) in %. The unit can be switched to N by pressing <u>Unit change</u>. The pressing velocity should be 20mm/s. If the velocity is set to 20mm/s or less, pressing operation will be performed in the setting velocity.
4) Push End [mm]	: Set up the position to detect the pressing operation is missed. Positioning coordinate value. Enter is as the distance from the home position. The unit is mm and input can be made down to two decimal places.

The transfer operation and manual operation is the same as the positioning operation. [Refer to 19.4.1 Positioning Operation]





19.4.3 Manual Mode



Once the simple data setup window is shown, the manual operation box should show up in the right bottom of the screen.

Selection can be made with \circ (radio buttons) from Trial Run, Jog and Inching.

(1) Test Run

Select Test run in rac	lio buttons (\bigcirc).	,	
Manual Mode				
⊙Test run	⊖Jog	◯Inchii	ng	OInching
Servo OFF	0	Brake rel.		Brake rel.
Cur.pos.	0. 00 mm	B. End F	C F. End	B. End F. End

It should be switched over between power on and off by Servo OFF. It should be switched over between brake compulsory release on and off by Brake rel.

The actuator moves to the backward end at B. End. Make operation using velocity and acceleration/deceleration in the operation conditions (Way back: from F. End to B. End).

The actuator moves to the forward end at $\overline{F. End}$. Make operation using velocity and acceleration/deceleration in the operation conditions (Way forward: from B. End to F. End).

Both forward and backward operations should activate while the button is touched and held. <u>Release the button</u> and the operation should stop.

B. End and F. End are ready for operation when they are shown in green. If they are not green, the set values are not transferred. Transfer the set value data to an ELECYLINDER in advance by pressing Transfer button.



(2) JOG

Select JOG in radio	()		
⊖Test run	€Jog	◯Inc	hing
Jog vel.	change	1	mm/s
Cur.pos.	0. 00 mm	Backward	Forward

An actuator keeps moving backward while touching Backward button. Regardless of the backward end setting, the actuator should move backwards till the home position.

An actuator keeps moving forward while touching Forward button. Regardless of the forward end setting, the actuator should move forwards till the stroke end.

Touch Jog vel. change button and the jog velocity to move backward/forward should change in the order below.

```
1 mm/s [deg/s] \rightarrow 10 mm/s [deg/s] \rightarrow 30 mm/s [deg/s] \rightarrow 50 mm/s [deg/s] \rightarrow 100 mm/s [deg/s]
```

(3) Inching

0			
Select Inchina	in radio	buttons	(\bigcirc)

Manual Mode			
⊖Test run	⊖Jog	€Inc	ching
Inc. dis.	change	0.50	mm
Cur.pos.	0. 00 mm	Backward	Forward

Touch Backward button and an actuator should move backward in a certain distance. Regardless of the backward end setting, the actuator should move backwards till the home position.

Touch Forward button and an actuator should move forward in a certain distance. Regardless of the forward end setting, the actuator should move forwards till the stroke end.

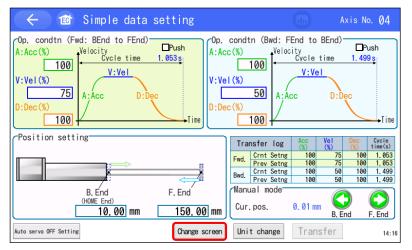
Touch Inc. dis. change button and the distance to move in one touch should change in the order below.

0.01 mm [deg] \rightarrow 0.10 mm [deg] \rightarrow 0.50 mm [deg] \rightarrow 1.00 mm [deg] \rightarrow 5.00 mm [deg]





(4) Transfer log display (Not displayed for wire cylinder)



Touch Change screen button and the screen should be switched over between the manual operation display and data transfer history display.

Switchover is available in any condition of Test run, Jog and Inching.

Tra	nsfer	log	Acc (%)	Vel (%)	Dec (%)	Cycle time(s)
Fwd.	Crnt	Setng	30	60	30	1.448
Fwa.	Prev	Setng	30	60	30	1.448
Bwd.	Crnt	Setng	30	75	30	1. 191
Dwu.	Prev	Setng	30	75	30	1. 191
	pos.		0.00 m	m C	Ind	F. End

In the data transfer history display, the manual operation buttons work as **B**. End and **F**. End buttons for Test Run.

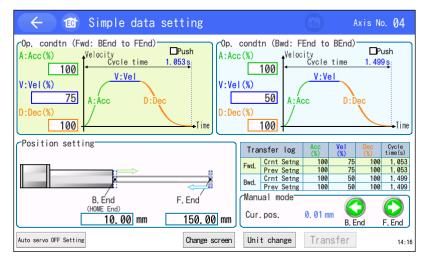
Once you switch the screen back to the manual operation display, the setting should go back to the test run.





19.4.4 Mounting Orientation Setting / Payload Setting

By setting "Mounting Orientation" and "Payload [kg]" on the way back and forth in advance, the acceleration and deceleration you can choose can be determined.

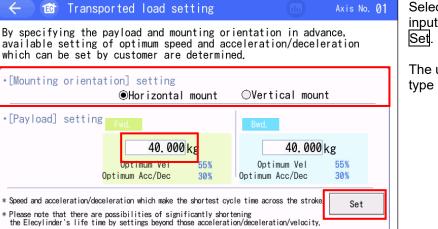


Touch either acceleration. velocity or deceleration.

	Input 1 c	range ~ 100		
7	8	9	ESC	
4	5	6		
1	2	3		
0 BS CLR ENT				
Load setting(Fwd) 4.000 kg Change				

The numeric key pad should open. Touch Change on the right bottom.

The models not applicable for the payload setting (refer to next page) should not have Change displayed.



Select "Mounting orientation", input "Payload" and then touch

The unit is "kg-m2" for rotary

 \leftarrow





🗲 🇃 Simple data setting	Axis No. 04
A:Acc(%) 100 V:Vel(%) D:Dec(%) Velocity Cycle time 1.053s V:Vel V:Vel A:Acc(%) V:Vel(%) D:Dec(%)	Well FEnd to BEnd) Velocity Cycle time 000 V:Vel 500 A:Acc D:Dec Time
Find.	sfer log Acc (%) Vel (%) Dec (%) Cycle time(%) Crnt Setng 100 75 100 1.053 Prev Setng 100 50 100 1.053 Crnt Setng 100 50 100 1.499 al mode 100 50 100 1.499 pos. 0.01 mm B. End F. End F. End
Auto servo OFF Setting Unit	change Transfer 14:16

Touch an operational condition to be set or adjusted.

Input range 1 ~ 100				
7	8	9	ESC	
4	5	6		
1	2	3		
0	BS	CLR	ENT	
Load setting(Fwd) 4.000 kg Change				

Input a value in the numeric keys and touch ENT.

Tra	nsfer log	Acc (%)	Vel (%)	Dec (%)	Cycle time(s)
Fwd.	Crnt Setng	10	80	10	0.683
Fwa.	Prev Setng	20	100	20	0.514
Bwd.	Crnt Setng	10	80	10	0.683
Dwa.	Prev Setng	20	100	20	0.514
	pos.	1. 53 m	m C	Ind	F. End
Uni	t Change	Trar	nsfer		

Touch Transfer.

The values should get written to the controller, <u>B. End</u> and <u>F. End</u> should turn into green and "Transfer log" should be updated.

Payload Setting Not Applicable Model

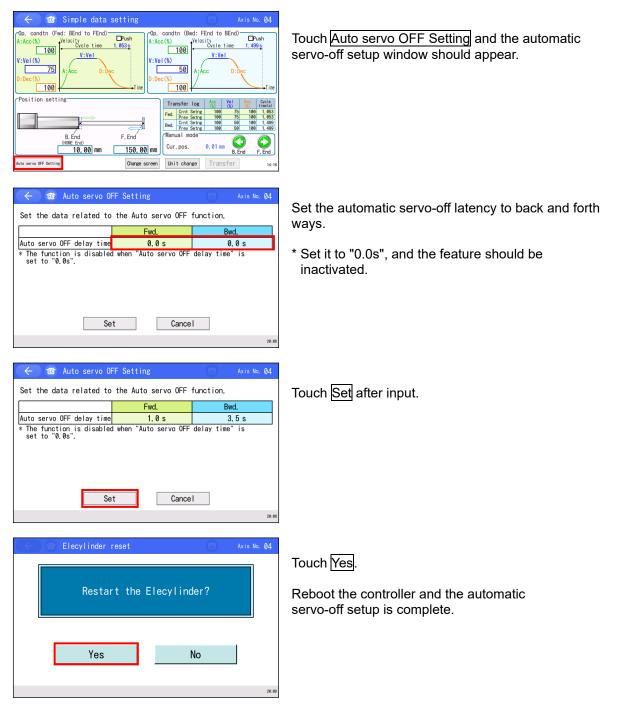
- Ultra Mini ELECYLINDER (EC-SL3 , GDS3L, GDB3 , T3)
- Gripper Type (EC-GRB8M, GRB10M, GRB13M, GRB13L)
- Stopper Cylinder ECO Type (EC-ST15ME)





19.4.5 Auto servo OFF

When the latency is set to the automatic servo-off, the servo should turn off once the set time has passed after the operation is completed. The automatic servo-off latency can be set to each of back and forth ways.



The applicable version of ELECYLINDER

Models	Version
24V system ELECYLINDER	V000D or later
200V system ELECYLINDER	V0005 or later
Ultra Mini ELECYLINDER	V0002 or later





19.5 ROBO PUMP Setting

The ROBO PUMP Settings button should be displayed. Touch it and the screen shifts to the ROBO PUMP setting window.

In the ROBO PUMP setting window, settings for suction of ROBO PUMP, release, display of status monitor, pressure setting and detail settings are available.



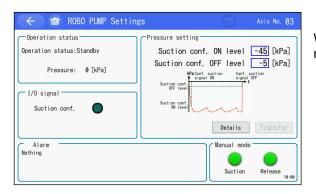
Touch [ROBO PUMP Settings] button on the EC Menu 1 window.

The ROBO PUMP setting window appears.

The contents of pressure setting may differ depending on the PIO patterns and enable or disable of the energy-saving mode.

← @ ROBO PUMP Setting	s Axis No. 03
Operation status Operation status:Standby Pressure: 0 [kPa]	Pressure setting Suction conf. ON level -45 [kPa] Suction conf. OFF level -5 [kPa] Suction conf. Suction co
Alarm	Nanual mode Suction Release 10.00

When PIO pattern is 0 or 1, and energy-saving mode is disabled



When PIO pattern is 0 or 1, and energy-saving mode is enabled

INTELLIGENT ACTUATOR —
ACIUAIOR ===



🔶 🇃 ROBO PUMP Settings	Axis No. 03
Operation status:Standby Pressure: 0 [kPa] I/0 signal Suction conf. Release conf.	Level of suction conf45 [kPa] Level of release conf5 [kPa] Level of release conf5 [kPa] Level of release conf5 [kPa] Level of configuration Conf. (reliase release conf5 [kPa] Level of Level of Configuration Conf. (reliase Level of Configuration Conf. (reliase Level of Configuration Configuratio
Alarm Nothing	Manual mode Suction Release

When PIO pattern is 2, and energy-saving mode is disabled

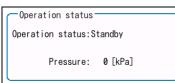
← ☎ ROBO PUMP Settings	Axis No. 03
Operation status Operation status:Standby Pressure: 0 [kPa]	Pressure setting Level of suction conf45 [kPa] Level of release conf5 [kPa] Macon. suction Conf. release signal (Macon. Suction Conf. release signal (Macon. Suction Conf. release suction conf. Level of Level of Leve
Alarm	Manual mode Suction Release

When PIO pattern is 2, and energy-saving mode is enabled





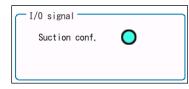
19.5.1 Operation Status



The detail of display is as follows:

- 1) Operation status : The operation status of ROBO PUMP should be displayed.
- 2) Pressure [kPa] : Pressure at the vacuum pump part should be displayed.

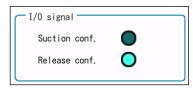
19.5.2 I/O Signal



When PIO pattern is 0 or 1

The detail of display is as follows:

1) Suction conf. : It should turn on when suction is complete. It should be off when suction is not complete.



When PIO pattern is 2

The detail of display is as follows:

- 2) Suction conf. : It should turn on when suction is complete.
- 3) Release conf. : It should turn on when release is complete.





19.5.3 Pressure Setting

Pressure setting
Suction conf. ON level -45 [kPa]
Suction conf. OFF level5 [kPa]
kPa Signal ON signal OFF
Suction conf. OFF level
Suction conf.
ON level
Details Transfer

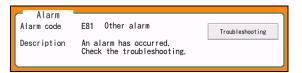
The display, setting details and process when each button is touched are as shown below.

1) Suction conf. ON level [kPa]	: The upper limit of pressure to terminate suction should be set up. The unit is [kPa] and integers in negative can also be input.
	Settings cannot be changed during suction or release in the monitoring mode.
2) Suction conf. OFF level [kPa]	 The lower limit of pressure to terminate release should be set up. The unit is [kPa] and integers in negative can also be input. Settings cannot be changed during suction or release in the monitoring mode.
3) Suction conf. level [kPa]	: The upper limit of pressure to terminate suction should be set up. The unit is [kPa] and integers in negative can also be input. Settings cannot be changed during suction or release in the monitoring mode.
4) Release conf. level [kPa]	: The lower limit of pressure to terminate release should be set up. The unit is [kPa] and integers in negative can also be input. Settings cannot be changed during suction or release in the monitoring mode.
5) Details button	: The ROBO PUMP Advanced Settings window should be displayed [Refer to 19.5.8.1 ROBO PUMP Advanced Settings 1 Window (Energy-saving mode) and 19.5.8.2 ROBO PUMP Advanced Settings 2 Window (Level Setting)]
6) Transfer button	: The changed setting should be sent to ROBO PUMP. When there is no change made to the settings or during suction or release, the Transfer button should be deactivated.
7) Pressure setting graph	: The relation between the suction confirmation ON and OFF levels and the pressure should be shown.





19.5.4 Alarm

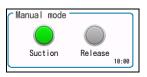


The display and process when each button is touched are as shown below.

1) Alarm code

- : An occurred alarm code should be displayed. "None" should be shown when there is no alarm occurred.
- 2) Description : The details of an occurred alarm should be displayed.
- 3) Troubleshooting button : The screen moves to the troubleshooting window.

19.5.5 Manual Mode



The process when each button is touched are as shown below.

 Suction button
 Touch it and the suction operation should start. When it is in standby and data is not yet sent, it should be valid.
 Release button
 Touch it and the release operation should start. When PIO Pattern = 0 or 2, it should be valid during release or in standby. When PIO Pattern = 1, it should be valid only during suction.





19.5.6 Release Warning Confirmation Window

When it is attempted to move to the EC Menu 1 window or Select Axis window during suction, the release warning confirmation window should open.

← 🕜 Warning			Axis No. Ø3		
If you switch to the screen, you cannot release. Otherwise, the workpiece may drop unexpectedly, resulting in personal injury or damage to the workpiece or equipment. Execute the release operation to change to another screen. Are you sure?					
Yes : After release, then switch to the screen, No : Screen transition without the release operation. Cancel : Back to previous screen without release.					
Yes	No	Cance			
			10:1		

The process when each button is touched are as shown below.

Yes button
 The screen should go to the EC Menu 1 window or Select Axis window after the release process is completed.
 No button
 The release process should not be performed before the screen goes to the EC Menu 1 window or Select Axis window.
 Cancel button
 The release process should not be performed, and the screen should go back to the ROBO PUMP Settings (ROBO PUMP Advanced Settings) window.

19.5.7 Deleting Data in Edit Confirmation Window

When data has been edited, but the Transfer button was not touched and attempted to go to the EC Menu 1 window or Select Axis window, the Deleting Data in Edit Confirmation window should come out.

Elecylinder reset		Axis No. 03
Restart the Elec	ylinder?	
Yes	No	10:00

The process when each button is touched are as shown below.

1) Yes button

- : The data should be deleted and the screen goes to the EC Menu 1 window or Select Axis window.
- 2) No button : The data should not be deleted, and the screen goes back to the ROBO PUMP Settings (ROBO PUMP Advanced Settings) window.





19.5.8 ROBO PUMP Advanced Settings Window

By touching the Details button in the ROBO PUMP Settings window, the screen goes to ROBO PUMP Advanced Settings Window 1. In ROBO PUMP Advanced Settings Window 1, the energy-saving mode enable/disable can be switched over.

🔶 ᡝ ROBO PUMP Setting	s Axis No. 03
Operation status Operation status:Standby Pressure: 0 [kPa]	Pressure setting Suction conf. ON level45 [kPa] Suction conf. OFF level5 [kPa] Suction conf
Nothing	Nanual mode Suction Ite:N0

 Conf. suction
 Conf. suction
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 Suction conf

Touch the Details button in the ROBO PUMP Settings window.

The ROBO PUMP Advanced Settings window 1 should be displayed.





19.5.8.1 ROBO PUMP Advanced Settings 1 Window (Energy-saving mode)

🗧 🔶 📧 ROBO PUMP Advanced Settings	Axis No. 03
Energy-saving mode Descrptn	●Disable ○Enable
Suction conf, Off level Suction conf, UN level	
By touching Descrptn (Description) button, the description of the parameter will be displayed.	↓Nx pg
	10:00

The display, setting details and process when each button is touched are as shown below.

1) Descrptn button	: Touch it and an explanation of the energy-saving mode should be shown at the bottom of the window.
2) Disable, Enable button	 Setting for disable and enable of the energy-saving mode can be conducted. Touch O (radio button) at the item that you would like to set up or text string. O (radio button) of the selected item should turn into black.
3) Pressure setting graph	: The relation between the suction confirmation ON and OFF levels and the pressure should be shown.
4) Energy-saving mode	: Touch the Descrptn button, and an explanation of the energy- saving mode should be shown.
5) ↓ Nx pg button	: ROBO PUMP Advanced Setting Window 2 (Level Setting) should be displayed.





19.5.8.2 ROBO PUMP Advanced Setting 2 Window (Level setting)

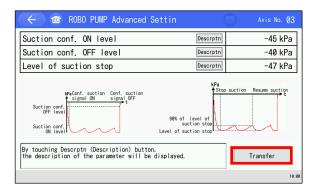
By touching the <u>\[Nx pg</u>] button in ROBO PUMP Advanced Settings Window 1, the screen goes to ROBO PUMP Advanced Settings Window 2. In ROBO PUMP Advanced Settings Window 2, setting of suction confirmation ON level, suction confirmation OFF, suction confirmation and release confirmation level can be conducted. The suction confirmation ON level, suction confirmation OFF, suction confirmation and release confirmation level are to be determined by the setting of the PIO patterns.

Also, when the energy-saving mode is enabled, the setting of the suction stop level can be established.

🖌 🇃 ROBO PUMP Advanced Settings		Axis No. 03
Energy-saving mode Descrptn	◉Disable	⊜Enable
Suction conf. suction GFF level Suction conf. Suction conf. Suction conf. Suction conf. Suction conf. Suction conf.		
By touching Descrptn (Description) button, the description of the parameter will be displayed.	↓N	lx pg
		10:00

Touch the \bigcup Nx pg button in the ROBO PUMP Advanced Settings window 1.

ROBO PUMP Advanced Settings Window 2 should be displayed.



🔞 ROBO PUMP Advanced Settin Axis No. 03 -45 kPa Level of suction conf. Descrptn Level of release conf. Descrptn -7 kPa Level of suction stop Descrptn -47 kPa suction Conf. suction Conf. sucti signal ON signal OFF 90% of level of suction sto Le Level of suction ste By touching Descrptn (Description) button, the description of the parameter will be displayed. Transfer 10:0 When PIO pattern is 0 or 1

When PIO pattern is 2





The display, setting details and process when each button is touched are as shown below.

1) Suction conf. ON level	: The pressure to turn the suction confirmation signal ON is set up. Integers in negative can be input. The suction confirmation signal should turn ON when the pressure gets below the set value.
2) Suction conf. OFF level	 The pressure to turn the suction confirmation signal OFF is set up. Integers in negative can be input. The suction confirmation signal should turn OFF when the pressure gets above the set value.
3) Level of suction cont.	: The pressure to turn the suction confirmation signal ON is set up. Integers in negative can be input. The suction confirmation signal should turn ON when the pressure gets below the set value.
4) Level of release conf.	 The pressure to turn the release confirmation signal ON is set up. Integers in negative can be input. The release confirmation signal should turn ON when the pressure gets below the set value. It should turn OFF when the suction signal turns on.
5) Level of suction stop	: The pressure to stop the suction action is set up. Integers in negative can be input. It is available to set up when the energy-saving mode is enabled. Once the pressure reaches the value set in this parameter, the suction action stops, and the suction action resumes when the pressure goes above 90% of the set value.
6) Descrptn button	: Touch it and an explanation for the level setting should be shown at the bottom of the window.
7) Parameter Description Box	: Touch the Descrptn button, and an explanation for the level setting should be shown.
8) Transfer button	: The changed setting should be sent to ROBO PUMP.





19.6 Edit Parameter

Parameters are displayed and edited.



Touch Edit parameter button on the EC menu 1 window.

A parameter table is displayed. (The displayed items may differ depending on models.)

1.Operation range adjustment	Descrptn	250. 00 mm
2.AutSwitch"LS" SignI Detctn Rng Adjst	Descrptn	0. 10 mm
3.HOME direction change	Descrptn	©0pposite⊛Default
4.HOME position adjustment	Descrptn	3. 00 mm
5.Smooth accel/decel setting	Descrptn	◉Disable ○Enable
6.Current control setting while stop	Descrptn	◉Disable ○Enable
7. Reserve		
8.Power saving setting	Descrptn	◉Disable ○Enable
By touching Descrptn (Description) button, the description of the parameter will be displayed.		

Next page shows the basic operation in the edit parameter window.





(1) Item to input a setting value

1.Operation range adjustment	Descrpt	n		250.0)0 mm
2.AutSwitch"LS" Signl Detctn Rng Adjst	Descrpt	n		0.1	0 mm
3.HOME direction change	Descrpt	n ()0ppo	si te 🌒	Default
4.HOME position adjustment	Descrot			20	10 mm
5.Smooth accel/decel setting	De	-	_		25
6.Current control setting while stop	De 7		8	9	ESC
7. Reserve	4	Т	5	6	BS
8.Power saving setting	De 1	t	2	3	CLR
By touching Descrptn (Description) button. the description of the parameter will be displayed.			2		

Touch a value that you would like to set up and the numeric keys should appear.

Touch numbers on the numeric keys to input and touch ENT button.

When the process needs to be cancelled after the numeric keys appear, touch ESC button.

(2) Item to tach \mbox{O} (radio button) to select

1.Operation range adjustment	Descrptn	250. 00 mm
2.AutSwitch"LS" SignI Detctn Rng Adjst	Descrptn	0. 10 mm
3.HOME direction change	Descrptn	⊖Opposite @Default
4.HOME position adjustment	Descrptn	3. 00 mm
5.Smooth accel/decel setting	Descrptn	⊙Disable ⊜Enable
6.Current control setting while stop	Descrptn	⊙Disable ⊜Enable
7. Reserve		
8.Power saving setting	Descrptn	⊙Disable ⊜Enable
By touching Descrptn (Description) button, the description of the parameter will be displayed.		

Touch O (radio button) of the item or the text itself that you would like to select.

A black dot will be marked in O (radio button) that you selected.

(3) Descriptions

🔶 🗃 Parameter edit		dh Axis No. 01	
1.Operation range adjustment	Descrptn	250. 00 mm	
2.AutSwitch"LS" Signl Detctn Rng Adjst	Descrptn	0. 10 mm	
3.HOME direction change	Descrptn	©0pposite@Default	
4.HOME position adjustment		3. 00 mm	
5.Smooth accel/decel setting		●Disable ○Enable	
6.Current control setting while stop		●Disable ○Enable	
7. Reserve			
8.Power saving setting	Descrptn	⊙Disable ⊜Enable	
Actuator operation range (stroke) adjustment. Please do not input the value longer than the actual stroke. It may cause damage to the unit.			
		10:00	

Touch Descrptn button and the descriptions of the setting items will be shown in the bottom of the screen.





(4) Reflecting Parameters

Elecylinder reset		Axis No. 01
Restart the Elecylinder	r?	
Yes No	1	
		10:00

Touch EC Home Button once all the settings are completed.

A confirmation window asking "Restart?" will come up. Touch Yes button if you have made a change.

Touch the No button and the screen returns to the edit parameter window without reflecting the parameters you set up. To reflect the parameter you have set, you must restart ELECYLINDER or ROBO PUMP.

Caution: If ELECYLINDER or ROBO PUMP is not restarted, the parameter that has been rewritten does not translate to the intended action. The parameter will become effective once ELECYLINDER or ROBO PUMP is restarted or power is reconnected.

Elecylinder reset	Axis No. Ø1
Restarting the Elec Please wait a mi	
	10:00

ELECYLINDER or ROBO PUMP is restarted, after which the parameter you have set will be reflected.

(5) Data Edit Prohibited Operation Status

🔶 🏦 Troub	leshooting		RoboPump
Alarm display Al	arm list Check mode	l num. Inquiry	
•Alarm descript.			
Alarm code	2D9	Alarm level	Message
Name Operatio	n status of data e	diting prohibited	
prohibite Perform t	he operation state d. he release operati by", and then edit	on to set the oper	-
			10:00

When it is attempted to change any settings during ROBO PUMP suction or release, the data edit prohibited operation status window should open.

The parameter will not be reflected.

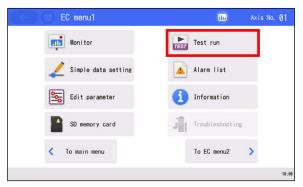




19.7 Test Run

Jog/inching operation, operation to a position registered in the position table, continuous movement, operation by indicating a position directly, monitoring of the input and output signals and compulsory output are available.

For ROBO PUMP, the screen should move directly to the I/O test from EC Menu 1.



The movement menu window appears.

🔶 🔂 Test run	Axis No. 01
Jog i	nching
Positi	on move
Direc	t move
I/0	test
	19:00

Touch Test run button on the EC menu 1 window. For ROBO PUMP, touch the I/O Test button.

Touch either one of Jog inching, Position move, Direct move or I/O test buttons.

(1) Jog inching

Perform jog/inching operation.

Refer to [19.7.1 Jog Inching Operation] for details about how to operate.

(2) Position move

Movement to the forward end or backward end or continuous movement should be performed. • Move

Movement should be made from the current position to either of the forward end or the backward end which has been indicated. (One time of movement only)

Continuous

Movement should be made repeatedly between the forward end and the backward end.

Refer to [19.7.2 Position Movement Operation] for details about how to operate.

(3) Direct move

Input the target position and the speed on the numeric keys to perform movement. Refer to [19.7.3 Direct Movement Operation] for details about how to operate.

(4) I/O test

Monitoring of the input and output signals and compulsory output of the output signal can be conducted.

Refer to [19.7.4 I/O Test] for details about how to operate.



19.7.1 Jog Inching Operation (for applicable models only)

You can perform jog/inching operation.

\leftarrow	Jog	inching						No. 01
 10 30 50 			0.00 mm 0.01mm 0.10mm 0.50mm 1.00mm 5.00mm	+	BACK (-)	Serv Homin Brake	ng rel.	
								10:00

: Select either of 1, 10, 30, 50 or 100mm/s of JOG speed or 0.01, 0.10, Jog vel. / Inching 0.50, 1.00, 5.00mm of inching distance, and JOG operation with the selected speed or inching operation with the selected distance can be conducted. The circle (radio button) on the selected one will be marked with a black dot. Servo button : It shows the status of the servo whether it is ON or OFF for the axis. When the servo is ON, display of O is activated and it is inactivated when the servo is OFF. Homing button : It shows the status of completion of the home-return operation. When the home-return operation is incomplete, the display of O is inactivated. Touch Homing button and the axis starts home-return operation and the display of O gets activated. Brake rel. button : For an actuator equipped with a brake, touch Brake rel. button and the brake gets compulsorily released and the circle turns on. Touch Brake rel. button again and the brake works and the circle turns off. • BACK (-), FWD (+) : When JOG operation is selected, while touching them, the axis moves buttons in the set speed. When inching operation is selected, every time touching them, the axis moves for the set distance. BACK (-) button performs JOG operation in negative direction. FWD (+) button performs JOG operation in positive direction. In inching operation, touch and hold them for 2 seconds, and JOG operation will be performed in 1mm/s. The speed increases in every 1 second afterwards.

Caution: An axis could drop if the brake compulsory release is performed while the servo is off when the axis is installed in the vertical orientation.





19.7.2 Position Movement Operation (for applicable models only)

Move to a position or continuously to multiple positions registered in the position table. The items to be displayed should differ depending on valid/invalid of the safety velocity. Refer to [19.1.1 EC Operation Mode]

Position No.	0	Servo ON
Current positi Target positio		Homing
Velocity	1 mm/s	
1	Change vel	Ļ
Move	Cont. move	Stop

When Safety Velocity is Valid

Position No. Current position Target position Velocity overr	n 25.00 mm	Servo ON M
1	Change vel	Ļ
Move	Cont. move	Stop

When Safety Velocity is Invalid

- Position No. : "1" should be shown when the forward end is selected and "0" when the backward end is selected.
- Current position : Displays the current position.
- Target position : Displays the target position set in the selected position number.

When Safety Velocity is Valid;

 Velocity : The set velocity (mm/s) should be displayed.

When Safety Velocity is Invalid;

- Velocity override : Displays the selected speed override (%).
- Servo ON button : It shows the status of the servo whether it is ON or OFF for the axis. Touch the Servo ON button and the axis turns the servo on. Touch it again and the axis turns the servo off. When the servo is ON, display of O is activated and it is inactivated when the servo is OFF.
- Homing button : It shows the status of completion of the home-return operation. When the home-return operation is incomplete, the display of O is inactivated. Touch Homing and the axis starts home-return operation and the display of O gets activated.
- : Touch $|\uparrow|$ or $|\downarrow|$ buttons to select a position number buttons (1: forward end, 0: backward end) for the movement target.

When Safety Velocity is Valid;

Change vel button : Speed can be changed in order of 1mm/s, 10mm/s, 30mm/s, 50mm/s and 100mm/s every time touching Change vel button.





When Safety Velocity is Invalid;

- Change vel button
 Speed override can be changed in order of 10%, 50% and 100% every time touching Change vel button.
- Move button : Touching Move button moves the axis to the target position.
- Cont. move button : Touch Cont. move button and the axis performs continuous operation between the forward end and backward end till touching Stop button.
- Stop button : Touching Stop button stops the axis.





19.7.3 Direct Movement Operation

A position is specified directly to move the axis.

(+) 🔂 D	irect move			Axis No. 01
	position position y	3. 65 mm 0. 00 mm 0. 00 mm/s	Serv Hom	ro ON 🎑
	Move	Stop		
				10:00

- Current position : Displays the current position.
- Target position : Touching "Target position" displays the numeric keypad. Enter a desired target position and then touch ENT button.
- Velocity : Touching "Velocity" displays the numeric keypad. Enter a desired speed and then touch ENT button.
- Servo ON button : It shows the status of the servo whether it is ON or OFF for the axis. Touch the Servo ON button and the axis turns the servo on. Touch it again and the axis turns the servo off. When the servo is ON, display of O is activated and it is inactivated when the servo is off.
- Homing button : It shows the status of completion of the home-return operation. When the home-return operation is incomplete, the display of O is inactivated. Touch Homing button and the axis starts home-return operation and the display of O gets activated.
- Move button : Touching Move button moves the axis to the target position you have set.
- Stop button : Touching Stop button stops the axis.





19.7.4 I/O Test

The input signal and the output signal can be monitored.

You can also touch OUT00 to OUT02 to forcibly turn ON/OFF the corresponding output signals. Touch I/O test button in the trial operation menu window (or EC menu 1 window) to open the I/O test window.

← 1 I/0 test				Axis No. 01
IN00	Inp	0utp	OUT00	
INØ1			OUT01	
IN02			0UT02	
0FF :	IN OUT	ON :	IN OUT	10:00

If it is necessary to turn on OUT00 which is currently off, touch $\boxed{\text{OUT00}}$ button.

← 🛍 I/0	test			Axis No. 01
IN00	Inp	0utp	OUT00	
IN01			OUTØ1	
IN02			OUTØ2	
OF	FF : IN OUT	ON :	IN OUT	10:00

OUT00 turns on. Touch OUT00 button again and it turns off.



19.8 Alarm List

A list of alarms that may generate after ELECYLINDER or ROBO PUMP power is turned on is shown. The displayed items should differ for ELECYLINDER and ROBO PUMP.

C C menu1	ulu Axis No. 01
Monitor	Test run
🖌 Simple data setting	Alarm list
Edit parameter	Information
SD memory card	Troubleshooting
C To main menu	To EC menu2
	10:00

Touch Alarm list button on the EC menu 1 window. ELECYLINDER's or ROBO PUMP alarm list appears.

19.8.1 Display of Alarm List (ELECYLINDER)

For displayed should be numbers, groups, names, addresses, code and alarm occurred time (hour, minute, second).

The time of occurrence of each alarm is indicated by an elapsed time from this "PowerUP No Error".

Alarm	display	Alarm list Check model num.	Inquiry		
Alarm	list				
fouch t	the ala	rm No. to check the alarm description and	perform	trou	bleshooting.
No.	Group	Name	Address	Code	Time (hh:mm:ss)
0	Other	PowerUP No Error	****	FFF	::
1	E	Power supply voltage/capacity alarm	****	0CE	1:16:55
2	Other	PowerUP No Error	****	FFF	::
3	E	Power supply voltage/capacity alarm	****	0CE	0:00:10
4	Other	PowerUP No Error	****	FFF	::
5	E	Power supply voltage/capacity alarm	****	0CE	0:17:13
6	0ther	PowerUP No Error	****	FFF	::
7	E	Power supply voltage/capacity alarm	****	0CE	0:01:32
		↑Prpg ↓Nxpg			Clear

Touching \bigvee Nx pg button displays the list of the next window.

	\leftarrow	E	Tro	ublesho	oting					Axis No.	01
,	Alarm	display		Alarm lis	t Check	model num.		Inquiry			
•/	Alarm	list									
Т	ouch	the alar	rm No.	to check	the alarm	description	and	perform	trou	bleshooting.	
ĺ	No.	Group			Name			Address	Code	Time (hh:mm:ss)	
	8									: :	
	9									: :	
	10									: :	
	11									: :	
	12									: :	
	13									: :	
	14									: :	
	15									: :	
l		- 1	tPr∣	og	[↓Nx pg				Clear	
						Ala	arm r	eset			10:00

Touching <u>↑ Pr pg</u> button displays the list of the previous window.

Touching Clear button clears all alarm details.





19.8.2 Display of Alarm List (ROBO PUMP)

For displayed should be numbers, groups, names, addresses, code and alarm occurred time (hour, minute, second).

The time of occurrence of each alarm is indicated by an elapsed time from this "PowerUP No Error".

Alarm	display	Alarm list Check model num.	Inquiry				
Alarm list							
Touch the alarm No. to check the alarm description and perform troubleshooting.							
No.	Code	Name	Address	Detail	Time (hh:mm:ss)		
0	FFF	PowerUP No Error	****	****	::		
1	E81	Undefined error detected	****	****	0:01:27		
2	FFF	PowerUP No Error	****	****	::		
3	E81	Undefined error detected **** 0:03:16					
4	FFF	PowerUP No Error	PowerUP No Error **** -				
5	E81	Undefined error detected	****	****	0:00:50		
6	FFF	PowerUP No Error	****	****	::		
7	EC5	Undefined error detected	****	****	0:00:31		
		∱Prpg ↓Nxpg			Clear		

Touching \bigvee Nx pg button displays the list of the next window.

Alarm	display	Alarm lis	st Chec	k model n	um.	Inquiry				
Alarm list										
Fouch t	he alarm N	o. to check	the alarm	descript	ion and	d perform	troub	leshootir	ıg.	
No.	Code		Name			Address	Detail	Tim (hh:mm		
0								:	:	
1								:	:	
2								:	:	
3								:	:	
4								:	:	_
5								:	:	
6								:	:	
7								:	:	
	∱ Pr	pg		↓Nx p	g			Clear		

Touching \uparrow Pr pg button displays the list of the previous window.

Touching Clear button clears all alarm details.





19.9 ELECYLINDER, ROBO PUMP Reset

ELECYLINDER or ROBO PUMP is restarted.

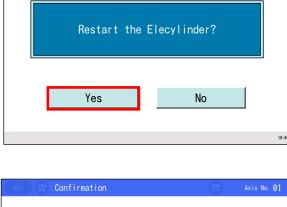
19.9.1 ELECYLINDER Reset

EC menu2	du	Axis No. 01
Change operating axis		
	Easy programming	
Environment setting		
S Elecylinder reset		
Other setting	To EC menu1	>
		10:00

Touch Elecylinder reset button on the EC menu 2 window.

Touch Yes button.

Touch No button to return to the EC menu 2 window without restarting.



 Confirmation
 Axis No. 01

 Servo must be off to restart the Elecylinder Servo OFF?

 Yes
 No

This window appears if the servo is ON. Touch $\underline{\text{Yes}}$ button.

Touch No button to return to the EC menu 2 window without restarting.





🔶 🔞 Elecylinder reset		Axis No. 01
Restarting the Elecylind	er.	
Please wait a minute.		
		10:00

ELECYLINDER is restarted.

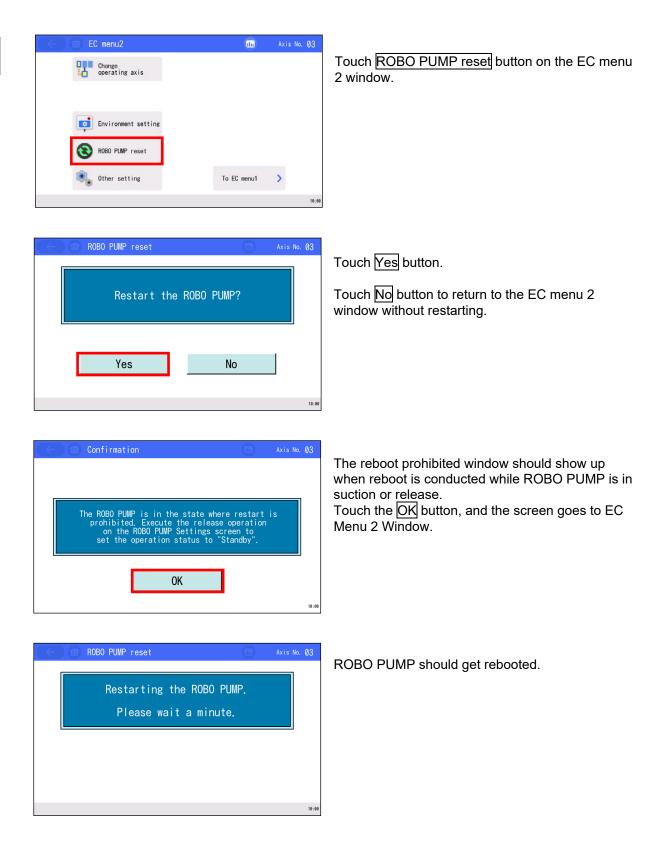


Returns to the EC menu 1 window.





19.9.2 ROBO PUMP Reset







Returns to the EC menu 1 window.

C 🔶 🎯 EC menu1	du Axis No. Ø3
Monitor	TEST I/O test
ROBO PUMP Settings	🔺 Alarm list
Edit parameter	i Information
SD memory card	Troubleshooting
< To main menu	To EC menu2
	10:





19.10 Other Setting

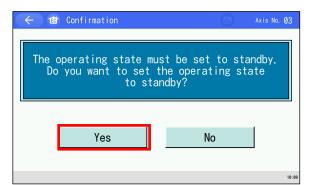
Parameter initialization and operation sound tuning should be conducted. The displayed items may differ depending on models.

←) (☆) EC menu2	ilu	Axis No. 01
Change operating axis		
	Easy programming	
Environment setting		
Elecylinder reset		
Other setting	To EC menu1	>
		10:00

Touch Other setting button in EC menu 2 window.

← ⓓ Other setting	du Axis No. 01
Parameter initialization	Operating noise adjustment
	10:00

Other setting window opens. For ROBO PUMP, the Parameter initialization button should be displayed. Select one from Parameter initialization and Operating noise adjustment that you would like to carry on and touch the button.



Touch the Parameter initialization button during suction or release of ROBO PUMP, and the standby confirmation window should be displayed. Touch Yes button.

Touch the No button, and the screen goes back to the Other Settings window without bringing ROBO PUMP to standby.



Make ROBO PUMP wait. After it is completed, the screen goes to the Initialize Parameter window.



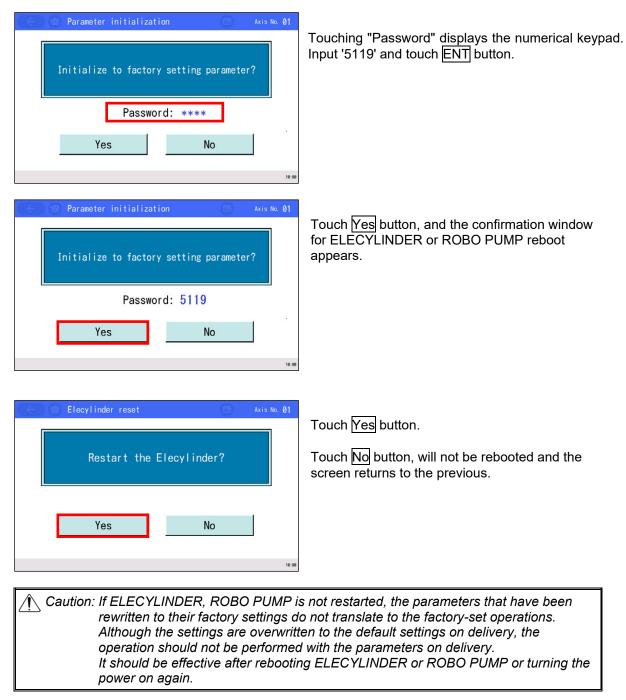


19.10.1 Parameter Initialization

The parameters are reset to their factory default settings (initialized).

Caution: Once the parameters are initialized (to their factory default settings), all parameters the user has set will return to the values set at the factory. Exercise caution.

Touch Parameter initialization button in Other setting window to display Parameter initialization window.







19.10.2 Operation Noise Tuning (for applicable models only)

The operation noise can be tuned.

By having it tuned, possibility of an operation noise error could be reduced.

Touch the Operating noise adjustment button in the Other Setting window to display the operating noise adjustment window.

• When Models that Support Level Setting

🗧 🔁 Operating noise adjustment		Axis No. 01
Operating noise can be adjusted by increasing/reducing the setting level. 0 1 2 3 4 5 6 7 8 9 10 11 ← Current s : Current s	setting lev	
Adjusted High tone motion noise can usually be reduced by increasi Low tone motion noise also may be reduced by lowering the Adjust by changing one level at a time. Set Cance	ng the se setting	tting level.
		10:00

• When Models that Support Pattern Setting

← 18	Operatir	ng <mark>no</mark> is	e adj	ustmer	nt			Axis No.	01
Operating by increas					atte	ern.			
		1 2	3 4	56	7	8	9		
	~						→		
							t setting pa ed setting p		
Changing	the operatin	g speed	may redu	uce the	opera	ating i	noise.		
	loes not impr ntact us to			ting met	hod b	efore	using this	function.	
	S	Bet				Cano	cel		
									10:0

Touch \leftarrow and \rightarrow buttons on the right and left of the levels to adjust the level one by one to perform tuning.

Once the tuning is finished, touch Set button.

Touch \leftarrow and \rightarrow buttons on the right and left of the patterns to adjust the level one by one to perform tuning.

Once the tuning is finished, touch Set button.

e t	lecylinder reset		Axis No. 01
	Restart the E	lecylinder?	
	Yes	No	
			10:0

Touch Yes button.

Touch No button and a reboot of ELECYLINDER would not be performed and the screen goes back to the previous window.





Restarting the Elecylinder. Please wait a minute.

ELECYLINDER should be rebooted.



The screen goes back to EC menu 1 window.



19.11 Information Display

Information such as ELECYLINDER or ROBO PUMP version, manufacturing information and maintenance information is displayed.



Touch Information button on the EC menu 1 window.

← @ Information	din Axis No. 01
Software version information	Maintenance information
Production information	Inquiry
	10:00

The information menu window appears.

Touch a button of the feature that you would like to display such as Software version information.

19.11.1 Information Display Windows

19.11.1.1 Software Version Information

Touch Software version information button in Information menu window. Software version information window opens.

🔶 🗃 Software version in	ormation	<u>du</u>	EC-S3M-200
Series/Type	EC		
Controller version	EC010007		
Controller core version	EC800001		
ABS unit version	0000020		
Interface board version	00000004		
		Edi	t axis name
			10:0

information	ilu	RoboPum
RP-VPM		
EF01FFB9		
EF810001		
	Edi	t unit name
	RP-VPM EF01FFB9	RP-VPM EF01FFB9 EF810001

ROBO PUMP window

Touch the Edit Axis Name button or the Edit Unit Name button and the names of axes/units can be edited. (The button would not be displayed if there is no setting established in the axis name display in the configuration.)

For how to edit an axis/unit name, refer to [19.11.2 Editing Axis Name and Unit Name].

19. ELECYLINDER, ROBO PUMP Operation Function





19.11.1.2 Production Information

Touch Production information button in Information menu window.

Controller S/N	B00237813		
Controller PCB revision	M. REV:0A	/ F.REV:01	
Actuator S/N	B00237813		
Actuator model number			
EC-S3M-200-2-ACR-MOT-WA			
EC-S3M-200-2-ACR-MOT-WA			
C-S3M-200-2-ACR-MOT-WA			
C-S3M-200-2-ACR-MOT-WA			
EC-S3M-200-2-ACR-MOT-WA			
EC-S3M-200-2-ACR-MOT-WA			

19.11.1.3 Maintenance Information

Touch Maintenance information button in Information menu window.

Total travel count	123, 456	
Total travel count threshold	1,000,000	Edit
Total travel distance	756,643 km	m⇔km
Total travel distance threshold	1,250,000 m	Edit
Overload warning level	70 %	Edit
Actuator replacement time	2020/12/31 11:50:27	-

Maintenance information window opens. Refer to [19.3.3 Maintenance Information Window] for how to operate displayed button.

Production information window opens.

19.11.1.4 Inquiry

Touch Inquiry button in Information menu window.



Inquiry window opens.





19.11.2 Editing Axis Name and Unit Name

A name can be set on an axis. To show the axis name, select Axis Name at the axis name display section in the environment setting window. Refer to [19.12 Environment Setting [Axis Name Display]]

Axis name is shown in the right top of each screen or select axis window. Even if the axis name is set to be shown, axis number will be shown if there is no axis name setting conducted.

EC menul	dia EC-S3M-200		\leftarrow Axis select	
Monitor	Test run		01 05 EC-S15M-500)913
📝 Simple data setting	Alarm list	Axis Name Display	06 EC-S13S-200	1014
Edit parameter	1 Information	Display	03 EC-S3M-200 07	11 15
SD memory card	Troubleshooting		04 EC 08	Backup for all Elecylinder
< To main menu	To EC menu2		EC op. mode	Save to SD memory card Transfer from SD memory card
	10:0	0		18:

(Note) The characters available to set in TB-02 are the half-size font characters and symbols. Use the PC software for input with full size characters.

[Axis Name Edit Operation]

<) 🔠 EC menu2	du	Axis No. 01	
Change operating axis			Touch Environment setting button on the EC menu 2 window.
	Easy programmin	ng	
Environment setting			
Elecylinder reset			
0ther setting	To EC menu1	>	
		10:00	

 Content
 Content
 Axis No. 01

 Data input warning
 Enable
 Disable

 Disp axis name
 Axis No.
 Axis No.

 Ripple compensation(Current monitor)
 Yes
 No

 Write the above setting
 Startup screen setting

Touch the Axis Name button to switch the setting to the axis name, and then touch the Write the above setting button. The setting will not be changed when you move to another screen without touching it.

19-61

Touch Information button on the EC menu 1 window.

rmation window anona	
rmation window opens.	

Info Touch Software version information button.

]	For ELECYLINDER, touch Edit axis name button.

For ROBO PUMP, touch	Edit unit name	button.

← 10 Software version	information	du	EC-S3M-20
Series/Type	EC		
Controller version	EC02FFAE		
Controller core version	EC80FFFC		
ABS unit version	0000020		
Interface board version	0000FFDD		

🔶 🗃 Software version in	formation	du	RoboPump
Series/Type	RP-VPM		
Controller version	EF01FFB9		
Controller core version	EF810001		
		Edi	t unit name
		_	8:0

← 10 Software version	information	<u>ilı</u>	RoboPum
Series/Type	RP-VPM		
Controller version	EF01FFB9		
Controller core version	EF810001		

s	oftware version information		Maintenance information	
	Production information		Inquiry	
				10:00
← 12	Software version	informati	on 🕕	EC-S3M-200
C : /T				

du

📧 Information





Confirmation Axis No. 03 The operating state must be set to standby. Do you want to set the operating state to standby? Yes No	Touch the Edit Unit Name button during suction of release of ROBO PUMP, and the standby confirmation window should open. Touch Yes button. Touch the No button, and the screen goes to the software version information window without bringing ROBO PUMP to standby.
Axis No. 03 Waiting for operating status.	Make ROBO PUMP wait.

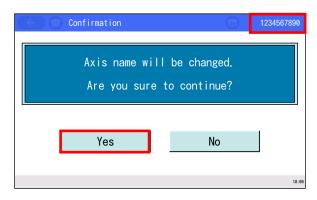
🔶 🗃 Software version info	ormation 🖬 EC-S3M-200		
Series/Type	EC		
Controller version	EC010007		
Controllor core version	F0000001		
1234567890			
ESC 1 2 3 4 5 6 7 8 9 0 - = BS			
TAB q w e r t y u i o p []			
CAP a s d f g	h j k l ;		
SHIFT Z X C V D	n m , . / ENT		
Ctrl Alt `¥	$\downarrow \uparrow \leftarrow \rightarrow$		
	18:98		

Please Wait...

A full-size keyboard should be displayed in the bottom half of the window. Input a name and touch ENT button.

The number of characters available to input is up to 12 half-size font characters. Touch ENT button with nothing input, and it is

defined as no setting. With no setting, an axis number will be shown.



Displayed in the top right is the name of the axis. (Tentative setting condition) Touch Yes button to confirm the setting.

Touch the No button and the setting goes back to the one changed.

or





19.12 Environment Setting

Data input warning setting, axis name display setting, ripple compensation and startup initial window setting should be conducted. For other configurations, refer to [Environment Setting in Chapter 21].

EC menu2	ilu	Axis No.	01
Change operating axis			
	Easy programming		
Environment setting			
Elecylinder reset			
0ther setting	To EC menu1	>	
			10:00

Touch Environment setting button on the EC menu 2 window.

← 📾 Environment setting	du	EC-S3M-200
Data input warning	Enable	Disable
Disp axis name	Axis Name	Axis No.
Ripple compensation(Current monitor)	Yes	No
	_	
	Startup s	creen setting

The environment setting window appears.

[Data input warning]

The warning can be output when a value less than the minimum speed and a value exceeding the rated acceleration/deceleration speed are entered in the position data. Note that the value is entered even if the warning occurs. Always use within the specification of the actuator.

🔶 😰 Environment setting	th	EC-S3M-200
Data input warning	Enable	Disable
Disp axis name	Axis Name	Axis No.
Ripple compensation(Current monitor)	Yes	No
Wri	ite the above	setting
	Startup s	creen setting
		10:00

Touch Enable button to give the warning. Touch Disable button not to give the warning.

Select either Enable or Disable,

and then touch Write the above setting button. The setting will not be changed when you move to another window without touching it.





[Axis Name Display]

Make a selection whether to show the name or number for axis display.

← 10 Environment setting	dia EC-S3M-200	Axis Name Display
Data input warning Disp axis name Ripple compensation(Current monitor)	Enable Disable Axis Name Axis No. Yes No Write the above setting	Touch <u>Axis Name</u> button and the name will be shown. Touch <u>Axis No.</u> button and the number will be shown.
	Startup screen setting 18:00	Select either Axis Name or Axis No, and touch Write the above setting button. The setting will not be changed when you move to another window without touching it.

The axis name can be set in Software version information window. Refer to [19.11.2 Editing Axis Name and Unit Name]

[Ripple Compensation]

Setting should be established to select whether to have ripple compensation or not to have it in the monitor window as the initial setting.

←	(III)	EC-S3M-200
Data input warning	Enable	Disable
Disp axis name	Axis Name	Axis No.
Ripple compensation(Current monitor)	Yes	No
	Startup sc	creen setting
		10:00

Touch Yes button and the setting should be established "with ripple compensation". Touch No button and the setting should be established "without ripple compensation".

Select either yes or no and touch Write the above setting button. The setting will not be changed when you move to another window without touching it.

[Startup screen setting]

Setting can be established for the window shown in the screen first after the power is turned on.

🧲 📧 Startup sc	reen setting	th	EC-S3M-200	
You can select startup screen from screens below.				
		EC menu scre	een	
Monitor screen	Position edit scre	en Parameter	edit screen	
Test run screen	Information scree	n		
OK Cancel *Update setting will be valid after restart.				
			10:00	

Select a screen from those below for the screen shown first after the power is turned on. <u>EC menu screen</u> <u>Monitor screen</u> <u>Position edit screen</u> <u>Parameter edit screen</u> <u>Test run screen</u> Information screen

Touch either one to select and touch OK button.

Note 1 Select Position edit screen, and Simple Data Setting Screen should be displayed at the startup.





19.13 Data Backup of ELECYLINDER, ROBO PUMP

Data is transferred between the Secure Digital memory card in the touch panel teaching pendant and ELECYLINDER or ROBO PUMP.

- (1) Type of Stored Data
 - ELECYLINDER : Position data, parameters, alarm list and all data
 - ROBO PUMP : Parameters, alarm list and all data
- (2) Extensions of the Stored Data
 - Position data : ptec (EC24V, EC200V)
 - Parameters : prec(EC24V), prec2(EC200V), prrpv(RP)
 - Alarm list : csv(EC24V, EC200V, RP)
 - All data : bkec(EC24V), bkec2(EC200V), prrpv(RP)

To the all data file of ELECYLINDER, the position data and the parameters should be stored. To the all data file of ROBO PUMP, it should be the parameter files. The alarm list should not be restored.

(3) Directories of the Stored Data

If the folder does not exist, it is automatically created.

- Position Data : \TB_SEL\EC\Position\
- Parameter : \TB_SEL\EC\Parameter\
- Alarm List : \TB_SEL\EC\Alarmlist\
- Whole Data : \TB_SEL\EC\Buckup\Folder Name\

The storage domain and destination of readout for data in restoring should be the folders above.

The folders to store the files cannot be changed. In the restoring process, any file existed in a folder other than those specified here should not be listed up in the file name list in the file select.

If the folder does not exist, it is automatically created.

- (Note) Files with Chinese names are not supported.
- (Note) If the EC operation mode is set to the monitoring mode, restoring would not be available either individually or all at once for all axes. Set the EC operation mode to the teaching mode when restoring. Refer to [19.1.1 EC Operation Mode]

Caution: For a Secure Digital memory card, choose a SD/SDHC memory card with 1G to 32G. (Toshiba-made recommended) Also, use FAT32 Format for the file system.

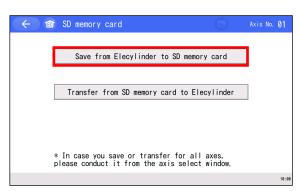


19.13.1 Backup of Individual Data

Backup should be made by transferring ELECYLINDER or ROBO PUMP individual data to a Secure Digital memory card.

(🔶) 🍘 EC menu1	đu	Axis No. 01
Monitor	Test run	
🖌 Simple data setting	Alarm list	
Edit parameter	Information	
SD memory card	Troubleshooting	
To main menu	To EC menu2	>
		10:00

Touch <u>SD memory card</u> button in EC menu 1 window.



SD memory card window opens. Touch Save from Elecylinder to SD memory card or

Save from ROBO PUMP to SD memory card button.

🔶 🗃 Save	to SD memory card		Axis No. Ø1
Please	e select the data to save.		
	Position data		
	Parameter		
	Alarm list		
		Save	
			10:00

The Select button should only be displayed for the applicable models.

Select the data type button for the backup such as Position data button and touch it. (multiple options selectable)

The data type been selected will be shown in light blue.

Touch Save button.

19-67

	Touch Yes button.
nder \Rightarrow SD memory card	
Position data	Touch No button, a

Touch No button, and the screen returns to the previous window.

Dackup ITTe Halle designation
Position data
File name EC-POS-DATA
EC-POS-DATA
ESC ! @ # \$ % ^ & * () _ + DEL
TAB Q W E R T Y U I O P { }
CAP A S D F G H J K L : "
SHIFT Z X C V B N M < > ? ENT
$\begin{array}{c c c c c c c c c c c c c c c c c c c $

A touch-panel keyboard should be displayed in the indicate backup file name window. Input a file name and touch the ENT button. The file name should be with 31 half-size font

characters at the maximum.

🗲 🥶 Backup file name designation	Axis No. 01	Touch Save button.
Position data		
File name EC-POS-DATA		
Save		
	10:00	

🔄 🎯 File name confirmation 👘	Axis No	. 01
File name		
EC-POS-DATA.ptec		
File name above will be saved. Are you sure to continue?		
Yes No		
		10:00

Touch Yes button in the file name confirmation window.

Touch the No button and the screen returns to the indicate backup file name window.



The above data will be transferred. Do you want to continue?

No

Transfer data:

Yes

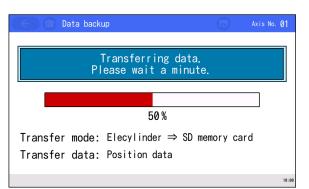




(🔄 🎯 File name confirmatio	on 💼 .	Axis No. 01
File name		
EC-POS-DATA.ptec		
A file of the same Do you want to	name already exi o overwrite it?	sts.
Yes	No	
		10:00

The screen below appears if the same name is found. Touch Yes button.

Touch the No button and the screen returns to the indicate backup file name window.



Data transfer window will be shown.

onfirmation		Axis No. 01
Saved to SD memory c	ard	
ОК		2
		10:00

A message to tell the data transfer is complete pops up and the backup process is finished.

Touch OK button, and the screen returns to Save to SD memory card window.





19.13.2 Restoring Individual Data

Restoring should be made by transferring ELECYLINDER or ROBO PUMP individual data from a Secure Digital memory card to ELECYLINDER or ROBO PUMP.

19.13.2.1 Restoring ELECYLINDER



Touch <u>SD memory card</u> button in EC menu 1 window.

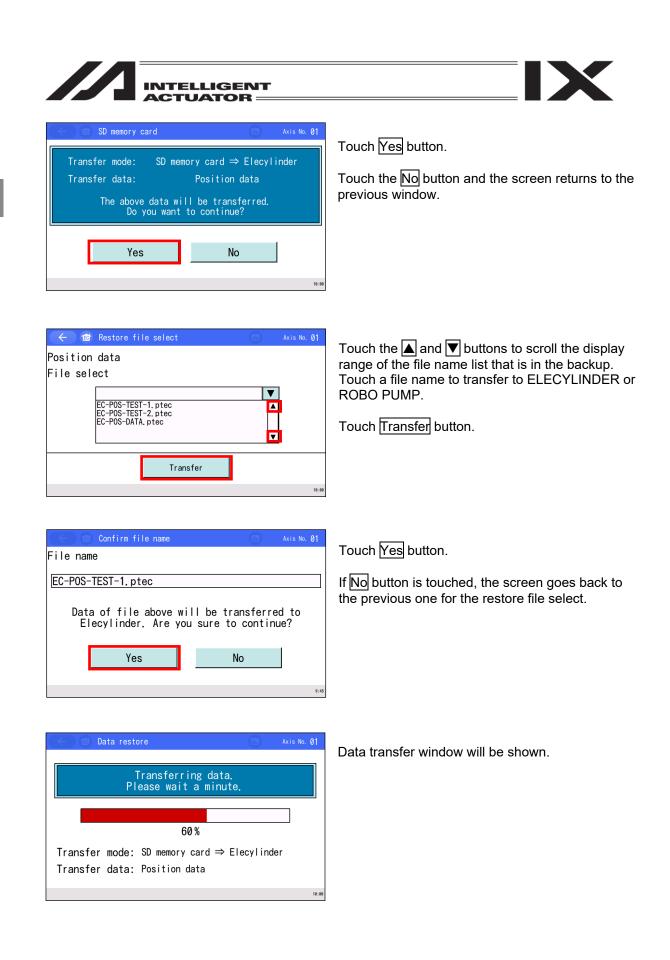
← 12	SD memory card		Axis No.	01
	Save from Elecylinder to SD memory ca	ard		
	Transfer from SD memory card to Elecyl	inder		
-			•	
	* In case you save or transfer for all axe please conduct it from the axis select win	es, ndow.		
				10:00

SD memory card window opens. Touch Transfer from SD memory card to Elecylinder button. (Valid only when EC operation mode is teaching mode)

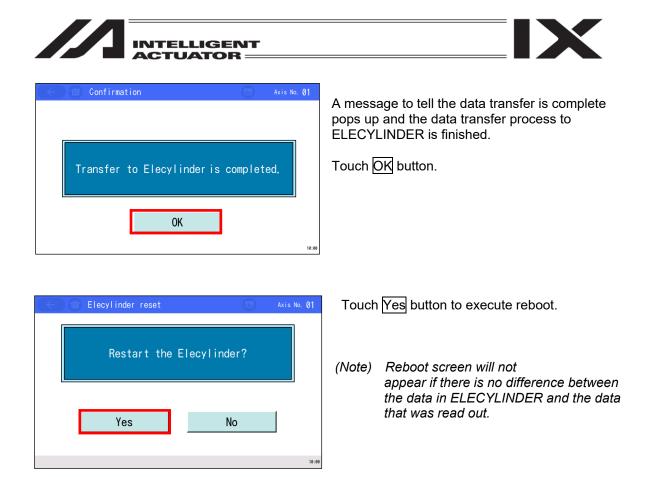
← 18	Transfer to Elecylinder		Axis No.	01		
	Please select the data to transfer.					
	Position data					
	Parameter					
	Trans	sfer				
				10:00		

Select the data type button to transfer to ELECYLINDER, such as Position data button, and touch it. (multiple options selectable) The data type been selected will be shown in light blue.

Touch Transfer button.



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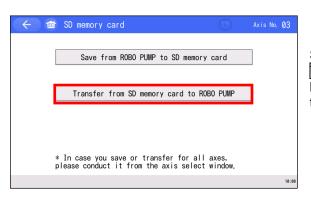




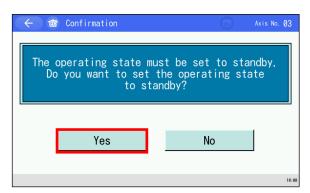
19.13.2.2 Restoring ROBO PUMP

C C menu1	ilu	Axis No. Ø3
Monitor	TEST I/O test	
ROBO PUMP Settings	🔺 Alarm list	
Edit parameter	i Information	
SD memory card	Troubleshooting	
To main menu	To EC menu2	>
		10:00

Touch SD memory card button in EC menu 1 window.



SD memory card window opens. Touch Transfer from SD memory card to ROBO PUMP button. (Valid only when EC operation mode is teaching mode)

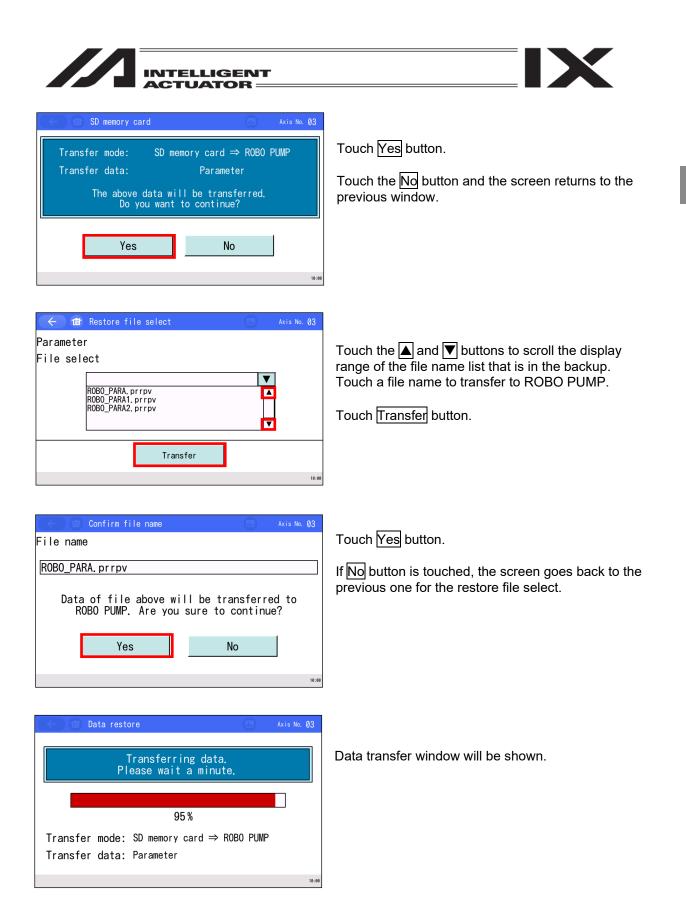


Touch the <u>SD memory card</u> button during suction or release of ROBO PUMP, and the standby confirmation window should open. Touch <u>Yes</u> button.

Touch the No button, and the screen goes back to the Secure Digital Memory Card window without making ROBO PUMP wait.



Make ROBO PUMP wait.



INTELLIGENT ACTUATOR	
Complete!	A message to tell the data transfer is complete pops up and the data transfer process to ROBO PUMP is finished. Touch OK button.
ROBO PUMP reset Axis No. 03 Restart the ROBO PUMP? Yes No	Touch Yes button to execute reboot. (Note) Reboot screen will not appear if there is no difference between the data in ROBO PUMP and the data that was read out.





19.13.3 Backup of All at Once for All Axes Data

Backup should be made by transferring ELECYLINDER data for all axes from ELECYLINDER to a Secure Digital memory card.

EC menu2	đu	Axis No.	01
Change operating axis			
E	Easy programming		
Environment setting			
Elecylinder reset			
0ther setting	To EC menu1	>	
			10:00

Touch Change operating axis button in EC menu 2 window.

Axis select								
01	EC	05	EC	09		13		
02	EC	06		10		14		
03	RP	07	EC	11		15		
04	EC	08		12		16		
					— All ax	es back	<up< td=""><td>1</td></up<>	1
	Save to SD memory card							
EC op. mode								
								10:00

Backup folder name designation Folder name ESC 1 2 3 4 5 6 7 8 9 0 - 1 BS TAB q w e r t y u i o p 1 Г asdfghjk CAP T. SHIFT Z X C V b n m ENT Ctrl Alt ¥ 1 1 10:0

Axis select window opens. Touch Save to SD memory card button.

A touch-panel keyboard should be displayed in the indicate backup folder name window. Input a folder name.

The folder name should be with 31 half-size font characters at the maximum.

e Backup fol	der name designation					
Folder name ALL						
	Save					
		10:00				

Touch Save button.





Folder name confirmation Folder name ALL Data will be saved in the above folder. Are you sure to continue? Yes No	Touch Yes button. Touch the No button and the screen returns to the indicate backup folder name window.
Folder name confirmation	The screen below appears if the same name is found. Touch Yes button.
A folder of the same name already exists. Do you want to overwrite it? Yes No INM Axis No. 01	Touch the No button and the screen returns to the indicate backup folder name window.
Transferring data. Please wait a minute. 50% Transfer mode: Elecylinder ⇒ SD memory card Transfer data: Position data & Parameter	Data transfer window will be shown.
Confirmation	A message to tell the data transfer is complete
Saved to SD memory card	pops up and the backup process is finished. Touch OK button, and the screen returns to axis select window.

10:00

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0K





19.13.4 Restoring of All at Once for All Axes Data

Restoring should be made by transferring ELECYLINDER or ROBO PUMP data for all axes from a Secure Digital memory card.

EC menu2	du	Axis No. 01
Change operating axis		
E	Easy programming	
Environment setting		
Elecylinder reset		
Other setting	To EC menu1	>
		10:00

Touch Change operating axis button in EC menu 2 window.

$\langle \leftarrow \rangle$ Axis select							
01	EC	05	EC	09		13	
02	EC	06		10		14	
03	RP	07	EC	11		15	
04	EC	08		12		16	
					All ax	es back	(up
EC op. mode						y card	
					Transfer from	n SD men	nory card
							10:00

Axis select window opens.

Touch Transfer from SD memory card button. (Valid only when EC operation mode is teaching mode)

(() (Restore	folder select	0
Folder	Select ALL ALL_1 ALL_2		
		Transfe	r
			10.

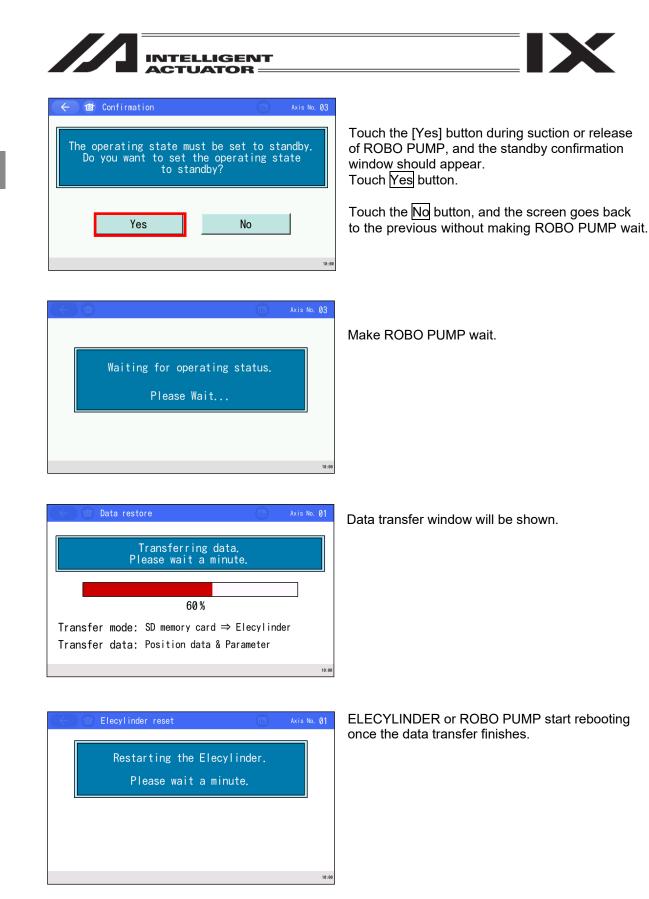
Touch the \blacktriangle and \bigtriangledown buttons to scroll the display range of the folder name list that is in the backup. Touch the folder to transfer to ELECYLINDER or ROBO PUMP.

Touch Transfer button.

Confirm folder name						
Folder name						
	וו					
Data in the folder above will be transferred to all axes. Are you sure to continue?						
Yes No						
7:	:53					

Touch Yes button.

If No button is touched, the screen goes back to the previous for the restore file select.



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INTELLIGEN ACTUATOR	т	
Confirmation	Axis No. 03	The complete confirmation window should appear
Complete!		once the data transfer of data for all of the ELECYLINDER or ROBO PUMP units is complete. Touch OK button, and the screen returns to axis select window.
ОК	18:90	select window.





19.14 Easy Programming

In the easy programming, pause duration can be set between sets of operations and continuous operation can be performed by indicating the number of repeating times.

[How to Establish Setting]

Set the position number (0: backward end, 1: forward end) of the destination to the easy programming input part (step). In order to have a pause between operations, use prepared five timers T1 to T5. Timer can be set in 0.1 second unit from 0 to 99.9sec. When it is required to repeat operation, input R (repeat indication symbol) at the end.

The number of steps available to indicate is 10 at maximum including R.

If there is a space, the step after that is not valid. The easy programming stops. Steps after R are also invalid.



Touch Easy programming button in EC menu 2 window.

Servo	← 10	t Easy programmi	ng		Axis No. 01
1. F. End 100.00 30.00 0.50 0.40 Operation Teach1 PID movement prohibition. Safety velocity valid Brake rel. Easy programming Servo Easy programming Start Example Homing R(Repeat) Stop time TI 0.05 T2 0.05 T4 0.05 t4 0.05 t0 0.05 Parations Cur. pos. Recent on the start of the table of ta	No.	Position(mm)	Vel (mm/s)	Acc (G)	Dec (G)
Deperation Teach1 P10 movement prohibition. Safety velocity valid V Brake rel.	0. B. End	0.00	40.00	0.50	0.30
Servo Easy programming Homing Cur, pos. Example Cur, pos. Example Cur, pos. Example Cur, pos. Example Cur, pos. Cur, pos. Cur, pos. Cur, pos. Cur, pos. Cur, pos. Cur, pos. Cur, pos. Cur	1. F. End	100.00	30.00	0.50	0.40
	Servo Homing Cur. pos	Easy programmi R(Repeat) Stop	ng time T1_0.0 s T2_0.0 s T3	Star Clea 0.0s T4 0.0s	t Ir T5 0.0 s

Easy programming window opens. Touch Example button and examples for how to construct a program are displayed.

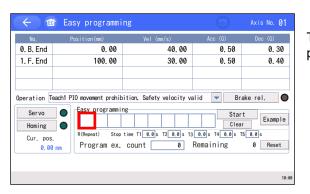
🗧 🗧 🗃 Easy programming		Axis No. 01
e.g. 1) Move to F.End(No.1) \Rightarrow Pause for "T1" sec \Rightarrow Move to B.End(No.0) Execute this operation and		
1 T1 0		
e.g. 2) Move to B.End(No.0) \Rightarrow Move to F.End(No.1) Execute this operation and repeat)	
0 1 R Progra	m ex. cou	nt 0
e.g. 3) Move to F.End(No.1) \Rightarrow Move to B.End(No.0) \Rightarrow Pause for"T2"seconds Execute this operation fo		s and finish
1 0 T2 R Progra	m ex. cou	nt 50
		10:00

Touch ← to return to the previous window. Take this as a reference when constructing an Easy programming.





[Driving Easy Programming]



Touch the first (on the most left) step of the easy programming.

No. 0. B. End	Positio	n(mm) 0.00	Vel	(mm/s) 40 0		(G) 0 50	Dec (G) 0,30
1. F. End	0	1	R	40 6	CLR	ESC	0.30
peration Tea	T1	T2	Т3	T4	T5	ENT	e rel.
Servo Homing		programmi eat) Stop	ng time T1 0.1	0 s T2 0.0 s	; T3 0.0 s	Start Clear	Example
Cur. pos. 0.00 m	Pro	ogram ex.		0	Remain		0 Reset

Input a position number or a timer (T1 to T5) and touch $\boxed{\text{ENT}}$ button.

0. B. End	0.00	40.00	0.50	0.30
1. F. End	100.00	30.00	0.50	0.40
Deration Te Servo Homing Cur. pos. 0.00	Fasy programmi R(Repeat) Stop	T2 1 R time T1 0.0 s T2 0.0 s T3	Star Clea	Ir Example

Set the next step and after in the same manner. Set R at the end when it is required to repeat the operation.

(+ @	Easy programm	ing				No. 01
No.	Position(mm)	Vel (mm/s)	Acc	(G)	Dec	(G)
0. B. End	0.00	40.00		0.50		0.30
1. F. End	100.00	30.00		0.50		0.40
						0.0
	- Fasy programmi	bition, Safety velocity va	7	8	9	ESC
Servo Homing		T2 1 R	4	5	6	BS
Cur. pos. 0.00	. Drogram ov	time T1 0.0 s T2 0.0 s T3	1	2	3	CLR
0.00			0		+/-	ENT
						10:00

Use a timer (T1 to T5) if you would like to set a stop time. Touch a timer and input in the numeric keys.

INTELLIGENT
ACTUATOR —



0. B. End	0.00	40.00	0.50	0.30
1. F. End	100.00	30.00	0.50	0.40
Servo Homing Cur. pos.	Easy programmi 1 T1 0 R(Repeat) Store	T2 1 R time T1 2.5 s T2 1.0 s T3	Star Clea	r Exampl

Have the servo ON and the home-return conducted, and then touch Start button to start the operation.

📧 Easy programming (6) 0. B. End 0.00 40.00 0.50 0.30 1. F. End 100.00 30.00 0.50 0.40 Operation Teach1 PIO movement prohibition. Safety velocity valid 🔻 Brake rel. 🔵 0 Easy programming Start Example Servo 1 T1 0 T2 1 R Homing 🔾 Clear Stop time T1 2.5 s T2 1.0 s T3 0.5 s T4 0.0 s T5 0.0 s R(Repeat) Cur. pos. Program ex. count 0 Remaining Ø Reset 0.00 mm

📧 Easy programming (G) 0. B. End 0.00 40.00 0.50 0.30 1. F. End 30.00 0.50 0.40 100.00 Operation Teach1 PIO movement prohibition. Safety velocity valid 🔽 Brake rel. 🔵 Easy programming 0
 Easy programming
 Start
 Example

 1
 T1
 0
 T2
 1
 R
 Clear
 Example

 R(Repeat)
 Stop time T1
 2.5 s
 T2
 1.0 s
 T3
 6.5 s
 T4
 0.8 s
 r5
 0.0 s
 Servo Homing 🔘 Cur. pos. Program ex. count 0 Remaining 0 Reset 0, 00 mm

😰 Easy programming Axis No. 01 No 0. B. End 0.50 0.30 0.00 40.00 1. F. End 100.00 30.00 0.50 0.40 Operation Teach1 PIO movement prohibition, Safety velocity valid 🔽 Brake rel. 🔘 Easy programming 0 Start Example Servo 1 T1 0 T2 1 R Homing 🔾 Clear Stop time T1 2.5 s T2 1.0 s T3 0.5 s T4 0.0 s T5 0.0 s R(Repeat) Cur. pos. Program ex. count Ø Remaining Ø Reset 0. 00 mm 10:0 During the operation, the Start button and the step number in execution turn to blue. To stop operation, touch the Start button again.

Operation stops.

10:0

10:00

If you require to set the repeating count, touch on the number of the program execution count.

÷

No

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📧 Easy programming

Servo O Easy programming

0.00

100.00

Operation Teach1 PIO movement prohibition, Safety velocity valid

No

0. B. End

1. F. End

← @	Easy programm	ing				Axis	No. 01	
No.	Position(mm)	Vel (mm/s)		Acc	(G)	Dec	(G)	Se
0. B. End	0.00	40.00)		0.50		0.30	
1. F. End	100.00	30.00)		0.50		0.40	
							100	
	- Foot program	bition, Safety velocity	val	7	8	9	ESC	
Servo Homing	0 1 T1 0	T2 1 R		4	5	6	BS	
Cur. pos. 0,00 m	R(Repeat) Sto	p time T1 2.5 s T2 1.0 s . count 100	T3	1	2	3	CLR	
0.00 1				0		+/-	ENT	
			_				10:0	,

INTELLIGENT

0. B. End	0.00	40.00	0.50	0.30
1. F. End	100.00	30.00	0.50	0.40
Servo Homing Cur. pos. 0.00	Dragram av	T2 1 R time T1 2.5 s T2 1.0 s T3	Start Clear 0.5s T4 0.0s TE Remaining	Example

40.00

30.00

(G)

0.30

0.40

10:0

0.50

0.50

🔻 Brake rel. 🔵

Set the count with the numeric keys and touch the	
ENT button.	

Touch the Start button to start operation. The repeating remaining count should be displayed and will count down as $100 \rightarrow 99 \rightarrow 98$ \rightarrow \cdots .

Touch the Reset button and the remaining count
should return to the program execution count.

Touch Clear button, and the set Easy program w	ill
be all deleted.	

1 T1 0 Repeat) Sto	T2 1 R	Clea	
Repeat) Sto			· · · · · · · · · · · · · · · · · · ·
	p time T1 2.5 s T2 1.0 s T3		
rogram ex	. count 100	Remaining	100 Reset
			1
nrogramm	ing		Avis No 0
programm	ing		Axis No. 🕖
programm	Vel (mm/s)	Acc (G)	Axis No. () Dec (G)
			Dec (G)
ion(mm) 0.00	Vel (mm/s) 40.00	Acc (G) 0.50	0.30
ion(mm)	Vel (mm/s)	Acc (G)	Dec (G)
ion(mm) 0.00	Vel (mm/s) 40.00	Acc (G) 0.50	Dec (G) 0.30
ion(mm) 0.00	Vel (mm/s) 40.00	Acc (G) 0.50	Dec (G) 0.30
ion(mm) 0.00	Vel (mm/s) 40.00	Acc (G) 0.50	Dec (G) 0.30
ion(mm) 0.00 100.00	Vei (mm/s) 40,00 30,00	Acc (G) 0.50 0.50	Dec (G) 0.30 0.40
ion(mm) 0.00 100.00	Vel (mm/s) 40.00 30.00 ibition, Safety velocity ve	Acc (G) 0.50 0.50	Dec (G) 0.30
ion(mm) 0.00 100.00	Vel (mm/s) 40.00 30.00 ibition, Safety velocity ve	Acc (G) 0.50 0.50	Dec (G) 0.30 0.40 ake rel.
ion(mm) 0.00 100.00	Vel (mm/s) 40.00 30.00 ibition, Safety velocity ve	Acc (G) 0.50 0.50	Dec (6) 0.30 0.40 ake rel.
ion(mm) 0.00 100.00	Vel (mm/s) 40.00 30.00 ibition, Safety velocity ve	Acc (G) 0.50 0.50	Dec (6) 0.30 0.40 ake rel.
ion(mm) 0.00 100.00 ovement proh sy programm	Vel (am/s) 40,00 30.00 ibition. Safety velocity va ing	Acc (6) 0.50 0.50 alid Br	Dec (G) 0.30 0.40 ake rel.
ion(mm) 0.00 100.00 ovement proh sy programm	Vel (am/s) 40,00 30,00 ibition, Safety velocity ve ing p time TI 0.05 T2 0.05 T2	Acc (6) 0.50 0.50 alid Br	Dec (G) 0.30 0.40 ake rel.
	_		

(Note) An Easy programming cannot be saved.





IX





20. Data Backup

Data is transferred between the Secure Digital Memory Card in the touch panel teaching pendant and the controller.

[Type of Stored Data]

- Position
- Program (individual, total)
- Symbol
- Parameter
- · All data backup
- · Global data
- Error list
- · Coordinate system definition data
- Positions for RC axes
- Positioner mode information
- Driver unit parameter

[Compatibility of Stored Data]

- The extensions of the data to be stored in a Secure Digital Memory Card are the same as those handled in the PC software for XSEL, thus there is compatibility. The extension of the position data for XSEL-J/K for example is ".xpt".
- (Refer to [List of Supported Models] in PC Software Instruction Manual for XSEL.)
- The error list is object only to backup. It cannot be restored. Data is in a CSV file.

[Directories of the Stored Data]

The folders to store the backup data of the controller and the folder to read the data from when restoring the data to the controller are as listed below. The directories to store the files cannot be changed. The files existing in other directories other than the specified folders cannot be listed up in the file name list in the file select at the initial setting or restore. If the folder does not exist, it is automatically created.

Data Type	Directory
Position	\TB_SEL\Position\File Name
Program (individual)	\TB_SEL\Program\File Name
Program (total)	\TB_SEL\ProgramAll\File Name
Symbol	\TB_SEL\Symbol\File Name
Parameter	\TB_SEL\Parameter\File Name
All data backup	\TB_SEL\Backup\File Name
Global data	\TB_SEL\Global\File Name
Error list	\TB_SEL\ErrorList\File Name
Coordinate system definition	\TB_SEL\Coordinate\File Name
data	
Positions for RC axes	\TB_SEL\RcPosition\File Name
Positioner mode information	\TB_SEL\PosMode\File Name
Extended Motion Position	\TB_SEL\ExMotionPos\File Name
Driver unit parameter	\TB_SEL\DrvUnitPara\File Name or Folder Name





20.1 Data Backup of the Controller

The data in the controller is transferred to the Secure Digital Memory Card for backup.

🤆 Menu	
Edit	File
Play	
Monitor	Environment Set
Controller	Next
Edit Play	Monitor Control ->

Touch File button in the menu screen.

🔶 File		
Backup Data		
Restore Data		
	Back	
Backup Restore		

Touch Backup Data button in the file menu screen.

🗧 🗧 Backup Data	
Position	All Data
Program	Global Data
Symbol	Return to File Menu
Parameter	Next
Position Program	Symbol Para ->

Select the data type that you want to store by touching the appropriate button. Touch Next button and the data types displayed in the screen will be switched.



When you store the data stated below, it is necessary to select the range of file storage after the data type to store is selected.

- (i) Position*
- (ii) Program
- (iii) Positions for RC axes
- (iv) Driver unit parameter
- * There should not be the select position data storage window displayed for RSEL and XSEL2-T/TX. (Position data in all the range should be stored.)
- (i) Position

((Position data Backup
	First No. Last No. • Selected Range 1 - 100 • Full Range
	OK CANCEL
	Keyboard
	SaveType OK

Input the position number range for backup and touch OK button. If you touch CANCEL button, the display returns to the backup menu screen.

[Selected Range]: Only the position data in the range input in "First No." and "Last No." is stored. [Full Range] : All the position data in the controller is stored.

Selected Range 1 -	t No. 10 <mark>0</mark>			
○Full Range				100
	7	8	9	ESC
ОК СА	4	5	6	BS
	1	2	3	CLR
	0		+/-	ENT
SaveType OK				

Touch items to select in "Range Indication" and "All Data".

When you select "Selected Range", input the position storage range. If you touch in the input area on "First No." or "Last No.", the cursor appears in the item you have touched.

Input the position number by displaying the numeric keys on the touch panel by touching Keyboard button.

Touch on the numeric part if you want to input on the touch panel numeric keys. The contents of input will be shown in the box above the touch panel numeric keys. When confirming the input number, touch $\boxed{\text{ENT}}$. The touch panel numeric keys close and the cursor moves to the next input box. (The cursor will disappear if Last No. is input.)

When redoing the input, touch ESC. When it is desired to cancel the input, touch ESC again, and the touch panel numeric keys will close.





(ii) Program

No	Steps	Program Name	Page Up Page Dn
1	100	PRG_001	Remaining 9599
2	100	Sample	
3	0		
4	100	Demo	
5	0		
6	0		Save All
7	100	PRG_007	Cancel
8	0		Carloot
	ch PrgNo. then	the tax around	- 8

Touch the program number to have a backup. If you touch CANCEL button, the display returns to the backup menu screen.

Touch Save All button, and all the programs in the controller can be stored at once as one file.

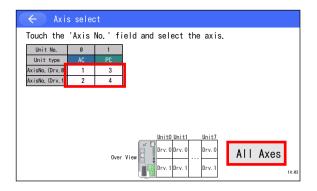
- * A program number with 0 for number of steps cannot be indicated.
- (iii) Positions for RC axes

← RC Position [Data Backup	
Position Data with Axis0 Axis1 Axis2 Axis3 Axis4 Axis5 Axis6 Axis7	the selected axes Axis8 Axis9 Axis10 Axis11 Axis12 Axis14 Axis15	are saved. Sict All Ris All
ОК		CANCEL
SICT AII RI	sAII OK	

Touch the RC axis numbers to store to put a check mark. (Only activated axes are subject to select.) After selecting the RC axis numbers to be stored, touch OK button. If you touch CANCEL button, the display returns to the backup menu screen.

Touch SIct All button, and all the activated axes can be selected. Touch RIs All button, and all the activated axes can be released from selected.

(iv) Driver Unit Parameter



Touch an axis number to save and select an axis. If you would like to save parameters of all the axes, touch the All Axes button. Files for the valid axes should be saved in the indicated folder.

Touch the — button and the screen returns to the backup menu window.





After the file storage range is selected, the display goes to the file name indication screen. (When data other than programs, positions and RC axis positions is to be stored, the display immediately goes to the file name indication screen after the file data select.)

🔶 Designate File Name	
Position Data	
File Name	
Position	
Save	Cancel
	Keyboard
Save	

Input the stored file name, and touch <u>Save</u> button. Touch <u>Cancel</u> button, and the display returns to the previous screen.

* The number of letters available to input in the stored file name is 31 at maximum with half-size font characters.

Touch the input area for "File Name", the cursor appears in the item you have touched. With the cursor being displayed, touch Keyboard button to show the touch panel numeric keys to input words.



Initial Screen

SHIFT key being touched

Use the keyboard shown in the figures above to input the file name. When you want to input a capital letter, either touch <u>SHIFT</u> key or touch <u>CAP</u> key to show the capital letters. (Figure on top right) <u>SHIFT</u> key gets released every time after a letter is input while <u>CAP</u> key is remained on until it is touched again. Touch <u>ENT</u> or <u>TAB</u> key to confirm the letter you have input.

* For the driver unit parameter (all at once for all axes), input a name of folder.

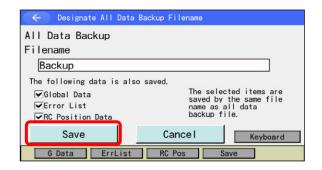
[Operation of Special Function Keys out of Letters]

- ESC cancels what was input and clear all the input conditions. When nothing is input, they keyboard closes by touching this key.
- It deletes a letter in front of the cursor. When nothing is input, all letters are deleted. BS It deletes letters on the cursor. DEL TAB It confirms the input letters and closes the keyboard. It moves the cursor one step to the left. It moves the cursor one step to the right. ↑ Move the cursor one step to the left. Move the cursor one step to the right. SHIFT It converts the letters on the keyboard to capital letters. It is released by inputting one letter or touching SHIFT key again. It converts the letters on the keyboard to capital letters. Touch CAP key again and it is CAP released. ENT It confirms the input letters and closes the keyboard.





When all the data backup files are to be stored, the following screen will be shown to designate the backup file names.



Input the stored file name, and touch Save button. (The way to input the file name is the same as the way to save other data.)

If you touch CANCEL button, the display returns to the backup menu screen.

* The number of letters available to input in the stored file name is 31 at maximum with half-size font characters.

When the backup file for all the data is stored, the global data, error list, RC position data and Extended Motion Position Data can be stored at the same time. When you store these sorts of data, put a check mark by touching on the data name (global data, error list, RC position data and Extended Motion Position Data).

- * The items of RC-axis Position Data and Extended Motion Position Data are displayed only when these functions have become available.
- * The file names for the data stored at the same time are the same as that for the backup file for all the data. (Only the extensions differ.)
 For instance, if the backup file name for all the data is "Backup yek", the file name for the global data.

For instance, if the backup file name for all the data is "Backup.xbk", the file name for the global data stored together is "Backup.xgd).

* The global data should also be stored in the all data backup file for RSEL and XSEL2-T/TX.





Backup files for some controllers are applicable for storage of file comments.

In case it is applicable, there should be a file comment input box displayed below the file name input box.

If it is required to input a comment, touch in the file comment input box to show the cursor, and then touch the keyboard button. A touch panel keyboard will appear. Input some character string, and touch the ENT button. It is not necessary to have a comment unless required.

The number of characters available for input in the file comment input box is up to 40 half-width characters.

🔶 Designate File Name	
Position Data Package	
File Name	
Position	
Comment (Optional)	
Save	Cancel
	Keyboard
	18:88

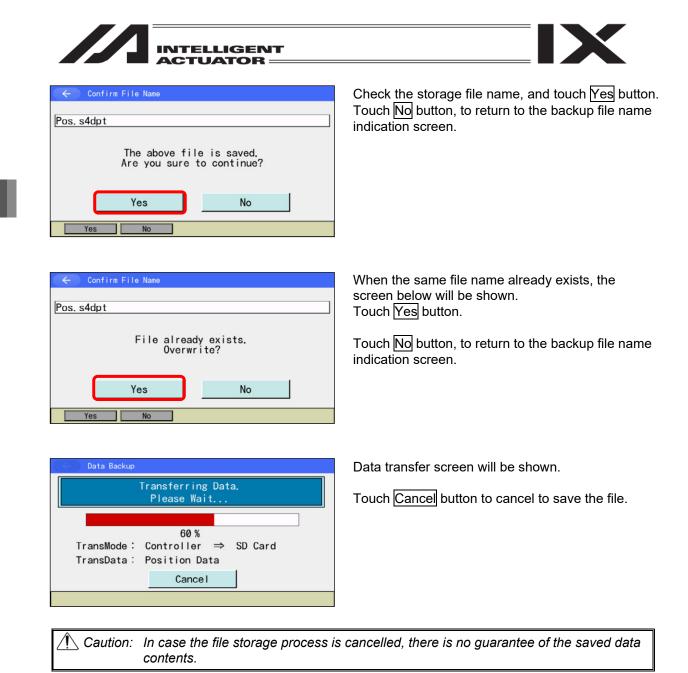
Touch in the file comment input box to show the cursor, and then touch the Keyboard button.

A touch panel keyboard appears.

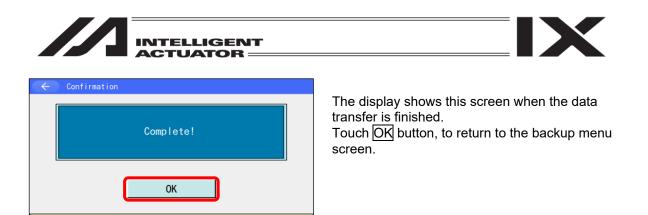
Central Designate File Name
Position Data Package
File Name
Comment
ESC 1 2 3 4 5 6 7 8 9 0 - = BS
TAB q w e r t y u i o p []
CAP a s d f g h j k l ;
SHIFT Z X C V b n m , . / ENT
$\begin{array}{c c c c c c c c c c c c c c c c c c c $
10:00

Input some character string, and touch the ENT button.

* The number of characters available for input in the file comment input box is up to 40 half-width characters.



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[Remark]

When the backup file for all the data and the data file for the RC axis positions are stored together, the select screen for the RC axis number to be stored opens after the backup file for all the data is stored. The way to operate this screen is the same as when you store the RC axis position data file individually.

← RC Position Da	ata Backup	
Position Data with t Axis0 Axis1 Axis2 Axis2 Axis3 Axis4	he selected axes Axis8 Axis9 Axis10 Axis11 Axis12	are saved.
Axis5 Axis6 Axis7	Axis13 Axis14 Axis14 Axis15	SICT AII RIS AII CANCEL
Sict All Ris	A11 OK	





20.2 Restore to Controller

Data in the Secure Digital Memory Card is transferred to the controller.

🤆 Menu	
Edit	File
Play	
Monitor	Environment Set
Controller	Next
Edit Play M	Nonitor Control ->

Touch File button in the menu screen.

🗧 File		
Backup Data		
Restore Data		
	Back	
Backup Restore		

Touch Restore Data button in the file menu screen.

🔶 Restore Data	
Position	All Data
Program	Global Data
Symbol	Return to File Menu
Parameter	Next
Position Program	Symbol Para ->

Select the data type that you want to transfer by touching the appropriate button. Touch Next button and the data types displayed in the screen will be switched.

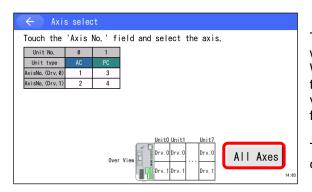




When the driver unit parameter (for applicable models only) is selected as the data type, the screen goes to the following window.

÷	Confirmation	
	If the restore target is specified incorrectly, the robot may not operate normally. Backup the parameters so that they can be put back anytime to those before changing them. Do you want to restore the parameters?	
	Backup Menu	
	Yes No	
	Yes No	10:00

The confirmation window before restoring should appear. Touch the Yes button and the screen goes to the select restored axis window. Touch the No button and the screen returns to the file menu window. Touch the Backup Menu button and the screen goes to the backup menu window.



Touch an axis number in the select restored axis window to select an axis.

When you would like to transfer parameters for all the axes, touch the <u>All Axes</u> button. Files for the valid axes should be transferred from the indicated folder.

Touch the \leftarrow button and the screen returns to the confirmation window before restoring.





🔶 Designate File Name	
Position Data	
Select File	
PSEL. pspt	
PSEL, pspt ASEL, aspt SSEL, sspt2	▲ ▼
Transfer	Cance I
Transfer	

Touch \blacktriangle and \bigtriangledown to select a file to transfer to the controller from the file list in a Secure Digital Memory Card.

Touch Transfer button.

If you touch <u>Cancel</u> button, the display returns to the restore menu screen.

- * In case the name of the file name exceeds 38 characters in half-size font and the extension is in 3 characters, the short file name (8.3 Format) should be shown in the file list. Those files with the extension in 4 characters or more will not be displayed in the file list.
- * The No. of files that can be displayed in the file list, is up to 300. The excessive files are not displayed in the file list.

The display moves to the restore file name indication screen as shown in the figure below only when the backup file is transferred for all the data.

🗲 Designate All Data Backup Filename
Select All Data Backup Filename
Backup. s4dbk
Select Global Data Filename
RXDSXD_backup. s4dgd
Select RC Position Data Filename
Backup.rpt
Transfer Cancel
G Data RC Pos Transfer

Touch \blacktriangle and \bigtriangledown to select a file to transfer to the controller from the file list in a Secure Digital Memory Card.

Touch Transfer button.

If you touch <u>CANCEL</u> button, the display returns to the restore menu screen.

- * In case the name of the file name exceeds 38 characters in half-size font and the extension is in 3 characters, the short file name (8.3 Format) should be shown in the file list. Those files with the extension in 4 characters or more will not be displayed in the file list.
- * The No. of files that can be displayed in the file list, is up to 100. The excessive files are not displayed in the file list.

When the backup file is transferred for all the data, it is available to transfer the global data file, RC axis position data file and Extended Motion Position Data File at the same time.

To transfer these sorts of data, touch on the data name (global data, RC position data and Extended Motion Position Data File) to put a check mark.

Next, select the files you want to transfer from the file list.

INTELLIGENT ACTUATOR	
🗲 Designate All Data Backup Filename	The window shown in the figure on the left should
Select All Data Backup Filename	be displayed for RSEL and XSEL2-T/TX.
AllDataBackup.rsbk	
Comment Comments are displayed here. Detail	
Global Data is also restored.	
Transfer Cancel	
10:08	

For RSEL and XSEL2-T/TX, when transferring all the data backup files, it is available to transfer the global data at the same time.

In order to transfer the global dat, touch the checkbox to put a checkmark.

Touch the Detail button and the tool information and the controller information in the backup file can be checked.

* For RSEL, when transferring all the data backup files, the files cannot be transferred if the driver unit construction information in the all data backup files and the construction of the actual driver unit are different from each other.





Backup files for some controllers are applicable for storage of file comments.

If the backup file and the controller under connection are applicable for the storage of file comment, there should be a file comment displayed below the file select box.

🔶 Designate File Name	
Position Data(including Select File	; Package)
Position.rspta	▼
Comment	
Comment	Detail
Transfer	Cancel
Transfer	10:00

Select the backup file to transfer to the controller in the select file box.

If the backup file and the controller under connection are applicable for the file comment, there should be a file comment displayed below the file select box.

If the backup file is applicable for the file comment, the tool information and controller information can also be stored in the backup file.

Touch the Detail button and the tool information and the controller information in the backup file can be checked.

← Designate File Name	
Position Data(including F	Package)
Select File	
Position.rspta	V
Comment	
Comment	Detail
Turnefer	Orman
Transfer	Cancel
Transfer	10:00

Select a backup file to transfer to the controller in the select file box and touch the Detail button.

File detailed information
About file saving
Backup date : 2019/09/01 10:00:00
Tool version : TB-02/TB-03 V2.60
Controller information
Model : RSEL
Version : V1.00
Serial No. : A123456789
Back
10:00

The tool information and controller information in the backup file are shown.





Contents of display are as shown below:

About file saving	
Backup data	: The day and time of backup is shown.
Tool version	: A tool used for the backup and the version of the tool are shown. Controller information
Model	: Model name of a controller that the backup was conducted is shown.
Version	: The application part version of a controller that the backup was conducted is shown.
Serial No.	: The manufacturing number of a controller that the backup was conducted is shown.

* There should display a blank if there is no applicable data in the backup file.

Touch the Back button and the screen goes back to the designate file name window.





After selecting the file to be transferred, set the controller transfer range. (When the symbol files and backup file for all the data are transferred, the transfer range select screen will not be shown. The data stored in the file are all transferred.)

(i) Position

Position data Restore
First No. Last No.
OK CANCEL
Keyboard
ОК

♥ Position data Restore				
First No. Last No.				
				100
	7	8	9	ESC
OK CA	4	5	6	BS
	1	2	3	CLR
	0		+/-	ENT
ОК				

Input the position number range for the transfer to the controller and touch OK button.

If you touch CANCEL button, the display returns to the restore file name indication screen.

If you touch in the input area on "First No." or "Last No.", the cursor appears in the item you have touched.

Input the position number by displaying the numeric keys on the touch panel by touching Keyboard button.

Touch on the numeric part if you want to input on the touch panel numeric keys. The contents of input will be shown in the box above the touch panel numeric keys. When confirming the input number, touch ENT. The touch panel numeric keys close and the cursor moves to the next input box. (The cursor will disappear if Last No. is input.)

When redoing the input, touch ESC. When it is desired to cancel the input, touch ESC again, and the touch panel numeric keys will close.





In RSEL and XSEL2-T/TX, each axes group retains the position data. When an axis number assignment to activate several axes groups is performed in the axis number assignment feature (Refer to [15.17 Axis Number Assignment]), a window to select the axes group that is subject to restoring at the position data restoring should be shown.

(Refer to [15.17.2 Axis Number Assignment Mode Switchover] for axes groups)

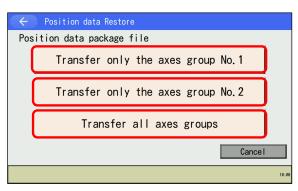
1) When restoring a backup file with axes group inactivated or backup file saved in the axis number assignment feature non-applicable controller to a controller with axes group activated

K	Pos	ition data R	esto	re				
Pos	sitior	n data file						
		Transfer	to	the	axes	group	No. 1	
		Transfer	to	the	axes	group	No. 2	
							Cancel	
								10:00

A position data file includes the position data for 1 group of axes group.

As the window shown in the figure on the left should be shown, select an axes group for the destination of restoring.

2) When restoring a backup file saved with axes group activated to a controller with axes group activated.



A position data file includes the position data for several axes groups.

As the window shown in the figure on the left should be shown, select an axes group for the destination of restoring.

* In this case, the position data will be restored to the same axes group number as that for backup.

When there is only one of the axes group subject to restoring, the select transfer range window should appear. Select a range and touch the OK button. When the all axes groups transferred is selected, the select transfer range window should not appear. (All the position data in the range should become the subject to restoring.)





🔶 Position data Restore	Axes group No. 1
First No. •Selected Range0 _Full Range	Last No. 0 (Max. 18,000)
OK	CANCEL
	Keyboard
	OK 18:84

If there is only one of the axes group subject to restoring, the window shown in the figure on the left appears.

(Shown on the top right of the window is the destination axes group number for restoring)

Selected Range : The position data in the range input in "First No." and "Last No." should be restored.

Full Range : All the position data in the indicated axes group should be restored.

Touch an item to select either "Selected Range" or "Full Range".

(ii) Program (individual)

No.	Steps	Program Name	Page Up	Page Dn
1	100	PRG_001	Remaining	9599
2	100	Sample		0000
3	0			
4	100	Demo]	
5	0]	
6	0			
7	100	PRG_007	Cance	
8	0			
	ah Duatia than	it is restored.		

Touch the transferred program number. If you touch Cancel button, the display returns to the restore file name indication screen.

(iii) Program (total)

No	Steps	Page Up Page Dn
1	100	
2	100	
3	0	
4	100	
5	0	Restore All
6	0	Restore All
7	100	Cancel
8	0	
*Tou	ch PrgNo, then	t is restored.

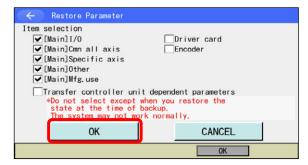
Touch the program number to be transferred individually. If you touch Cancel button, the display returns to the restore file name indication screen.

Touch Restore All button, and all the programs in the file can be transferred at once to the controller.





(iv) Parameter



Touch the parameter type to be transferred to put a check mark.

Select the transferred parameter type individually and touch \overline{OK} button.

If you touch <u>CANCEL</u> button, the display returns to the restore file name indication screen.

- * The controller basic unit dependent parameters are transferred only when a check mark is on "Transfer controller unit dependent parameters". Do not attempt to put a check mark on this in normal use. This setting is to be conducted in following cases.
 - When it is necessary to rewrite the parameters because the flash ROM data is broken
 - When it is necessary to rewrite the parameters because the basic unit dependent parameters on a wrong controller type is accidently written
- · When the status at the backup process needs to be recovered
- * It is not available to have a parameter transfer on a specific axis. The parameters on all the axes stored in the file are transferred.

The parameter types to be displayed should differ in RSEL and XSEL2-T/TX.





← Restore Parameter	
Item selection ♥ [Main]I/0 ♥ [Main]Common to all axis ♥ [Main]Axes group ♥ [Main]Robot ♥ [Main]Specific axis ♥ [Main]PLC ♥ [Main]Other ♥ [Main]Manufacturer use	Driver Encoder Option board
ОК	CANCEL
	14:53

For XSEL2-T/TX

Touch the parameter types to be transferred to put a checkmark.

Touch the OK button after selecting the parameter types to be transferred.

If touching the CANCEL button, the screen goes back to the designate restore file name window.





(v) Global data

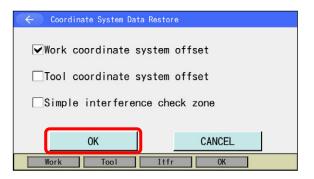


Touch on the global data types that you want to transfer to put a check mark.

After finishing selecting the transferred global data types, touch OK button.

If you touch <u>CANCEL</u> button, the display returns to the restore file name indication screen.

(vi) Coordinate system definition data



Touch on the coordinate system definition data types that you want to transfer, to put a check mark.

After finishing selecting the transferred coordinate system definition data types, touch OK button. If you touch CANCEL button, the display returns to the restore file name indication screen.

(vii) RC position data

← RC Posit	ion Data Restore		
Position Axis0 Axis1 Axis2 Axis2 Axis3 Axis4	Data with the selecter Axis8 Axis9 Axis10 Axis11 Axis12	d axes are restored.	
✓ Axis5 ✓ Axis6 ✓ Axis7	✓ Axis13 ✓ Axis14 ✓ Axis15 OK	SICT AII RIS AII CANCEL	
SICT AII	RISAII OK		

Touch on the axis numbers that you want to transfer to put a check mark. After finishing selecting the transferred axis numbers, touch OK button. If you touch CANCEL button, the display returns to the restore file name indication screen.

Touch Sict All button, and all the activated axes can be selected. Touch Ris All button, and all the activated axes can be released from selected status.





(viii) Extended motion position data

← Ex M	otion Positi	on Data Rest	ore	
Position Da Axis0 Axis1 Axis2 Axis3 Axis4 Axis5 Axis6 Axis7	ta with the Axis8 Axis9 Axis10 Axis11 Axis11 Axis12 Axis13 Axis14 Axis15	selected axe Axis16 Axis17 Axis18 Axis19 Axis20 Axis21 Axis22 Axis23	Axis24 Axis25 Axis25 Axis26 Axis27 Axis27 Axis28 Axis29 Axis30 Axis31	Sict All Ris All
	OK		CANC	CEL
SIct AI	I 🛛 🔤 🛛 RIs Al	I OK		10:00

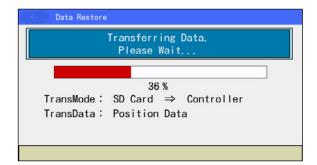
Touch on the axis numbers that you want to transfer to put a check mark. After finishing selecting the transferred axis numbers, touch OK button. If you touch CANCEL button, the display returns to the restore file name indication screen.

Touch Slct All button, and all the activated axes can be selected. Touch RIs All button, and all the activated axes can be released from selected status.

← Confi	rm File Name		
TransFile	: XSEL-PQ. x2pt2		
TransData	:Position Data		
t	The above data Do you want		
	Yes	No	
Yes	No		

Check the contents of transfer, and touch Yes button.

If you touch No button, the display goes back to the previous screen.



Data transfer screen will be shown.

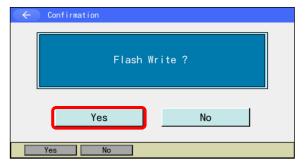


The display shows this screen when in the data transfer is finished.

If you touch OK button, the display returns to the restore menu screen.







To write the transferred data to the flash ROM, touch Yes button. When it is not necessary to write the data to the flash ROM, touch No button.

* This screen would not be shown when the flash ROM writing is not necessary (in such cases as global data file transfer).



"Flash ROM writing..." flashes during the flash ROM writing.

Never turn off the power to the Controller at this time.

← Confirm	mation	
	Complete!	
	ОК	

The display shows this screen when the flash ROM writing is finished. If you touch OK button, the display returns to the restore menu screen.

[Remark]

When the backup file for all the data and the data file for the RC axis positions and extended motion position data are stored together, the select screen for the RC axis number and extended motion control axis to be stored opens after the backup file for all the data is stored.

The way to operate this screen is the same as when you store the RC axis position data and extended motion position data file individually.





← RC Posit	ion Data Restore			
Position Axis0 Axis1 Axis2 Axis3 Axis3	Data with the se Axis8 Axis9 Axis1 Axis1 Axis1 Axis1	0 1	are restored.	
Axis4 Axis5 Axis6 Axis7	Axisi Axisi Axisi Axisi	3 4 5	SICT AII RIS AII ANCEL	
SICT AII	RIS AII	ОК	,	

← Ex M	lotion Positi	on Data Rest	ore	
Position Da VAxis0 VAxis1 VAxis2 Axis3 Axis4 Axis5 Axis6 Axis7	ata with the Axis8 Axis9 Axis10 Axis11 Axis12 Axis13 Axis14 Axis15 OK	selected axe Axis16 Axis17 Axis18 Axis19 Axis20 Axis21 Axis22 Axis23	es are reston Axis24 Axis25 Axis26 Axis26 Axis27 Axis28 Axis29 Axis30 Axis31 CAN(Sict All Ris All
SIct AI	I RISAI	I ОК		10:00

In the case that the RC-axis position data file is transferred at the same time

In the case that the extended motion position data file is transferred at the same time:









21. Environment Setting

Settings are established for the language, touch operation sound, sleep timer, clock and display.

(<) Menu					
Edit	File				
Play					
Monitor	Environment Set				
Controller	Next				
Edit Play Monitor Control ->					

The environment setting screen appears.

Environment setting							
• Language	Chinese	Japane	ese	English			
• Sound	0FF	MIN	MID	MAX			
•DimDispTime 30 sec							
• Data editing in non-MANU mode Permit Prohibit							
Time	Display	Write		Keyboard			
Menu	Time	Display		8:06			

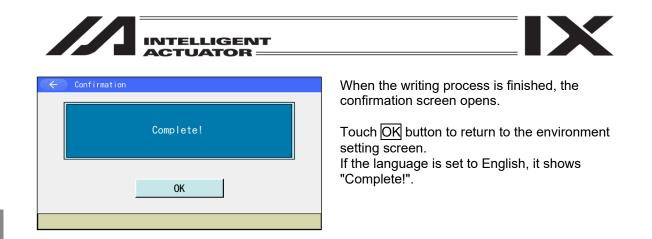
[Language]

Language can be selected and changed.

Environment setting							
• Language	Chinese	e Japar	nese	English			
• Sound	0FF	MIN	MID	MAX			
•DimDispTime ("0":Never Dim) 30 sec							
• Data editing in non-MANU mode Permit Prohibit							
Time Di	splay	Write	,	Keyboard			
Menu	Time	Display		8:06			

Touch Environment Set button in the menu screen.

- 1. Select Chinese, Japanese or English and touch.
- 2. Touch Write button.
- (Note) If writing is not conducted, the values will go back to those before making a change when moving to another screen.



[Touch Operation Sound Setting]

Setting can be established whether to output the touch sound or not.

Environment setting								
 Language 		Chines	e	Japa	nese		English	
Sound		0FF	N	MIN	MI	D	MAX	
•DimDispTime ("0":Never Dim) 30 sec								
• Data editing in non-MANU mode Permit Prohibit								
Time	Di	splay		Write	е	K	eyboard	1
Menu		Time	D	isplay	/ [8	8:06

← Confirmatio	1
	Complete!
	ОК

When the writing process is finished, the confirmation screen opens.

Touch OK button to return to the environment setting screen.

Select OFF, MIN, MID or MAX and touch.
 Touch Write button.

(Note) If writing is not conducted, the values will

when moving to another screen.

go back to those before making a change





[Sleep Timer]

Timer setting can be established for the screen to go to the sleep mode when no operation is held.

Environment setting							
• Language	Chinese	Japanese	English				
• Sound	0FF	MIN MI	ID MAX				
• DimDispTime ("0":Never Dim) 30							
• Data editing in non-MANU mode Permit Prohibit							
Time	Display	Write	Keyboard				
Menu	Time	Display	8:06				

- 1. Touch in the input box (highlighted in a square) at "DimDispTime".
- 2. Input a value to set on the keyboard.
- 3. Touch Write button.
- (Note) If writing is not conducted, the values will go back to those before making a change when moving to another screen.

← Confirmation	
Сотр	lete!
	К

When the writing process is finished, the confirmation screen opens.

Touch OK button to return to the environment setting screen.

[Data Edit in Non-Manual Mode]

Permission and prohibition of data edit in AUTO Mode can be set.

Environment setting						
• Language	Chinese	Japanese	•	English		
• Sound	0FF	MIN	MID	MAX		
•DimDispTime 30 sec						
•Data editir	•Data editing in non-MANU mode Permit Prohibit					
Time	Display	Write		Keyboard		
Menu	Time	Display	1	8:6		

- 1. Select either Permit or Prohibit and touch.
- 2. Touch Write button.
- (Note) If writing is not conducted, the values will go back to those before making a change when moving to another screen.

← Confirmation		
	Complete!	
	ОК	

When the writing process is finished, the confirmation screen opens.

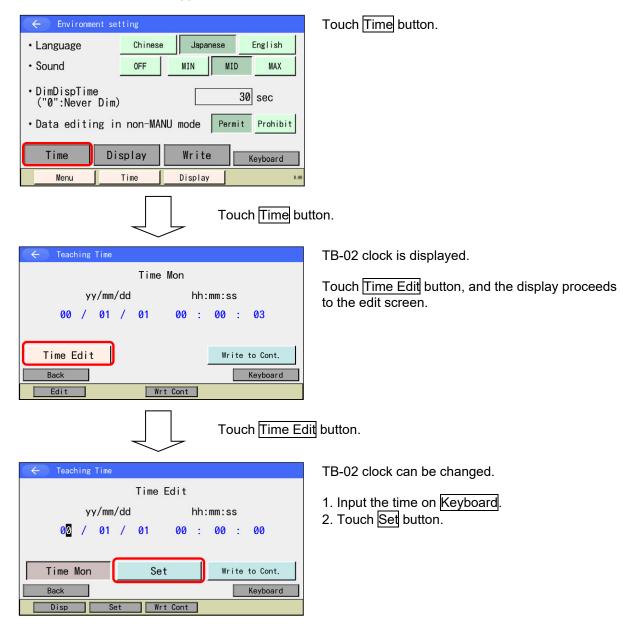
Touch OK button to return to the environment setting screen.

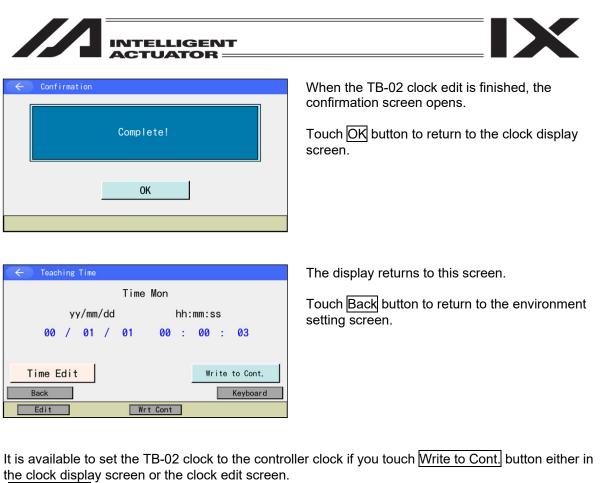




[Time Setting]

Clock setting can be established on TB-02. It is also available to set the TB-02 clock to the controller clock when a model that supports the controller clock is connected.





(Write to Cont. appears only when a model that supports the controller clock is connected.)





[Display] Adjustment of contrast and brightness of the screen, position tuning for touch panel and LCD screen check can be performed

← Environment setting						
• Language	Chines	e Japanese	English			
• Sound	OFF	MIN MIC	D MAX			
•DimDispTime 30 sec						
•Data editing in non-MANU mode Permit Prohibit						
Time	Display	Write	Keyboard			
Menu	Time	Display	8:06			

Display Setting menu screen is displayed.

Display Setting	
Contrast/Brightness	
Touch calibration	
LCD check	
Menu	

Touch Display button.

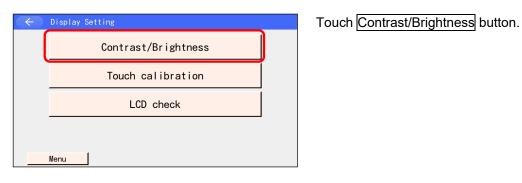
Select Display Setting menu.

Touch Menu button to return to the menu screen.





Change the Contrast/Brightness



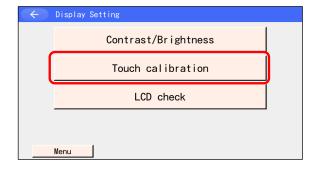


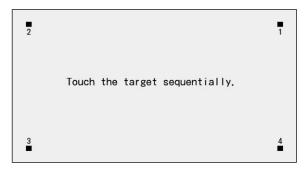
Touch \square and + under Contrast to adjust the contrast of the screen. Touch \square and + under Brightness to adjust the brightness of the screen.

Touch Menu button to return to the menu screen.

Touch calibration

A calibration for the position detection of the touch panel is performed.





Touch Touch calibration button.

Touch \blacksquare in the order of 1, 2, 3 and 4.

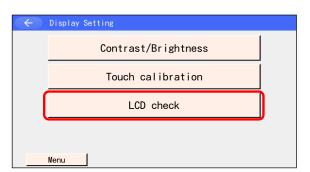
After finished, the display automatically returns to the menu screen.





LCD Check

LCD Display can be checked in the order of color pattern, White only and Black only.



Touch LCD check button.

Color Pattern is displayed.

Touch any point on the screen.

White only is displayed.

Touch any point on the screen.



Black only is displayed.

Touch any point on the screen.

After the color patterns are displayed again, the display automatically returns to the menu screen.





22. Error Display

22.1 RSEL and XSEL2-T/TX System

22.1.1 Display at Occurrence (Except for Those in Display for ELECYLINDER, ROBO PUMP Operation)

A troubleshooting window should show up when an error has been occurred. Touch How to deal button in the troubleshooting window and the confirmation window opens. Follow the instruction in the window to remove the cause and conduct the error reset.

[Example of Window]

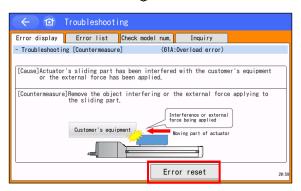
← @	Troubleshootin	g					
Error display	Error list C	heck mod	el num.	Inquiry	r]		
•Error descript							
Error No.	61A		Error	level	Cold	start	
Name Overl	oad error						
exter	tor's operating nal force applie oad of the motor	ed to th	ion exce ne actua	eded the ator's sl	rati ider	ng, or the part made f	the
Program No.:	Ø Step No.:	0	Pos	ition No.:		0 Ax. No. : 0	
Time(yy/mm/dd H	nh:mm:ss) **/**	*/** **:*	*:** De	tail code:	Øh	0h 0h	0h 0h
How	to deal		Erro	r reset			7:52
는 ① Error display	Troubleshootin Errorlist 0		el num.	Inquiry			
- Troubleshooti	ng [Cause Classific	ation] 1/	3 (61A:C)verload er	ror)		
	could be the cause.					ling to each i	item.
(1)Actuator's	sliding part is into	erfering	with cust	tomer's dev	ICe	Coun	ıt.m
(2)Actuator and	d controller model a	are not m	atching.				_
						Coun	it.m
(3)Actuator's catalog spe	bayload or accelerat 5.	tion/dece	leration	is exceedi	ng the	Coun	it.m
			Erro	or reset		See other factors	7:55
			Ļ				

Touch How to deal button.

When there are several factors, touch Count.m button at the applicable factor.

If there is no applicable factor, touch See other factors button.

* This window should not be displayed if the factor is not more than one.



The countermeasure should be displayed. Follow the instruction in the window to remove the cause and touch Error Reset button.





22.1.2 Error List for Teaching Pendant

(Except for Those in Display for ELECYLINDER, ROBO PUMP Operation)

Shown below is a list of errors related to teaching pendants. Refer to [Controller Instruction Manuals] for errors related to controllers.

Error No.	Error message
300	SEL Command Language Input Error
301	Operand Input Incomplete Error
302	Operand Input Prohibited Error
303	Operand Data Error
304	Operand Undefined Symbol Use Error
305	Operand Symbol Type Error
306	Program in Process Edit Prohibited Error
307	Symbol Error
308	Input Condition Undefined Symbol Use Error
309	Symbol Use Count Excess Error
30A	Secure Digital Memory Card Error (TP)
30B	Internal Process Error
30C	Consolidated Position Data File Error
30D	Data Edit Prohibited in Non Manual Mode Error
30E	Input Data Error
30F	Input Too Small
310	Input Too Big
311	Protect Data Error
312	Coordinate 1 / Coordinate 2 Valid Axis Pattern Error
313	Password Error
314	Home-Return Incomplete Error (TP/PC)
315	Servo off in Operation
316	Input Condition Input Prohibited Error
317	Input Condition Data Error
318	Input Condition Out of Input Range Error
319	Input Condition Input Incomplete Error
31A	Absolute Reset Execution Condition Failure Error
31B	Excess Break Point Settings
31C	Axis Number Error
31D	No Valid Axis Error
31E	Teaching Prohibited in Axis-Specific System Error
31F	Data Pairing Inconsistent
320	Absolute Value Too Small
321	Input below Min. Velocity Warning



Error No.	Error message
322	Communication Error (Driver Unit Related)
323	I/O Feature Indication Error
324	Excess Position Data Comment Definition Count (TP/PC)
325	Position Type Inconsistent Error
326	Feature Unsupported Error
327	Calendar Feature Error
328	Position Error
329	Lacking Empty Step
32A	Movement / Continuous Movement Prohibited at Position Data Change Error
32B	Undefined SEL Command Detection Error
32C	AUTO Mode Execution Command Prohibited Error
32D	Servo-on Multiple Rotation Data Reset Prohibited Error
32E	Servo-on Encoder Error Reset Prohibited Error
32F	Execution Prohibited Error Without Safety Circuit
500	Emergency Stop
700	Communication Error

IX





22.1.3 Display at Occurrence (Those in Display for ELECYLINDER, ROBO PUMP Operation)

When an alarm is generated in ELECYLINDER, the troubleshooting window (alarm group) as shown in the figure below should be displayed.

[Example of Window]

🔶 ᡝ Troubl	leshooting			ixis No. 01
Alarm display 🛛 Alar	m list Check mod	elnum. Inquiry	/	
•Alarm descript.				
Alarm Group	A	Alarm level	Operation	n release
Name Overload a	larm			
Descr. Moving part the target	of Elecylinder s position.	stopped abnormal	ly while m	oving to
1		Abnormal	Alar	n occurred ause detail
Alarm code: 0C1				
How to dea	1	Alarm reset		10:00
🔶 🗃 Troubl	leshooting			xis No. 01
	m list Check mode	elnum. Inquiry	·	
•Alarm descript.				
Alarm code	0D5	Alarm level	Cold	start
Name Deviation	Overflow in Home	-Return Incomple	te Conditi	on
	viation (differer lue) has exceeded me-return operati	d the threshold	in the con	
Detail code: **** A	drs: ****	Time(h:	:m:s) 0:00	:46
		Alarm reset		10:00

Touch the Alarm occurred see cause detail button and the screen goes to the troubleshooting window (alarm code) and the detailed contents of the alarm cause should be displayed. Other operations should be the same as the troubleshooting window for those other than ELECYLINDER.

The figure shown on the left is detail display with an alarm code in the troubleshooting window.





22.1.4 Alarm Code List for Teaching Pendant (Those in Display for ELECYLINDER, ROBO PUMP Operation)

Shown below is a list of the alarm codes related to a teaching pendant. For the alarm codes related to ELECYLINDER, refer to [Instruction Manual of ELECYLINDER].

Alarm Code	Alarm Name
2D6	No Movement Data
2D7	Drive Cutoff Operation Command
2D8	Suction or Release Command Prohibited
2D9	Data Edit Prohibited Operation Status
9C0	Input Data Error
9C1	Input Value Too Small
9C2	Input Value Too Big
9EB	Password Error
AD1	Secure Digital Card Writing Error
AD2	Secure Digital Card Reading Error
AD9	Secure Digital Card Open Error
BE0	Emergency Stop
BE2	Register Writing Forbidden at AUTO Mode
BE3	Register Writing Forbidden at Monitoring Mode
BE4	Operation Forbidden in AUTO Mode
BE5	Operation Forbidden at Monitoring Mode
BE6	Motor Voltage Drop
BE7	Servo Turned off During Operation
BE8	Over soft-limit



22.2 Connection of Controllers other than RSEL and XSEL2-T/TX System

22.2.1 Display at Occurrence

An alarm window should appear when an error detected on a controller is occurred. Also when an error detected on a teaching pendant is occurred, a message window should appear.

← Alarm				\leftarrow	Message	
Alarm Code Program No. Step No.	S : C6E : 0 : 0	ervo-OFF axis use erro	r		Messag	ge No. 9C1
Axis No. Position No. Info1	: 0 : 1 : 0 : 0h				Input data	a too small
Info2 Info3 Info4	: 0h : 0h : 0h					
Back		Reset Alarm	Inquiry		Back	Inquiry
			10:00			10

If the error detected on the controller is in the operation cancel level, the error can be reset with Reset Alarm button. Touch Reset Alarm button after a cause is removed. It is necessary to reboot the power to the controller or conduct the software reset in case of a cold start level error.

22.2.2 A	22.2.2 About Error Level Management	Managem	ent						
	Custom current		Display	Error list	Error LED	Program operation	vration		
Error level	assignment source	Error No. (HEX)	(7-segment display, etc.)	(Application only)	output (MAIN only)	Other parameter No. $4 = 0$	Other parameter No. $4 = 1$	Error reset	Remarks
	Main application	800 to 88F							
Secret	Main core	890 to 8AF		0					Special maintenance
leve	PC	8B0 to 8DF				_		_	error level
	TP	8E0 to 8FF				_		_	
	Main application								
	Main core	'		_		_			
	PC			V i		_		_	
	PC (Update tool)			(Battery-		_		_	
Message			C	field build		_		Enabled	Indicates Status, Input
level	Flash ACK Time Out	200 to 24F		related are		_			Error, etc.
	Main core	'		redistered in		_			
				the error list.)		_		_	
	PC	AA0 to ACF							
	=								
	Main application					_			
	Main core					_		_	Errors interfering with
							Release all the programs		action. For any minor
	PC			_	- +	the course of the form of the course of the	except for the I/O		errors with a level
Operation-	dL -		((than axis-related errors	action-abort time." (Errors		lower than this, error
cancellatio n level	0 Main application	400 to 4CF	C	D		become release factors	other than axis-related	Enabled	release is altempted with the auto-reset
	Main core	•				only in an error-occurring	errors become release	_	function at the external
		4D0 to 4DF			-		error-occurring moment.)		active command
	PC	4E0 to 4EF				_)	_	(SIU/PIU) receipt.
	ТР	4F0 to 4FF							
	Main application	500 to 5CF				Release the program at			
	Main core	'				the source.		_	
	РС			_		* However, release all the		_	
						programs except for the	Release all the programs	_	Need to turn ON
Cold start			С	С		"I/O processing program	except for the "I/O	Not	power again. (CPU
leve	Main application	600 to 6CF))	(Core only)	at action-abort time" when	processing program at	enabled.	and OS will operate
	Main core	•		_	-	driving-power-down	action-abort time."	_	normally.)
		6D0 to 6DF						_	
	РС	6E0 to 6EF		_		(initialization error, power		_	
	TP	6F0 to 6FF			-	error, etc.) occur.			

INTELLIGENT ACTUATOR —

down level PC TP TP: Teaching Pendant PC: PC Software

Main application Main core

System down level



Need to turn ON power. (CPU and OS will not operate.)

Not enabled.

All release

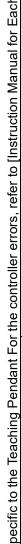
0

0

0

22.2.3 Teaching Pendant Error List (Application Section)

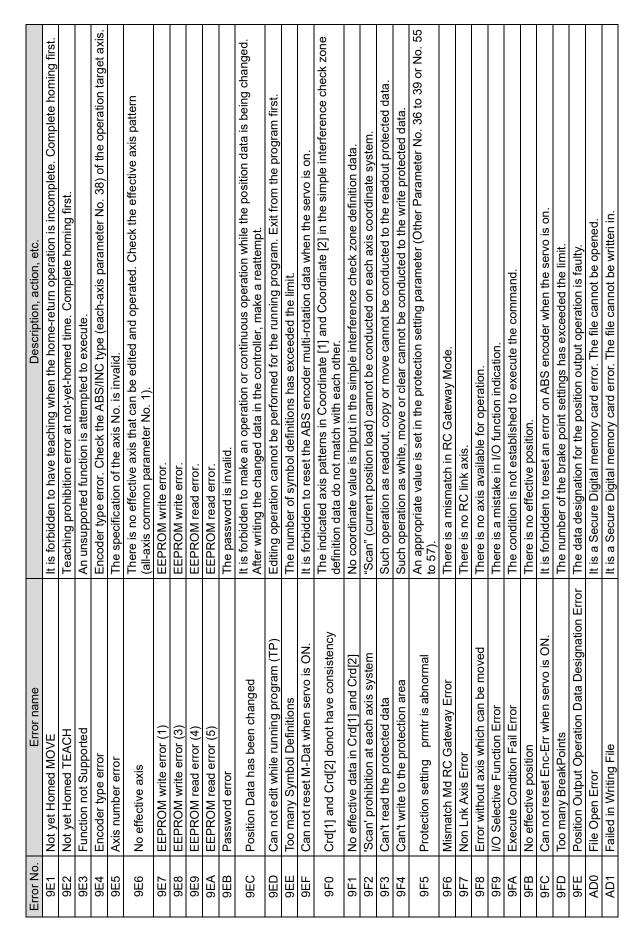
(These are	These are the errors specific to the Teaching Pendant Fo	g Pendant For the controller errors, refer to [Instruction Manual for Each Controller].)
Error No.	Error name	Description, action, etc.
9C0	Input data error	Input data error. Check the input data.
9C1	Input data too small	Too-small input data. Check the allowable input range.
9C2	Input data too large	Too-large input data. Check the allowable input range.
9C3	SEL Cmnd Input Error	Invalid data is input for the SEL command.
9C4	Inputting Conditions are not allowed	The input condition is used in the step where use of such condition is not allowed.
9C5	Input Condition DataError	An invalid value is input for the input condition.
9C6	Input Condition is out of range	A value out of the input range is input for the input condition.
9C7	No Input Condition yet	No input condition is input in the step where such condition is essential.
9C8	Undefined Symbol (Input Condition)	An undefined symbol is used for the input condition.
9C9	Operand not inputted(Oprnd1)	The operand 1 is not input in the step where the operand 1 is essential.
9CA	Operand not inputted(Oprnd2)	The operand 2 is not input in the step where the operand 2 is essential.
9CB	Operand not inputted(Oprnd3)	The operand 3 is not input in the step where the operand 3 is essential.
300	Inputting Oprnd is not allowed (Oprnd1)	The operand 1 is used in the step where use of the operand 1 is prohibited.
9CD	Inputting Oprnd is not allowed (Oprnd2)	The operand 2 is used in the step where use of the operand 2 is prohibited.
9CE	Inputting Oprnd is not allowed (Oprnd3)	The operand 3 is used in the step where use of the operand 3 is prohibited.
9CF	Operand1 is invalid	An invalid data is input for the operand 1. Check the data.
9D0	Operand2 is invalid	An invalid data is input for the operand 2. Check the data.
9D1	Operand3 is invalid	An invalid data is input for the operand 3. Check the data.
9D2	Inputted Operand is out of range(Oprnd1)	A value out of the allowable input range is input for the operand 1.
9D3	Inputted Operand is out of range(Oprnd2)	A value out of the allowable input range is input for the operand 2.
9D4	Inputted Operand is out of range(Oprnd3)	A value out of the allowable input range is input for the operand 3.
9D5	Undefined symbol (Oprnd1)	An undefined symbol is used for the operand 1.
9D6	Undefined symbol (Oprnd2)	An undefined symbol is used for the operand 2.
9D7	Undefined symbol (Oprnd3)	An undefined symbol is used for the operand 3.
9D8	Symbol type error (Oprnd1)	A symbol of the type not allowable for the operand 1 or outside of the scope is used.
6 0 6	Symbol type error (Oprnd2)	A symbol of the type not allowable for the operand 2 or outside of the scope is used.
9DA	Symbol type error (Oprnd3)	A symbol of the type not allowable for the operand 3 or outside of the scope is used.
9DB	Symbol type error (Input Condition)	A symbol of the type not allowable for the input condition or outside of the scope is used.
9DC	Invalid Symbol String	An invalid character is used at the head of the symbol or in the character string.
9DD	Multiple declaration of a Symbol	The same symbol has multiple definitions.
9DE	Symbol value not inputted	No symbol-defined value is input.
9E0	Servo OFF while in Action	It is forbidden to make an operation or continuous operation when the home-return operation is incomplete. Turn on the servo first.















Error No	Frror name	Description action etc
AD2	Failed in Reading File	It is a Secure Digital memory card error. The file cannot be read out.
AD3	File Close Error	It is a Secure Digital memory card error. An error has occurred when the file was closed.
AD4	Undefined Command Detection Error	Undefined SEL command was detected.
AD5	Can not Edit Data in NON-MANUAL Mode	It is forbidden to edit data in Non-Manual Mode.
AD6	Lacking Empty Step	Number of the empty steps is not enough.
AD7	RTC voltage reduction	The voltage on the RTC backup battery has dropped.
AD8	Symbol outside support range	A symbol out of the range of numbers supported in the controller was attempted to be edited.
AD9	Secure Digital memory card Open Error	Secure Digital memory card was not identified.
DEO	Receive Data Invalid	The received data has an error. When it is not eliminated even through re-connection, contact the manufacturer.
DE1	Header Logic Error (IAI Protocol Send)	It is a communication error. IAI protocol send data header logic error
DE2	Command ID Logic Err(IAI Protocol Send)	It is a communication error. IAI protocol send data command ID logic error
DE3	Receive Data Error (IAI Protocol Recv)	It is a communication error. IAI protocol receive data error
DE4	Response Time-out (IAI Protocol Recv)	It is a communication error. IAI protocol response time-out error
DE5	Overrun Error (Master Mode)	It is a communication error. Overrun error (in Master mode)
DE6	Framing Error (Master Mode)	It is a communication error. Framing error (in Master mode)
DE7	Parity Error (Master Mode)	It is a communication error. Parity error (in Master mode)
DE8	Send Que Overflow (Master Mode)	It is a communication error. SCI send queue overflow (in Master mode)
DE9	Receive Que Overflow(Master Mode)	It is a communication error. SCI receive queue overflow (in Master mode)
DEA	Send Buffer Overflow(IAI Protocol Send)	It is a communication error. IAI protocol send buffer overflow (in Master mode)
DEB	Receive Buf Overflow(Master Mode)	It is a communication error. IAI protocol receive buffer overflow (in Master mode)
DEC	Send Que Overflow (IAI Protocol Send)	It is a communication error. IAI protocol send queue overflow
DED	Receive Que Overflow(IAI Protocol Recv)	It is a communication error. IAI protocol receive queue overflow
		Controller no connection error. Communications cannot be established or an unsupported controller is connected.
	CTI Not Connected	The probable causes are as follows: 1) It is a communication failure due to a break in or noise from the communication line
7 7 1		2) The communication band rate of the controller is not supported by the teaching pendant.
		(The failure may be resolved by the controller power reconnection.)
		3) The model not supported by the teaching pendant is connected. (Refer to Support Models.)
DEF	Emergency Stop	The stop switch of the teaching pendant is pressed.
DFO	Unsupported CTL is connected	Non-supported controller is connected.
DF1	Communication string unmatch error	There is a mismatch in the communication string.









23. Information Display

Information such as version and production information should be shown.

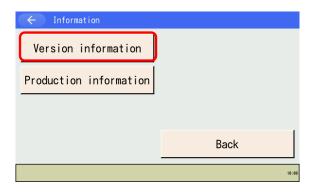
← Menu2	
Teaching update	
Information	
	Prev.
Update	Info 10:00

Touch the Information button in the main menu window.

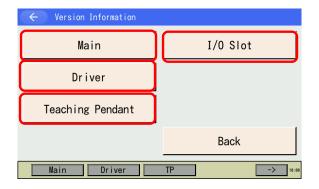
23.1 Version Information

Version of each device should be shown.

* Some models show this information in Main Menu \rightarrow Monitor \rightarrow Next \rightarrow Version Information



Touch the Version information button in the information menu window.



Touch a button for the desirable version.

Refer to [14.10 Version Information] for the contents of display in each window.





23.2 Production Information

(for applicable models only)

Production information for the controller and actuators should be shown.

← Information	
Version information	
Production information	
	Back
	10:00

Touch the Production information button in the information menu window.

[Displayed Items in Production Information Window]

1) Display Box for Driver Unit Number and Drv. No. Production information Driver unit No. 0 Drv.No. 0 Page Up Page Dn \sim 2) Driver S/N A80706467 Driver S/N 3) Driver PCB revision Driver PCB Revision .REV:08 / F. REV:02 Actuator S/N 4) Actuator S/N Controller S/N A123456789 7) Controller S/N 10:00

If both the controller and actuators are applicable for the information management feature and the actuator signification feature use flag in Driver Unit Parameter No. 192 is set to 1: Activated, the display should be as shown in the figure below.

(For XSEL2/2X, Bit 0-3 in All Axes Common Parameter No. 118 Actuator Identification Feature Setting also needs to be set to 1: Feature Enabled.

← Production information	Axes group No. 2 Axis No. 1	
Driver unit No. 2 Drv. No.	Page Up Page Dn	2) Driver S/N
Driver S/N Driver PCB Revision	A80706458	3) Driver PCB revision
Actuator S/N Actuator model number	<₹99999999999999 0001	4) Actuator S/N
RCS4-SA6C-WA-100-12-500-T4-N		
User Note 23456789012345678901234567890123	345678901234567890123456789012345	——6) User Note
Controller S/N	User Note Editing	
₩When the User Note is modified, power of	on again is need. 10:00	— 7) Controller S/N

, 1) Display Box for Driver Unit Number and Drv. No.





- Display Box for Driver Unit Number and Drv. No. The unit number and Drv. No. Of the driver unit should be shown. The information of the connected actuator should be shown here. When an axis number is assigned, a theoretical axis number should be displayed on the right top of the window.
 Driver S/N The production number of the driver unit should be shown.
 Driver PCB revision PCB revision of the driver unit should be shown.
 Actuator S/N The production number of the actuator saved in the encoder should be shown.
 Actuator model number
- The model code of the actuator saved in the encoder should be shown.
- 6) User Note The user note saved in the encoder should be shown.
- 7) Controller S/N The production number of the controller should be shown.

Touch the User Note Editing button, and a keyboard should be displayed after a confirmation window. Input some character string, and touch the ENT button to edit the user note.

In TB-02, only the half-width characters and numbers and half-width symbols are available for input. The number of characters available for input is up to 65 half-width characters.

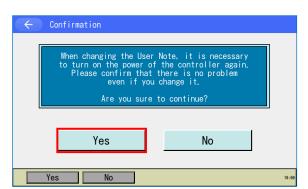


← Production information	Axes group No. 2 Axis No. 1
Driver unit No. 2 Drv.No. 2	Page Up Page Dn
Actuator S/N	X999999999999 0001
Actuator model number	X333333333333 0001
RCS4-SA6C-WA-100-12-500-T4-N	
1004 0000 11 100 12 000 14 1	
User Note	
12345678901234567890123456789012345	678901234567890123456789012345
Controller S/N	User Note Editing
$\ensuremath{\texttt{W}}\xspace{\texttt{W}}\xspace{\texttt{H}$	again is need. 10:00

Error

 Servo-off is required during editing the User Note.

 OK



When the servo of a selected axis is on, a warning should be shown and it should be terminated as an error.

Touch the OK button, and the screen goes to production information window.

Touch the User Note Editing button.

When editing the user memo for the first time after the power is turned on, a confirmation window should be displayed.

Touch the $\underline{\text{Yes}}$ button, and a keyboard should be shown.

Touch the No button, and the screen goes to production information window.

← Production information	Axes group No.2 Axis No.1
Driver unit No. 2 Drv.No. 2	Page Up Page Dn
123456789012345678901234567890123456789	001234567890123456789012345
ESC 1 2 3 4 5 6 7 8	3 9 0 - = BS
TAB q w e r t y u	i o p []
CAP a s d f g h j	k I ; '
SHIFT Z X C V b n	m , . / ENT
Ctrl Alt ¥	$ \downarrow \uparrow \leftarrow \rightarrow $
When the User Note is modified, power on again is	need. 10:00

Input some character string and touch the ENT button to edit the user note. Touch the ESC button, and the edited contents should get eliminated.

* The number of characters available for input is up to 65 half-width characters.

Touch the Page Up or Page Dn button and the window switches over between the driver unit number and Drv. No..





When the user memo has already been edited, touch the \leftarrow button on the left top of the window and the power supply reboot request message should show up. While the power supply reboot request message is displayed, any operation other than power supply reboot cannot be conducted. Reboot the power supply.

When the user memo has not been edited, touch the \leftarrow button on the left top of the window and the screen returns to the production information menu.





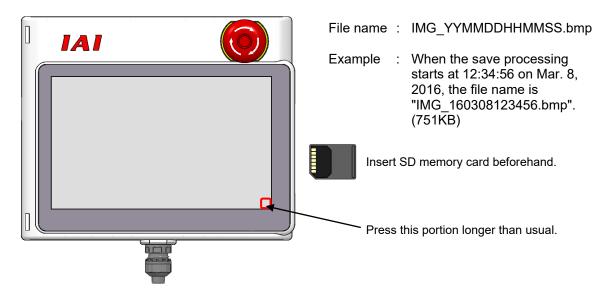




24. Appendix

24.1 Screenshot

It is possible to save the image on the current screen (screenshot) into SD memory card. When you want to capture a screenshot, press the lower right portion on the screen for about 2 seconds longer than usual on condition that SD memory card is inserted. After a short sound is heard, saving the screenshot starts. (If the touch tone is set to "OFF", the sound is not heard.) When saving is completed, the save file name is displayed for 3 seconds on the screen.



[Cautions]

- 1. The saving process takes approximately 10 seconds at the maximum.
- 2. During the saving process, the monitor display (such as the current position) on the screen does not get updated.

Warning: As buttons do not work on the screen during saving process, <u>emergency stop will not</u> <u>work</u>. Do not attempt to use this feature when an actuator is operated (continuous movement, Program Execution, etc.) from the teaching.





24.2 Teaching Update

The software in TB-02 can be updated using a SD memory card. Also, in case the menu window of TB-02 would not be displayed due to a failure in updating for reasons such as the power got shut during updating process, it is available to make a recovery by having a compulsory update.

(Note) This update should update the software of TB-02 only. It should not update the softwares of each controller or ELECYLINDER.

Regardless of condition of connection, this update updates all the TB-02 softwares for ELECYLINDER (for wireless connection / wired connection) / ROBO PUMP / CON / SEP / MEC / SEL.

Update takes approximately 35 minutes.

Conduct either of the following update procedures in accordance with each conditions.

- 24.2.1 How to Update when SEL controller Connected
- 24.2.2 How to Update when Alarm Code DEE Displayed
- 24.2.3 How to and Compulsorily Update

Preparation

- Preparation 1 Prepare a SD memory card or a SD High-Capacity memory card with 1GB to 32GB formatted in FAT32 (hereafter described as a SD memory card).
- Preparation 2 Access homepage http://www.iai-robot.co.jp/download/tb-02/ and download the TB-02/03 update file TB-02_\$\$\$.zip and unzip it. (\$\$\$ should be replaced by the version number in three digits.)
- Preparation 3 Copy the unzipped update file TB-02_\$\$\$.pct to the root folder of the SD memory card. (\$\$\$ should be replaced by the version number in three digits.)
 - (Note) Update cannot be conducted if there are two or more update files in the root folder.

Preparation 4 Take the SD memory card cover is open, and insert a SD memory card while the power to TB-02 is off. [Refer to 2.4 How to Set in/out SD Memory Card.]

Preparation 5 Supply power to the controller to which TB-02 is connected and start up TB-02.





24.2.1 How to Update when SEL controller Connected

(Note) Refer to [24.2.2 How to Update when Alarm Code DEE Displayed] if Alarm Code DEE gets shown after the power is turned on.

[Step 1] Perform from Preparation 1 to Preparation 5 in [24.2 • Preparation].

Kernu Edit File Play Monitor Environment Set Controller Next Edit Play Monitor Control	[Step 2] Touch Next button in the menu window.
<pre> Venu2 Teaching update Prev. Update -> </pre>	[Step 3] Touch <u>Teaching update</u> button.
 ← Confirmation Start updating of the teaching firmware. Are you sure to continue? Yes No Yes No 	[Step 4] A confirmation window for update appears. Touch Yes button.
This is UPDATE PROGRAM. (V2.00) File checking is done. Program write ia complete. Ourrent version 1.00 to New version 2.00 100% Write complete Verify is done. 100% Write complete Program Update is All Done !!! Touch the screen and this will be rebooted automatically.	[Step 5] Update starts. Touch the screen after you confirm the following messages; "Program Update is All Done !!!" "Touch the screen and this will be rebooted automatically."

TB-02 will start up in the new version.

In case there is nothing shown on the screen even after more than one minute has passed after starting update, refer to how to recover in [24.2.4 Troubleshooting] No. 5 to perform the compulsory update.

A Caution: Do not attempt to turn off the power to TB-02 while in updating.





24.2.2 How to Update when Alarm Code DEE Displayed

Follow the procedures below to make an update in case of a SEL system controller and it displays Controller Unconnected Error (Alarm Code DEE) after the power gets turned on.

[Step 1] Perform from Preparation 1 to Preparation 5 in [24.2 ♦ Preparation].

C Illessage	[Step 2]
Message No. DEE CTL Not Connected Back Inquiry Connectable model	Touch Connectable model button.
Connectable model Current version can connect to the controllers listed below. Addi-C/CV/SE/PO/PL XSEL-J/K/J/X/K/KT/KET MODI-C/CV/SE/PO/PL XSEL-J/K/J/X/K/KT/KET MODI-C/CV/SE/PO/PL XSEL-J/K/J/X/KJ/KT/KET MODI-C/CV/SE/PO/PL XSEL-J/K/J/X/KJ/XKT/KET MODI-C/CV/SE/PO/PL XSEL-J/K/J/X/KJ/XKJ/XKJ PODI-C/CV/SE/PO/PL XSEL-KJ/SI/KAV/SAX PODI-C/CV/SE/PO/PLB TH-K/CT/A-K/C SOM-C/L/C/CV/SE/PO/PLB TH-K/CT/A-K/C SOM-C/L/C/CPS/PC/FLG TH-K/CT/A-K/C SOM-C/L/C/CPS/PO/PLB TH-K/CT/A-K/C SOM-C/L/C/CPS/PO/PLB TH-K/CT/A-K/C SOM-C/L/C/CPS/PO/PLB TH-K/CT/A-K/C SOM-C/L/C/CPS/PO/PLB TH-K/CT/A-K/C SOM-C/L/C/CPS SEL-K/S/S/REL-C/CS ROBINET.ROLPARA/PARC/PROC SEL.XSEL2-T/TX MSEP-C, PSEP-C, USEP-C TEaching update MSEP-C/L/C TEaching update	[Step 3] Touch <u>Teaching update</u> button.
Confirmation Update will be started, Are you sure to continue? Yes No No	[Step 4] A confirmation window for update appears. Touch Yes button.
This is UPDATE PROGRAM. (V2.00) File checking is done. Program write ia complete. Current version 1.00 to New version 2.00 100% Write complete Verify is done. 100% Write complete Program Update is All Done !!! Touch the screen and this will be rebooted automatically.	[Step 5] Update starts. Touch the screen after you confirm the following messages; "Program Update is All Done !!!"

"Touch the screen and this will be rebooted automatically."

TB-02 will start up in the new version.

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In case there is nothing shown on the screen even after more than one minute has passed after starting update, refer to how to recover in [24.2.4 Troubleshooting] No. 5 to perform the compulsory update.

1. Caution: Do not attempt to turn off the power to TB-02 while in updating.





24.2.3 How to Compulsorily Update

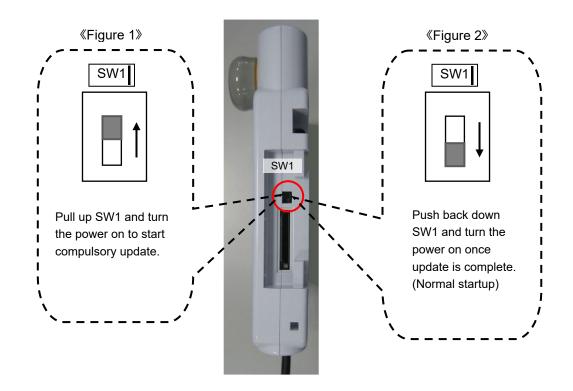
Follow the procedures below to update again in case the menu window of TB-02 would not be displayed due to a failure in updating for reasons such as the power got shut during updating process.

- [Step 1] Perform from Preparation 1 to Preparation 4 in [24.2 ◆Preparation]. (Turning the power on in Preparation 5 should be performed in [Step 3].)
- [Step 2] Slide the update setting switch on the SD memory card slot (hereafter described as SW1) upward (to the side opposite the SD memory card slot). Refer to «Figure 1»
- [Step 3] Follow Preparation 5 in [24.2 ◆Preparation] to turn on the power to TB-02. Once the power gets supplied, updating process starts without any confirmation window.
- [Step 4] Once the update is complete, a window showing "Program Update is All Done !!!" appears.



There may be a case that the black and white are in opposite depending on the version of the software.

[Step 5] Shut (turn off) the power slide SW1 downwards (towards the SD memory card), and then supply (turn on) the power again. Refer to «Figure 2»







24.2.4 Troubleshooting

No.	Condition	Considerable Cause	Check Items and Counteractions
1	[Teaching Update] or [Start Updating] is not active (grayed out) and cannot touch it.	 No memory card is inserted (or can be identified). There is no update file found in the route folder of the memory card. There are several update files found in the route folder of the memory card. 	 Make sure that a SD memory card with 1GB to 32GB capacity formatted in FAT32 is firmly inserted. Check that there is one file existed in the route folder of the memory card named "TB02_\$\$\$.pct" (three digits of version number come in \$\$\$).
2	Display appears stating "Software is not installed." when the power gets turned on.	Software in normal condition is not written due to a reason such as failure in update.	Perform compulsory update. Refer to [24.2.3 How to Compulsorily Update]
3	Display appears stating "File Format Error (Check sum Error)" at the start of update.	"TB02_\$\$\$.pct" (three digits of version number come in \$\$\$) saved in the memory card is either not an update file or destroyed.	Save the update file again and try updating again.
4	Display appears stating "SD Card Access NG !!!" at the start of update.	The memory card is inappropriate.	Try another memory card and update.
5	There is nothing shown on the screen after more than 1 minute passed after the update has started.	There is nothing shown on the screen after more than 1 minute passed after the update has started.	 [Process for Recovery] 1. Take out the memory card. 2. Turn the power off. 3. Conduct the compulsory update. Refer to [24.2.3 How to Compulsorily Update]
6	Display appears stating "Update_Appl_WrteFROM NG !!!" during updating process.	The memory card was taken out during updating process.	Do not attempt to take out the memory card till updating is complete.
7	Display appears stating "SD Card Not Inserted !!!" at the start of compulsory update.	 No memory card is inserted Cannot be identified. 	Make sure that a SD memory card with 1GB to 32GB capacity formatted in FAT32 is firmly inserted.
8	Display appears stating "File not found. !!!" at the start of compulsory update.	 There is no update file found in the route folder for the memory card. There are several update files found in the route folder of the memory card. 	Check that there is one file existed in the route folder of the memory card named "TB02_\$\$\$.pct" (three digits of version number come in \$\$\$).





25. Warranty

25.1 Warranty Period

One of the following periods, whichever is shorter:

- 18 months after shipment from our company
- 12 months after delivery to the specified location

25.2 Scope of Warranty

Our products are covered by warranty when all of the following conditions are met. Faulty products covered by warranty will be replaced or repaired free of charge:

- (1) The breakdown or problem in question pertains to our product as delivered by us or our authorized dealer.
- (2) The breakdown or problem in question occurred during the warranty period.
- (3) The breakdown or problem in question occurred while the product was in use for an appropriate purpose under the conditions and environment of use specified in the Operation Manual and catalog.
- (4) The breakdown or problem in question was caused by a specification defect or problem, or by a quality issue with our product.

Note that breakdowns due to any of the following reasons are excluded from the scope of warranty:

- Anything other than our product
- Modification or repair performed by a party other than us (unless we have approved such modification or repair)
- Anything that could not be easily predicted with the level of science and technology available at the time of shipment from our company
- A natural disaster, man-made disaster, incident or accident for which we are not liable
- Natural fading of paint or other symptoms of aging
- Wear, depletion or other expected result of use
- Operation noise, vibration or other subjective sensation not affecting function or maintenance

Note that the warranty only covers our product as delivered and that any secondary loss arising from a breakdown of our product is excluded from the scope of warranty.

25.3 Honoring the Warranty

As a rule, the product must be brought to us for repair under warranty.

25.4 Limited Liability

- (1) We shall assume no liability for any special damage, consequential loss or passive loss such as a loss of expected profit arising from or in connection with our product.
- (2) We shall not be liable for any program or control method created by the customer to operate our product or for the result of such program or control method.





25.5 Conditions of Conformance with Applicable Standards/Regulations, Etc., and Applications

(1) If our product is combined with another product or any system, device, etc., used by the customer, the customer must first check the applicable standards, regulations and/or rules. The customer is also responsible for confirming that such combination with our product conforms to the applicable standards, etc.

In such a case we will not be liable for the conformance of our product with the applicable standards, etc.

(2) Our product is for general industrial use. It is not intended or designed for the applications specified below, which require a high level of safety. Accordingly, as a rule our product cannot be used in these applications.

Contact us if you must use our product for any of these applications:

- Medical equipment pertaining to maintenance or management of human life or health
- A mechanism or mechanical equipment intended to move or transport people (such as a vehicle, railway facility or aviation facility)
- Important safety parts of mechanical equipment (such as safety devices)
- Equipment used to handle cultural assets, art or other irreplaceable items
- (3) Contact us at the earliest opportunity if our product is to be used in any condition or environment that differs from what is specified in the catalog or Operation Manual.

25.6 Other Items Excluded from Warranty

The price of the product delivered to you does not include expenses associated with programming, the dispatch of engineers, etc. Accordingly, a separate fee will be charged in the following cases even during the warranty period:

- Guidance for installation/adjustment and witnessing of test operation
- Maintenance and inspection
- Technical guidance and education on operating/wiring methods, etc.
- Technical guidance and education on programming and other items related to programs.





Change History

Revision Date	Revision Description
2016.3	First Edition
2016.4	 Second Edition Applicable for language switching function Chapter 21 Appendix (Screenshot, Teaching Update) added Terms integrated, correction made
2016.7	 Third Edition Applicable for XSEL-RA/SA/RAX/SAX/RAXD/SAXD 3.8.1 How to Attach Grip Belt added Chapter 17 Absolute Reset Description Reviewed Chapter 19 Extended Motion Control Function Added Terms integrated, correction made
2017.08	 Fourth Edition Applicable for Wrist Unit (WU) Applicable for MSEL-PCF/PGF 11.4 Program Execution Time Measurement Function added 15.13 Servo Additional Data Monitor added 16.14 Pairing ID Clear Function added 22.2.3 Note added stating how to make update when Controller Unconnected Error occurred Terms integrated, correction made
2017.12	 Fifth Edition XSEL-RAX/SAX IXA Applicable Support (Applied to 3-axis SCARA, Applied to SCARA axis battery-less absolute) Correction made
2018.01	Edition 5B • Applicable for collision detection function • Applicable for compliance control function
2018.06	Edition 5C • Note added in Support Models • 4.1 to 4.12 Note added for cable minimum bending radius • 22.2 Time for teaching update revised
2018.10	Edition 5D • 4.12 Connection cable wiring diagram deleted
2020.02	Sixth Edition • Applicable for RSEL Controller
2020.04	Edition 6B • Correction made





Revision Date	Revision Description
2020.06	Seventh Edition • Applicable for 6-axis Cartesian Robot • Applicable for Wrist Unit
2021.08	 Eighth Edition Changes made to the Cover Changes made to the Safety Guide Chapter Contents table of deleted Product Check 3. How to Read Model Nameplate the replaced Mode Transition Diagram of 6.7 RSEL Controller the replaced Descriptions added for the maximum setting in 9.3.3 (1) Jog Operation, (2) Inching Operation and (8) Movement 15.9.2 Driver Alarm List added 6.1 Controller Items "I/O port allocation", "Option unit", and "EC operation mode" added. 16.18 Input/Output Port Assignment added. 16.20 Optional Unit Setting added. 16.21 EC Operation Mode added. Chapter 20 ELECYLINDER Operation Function Chapter 21 Data Backup "driver unit parameters" backup and restore added 23.1 RSEL System Explanation during screen display for ELECYLINDER operation added
2022.06	 Edition 8B Supported models for ELECYLINDER added Correction due to the abolition of DVD 3.7 Description revised regarding built-in battery 20.4.4 Descriptions added for Payload Setting Not Applicable Model 20.9.2 The when of the Models that Support Pattern Setting to the Operation Noise Tuning added
2022.08	Edition 8C • Support Models added
2023.07	 Edition 8D Models change and added for ELECYLINDER supported Product Check 3. How to Read Model Nameplate the replaced 15.9 Description revised of the error list 20.4 Change made to Simple Data Setting content 20.4.5 Auto servo OFF added 23.1.1, 23.1.3 Screen image changed for troubleshooting 25.2.2, 25.2.3 Black and white display change of the update start screen image





Revision Date	Revision Description	
2023.08	Edition 8E • Move Product Check to chapter 3 • 3.1.2 Added ELECYLINDER instruction manual • 20.4 Unification of contents of simple data setting, correction of typos.	
2024.06	 Edition 8F 20.4 Note added related to grip force of ELECYLINDER 3-finger gripper 25.2 Teaching Update change made to contents (25.2.3 How to Compulsorily Update, 25.2.4 Troubleshooting added) Correction made 	
2024.07	Ninth Edition • Applied to ROBO PUMP Standard Type (RP-VPM)	
2024.09	Tenth Edition • Applicable for XSEL2 Controller	
2025.02	Edition 10B • Chapter structure change	
2025.03	Eleventh Edition • 16.2.2 Absolute Reset Procedures description changed to order by type • 19.4.1, 19.4.2 Wire Cylinder setting added • 19 4 Simple Data Setting (Position Editing) screen image changed	



IAI Corporation

Head Office: 1210 Ihara Shimizu-KU Shizuoka City Shizuoka 424-0114, Japan TEL +81-54-364-5105 FAX +81-54-364-2589 website: www.iai-robot.co.jp/

IAI America, Inc.

Head Office: 2690 W. 237th Street, Torrance, CA 90505 TEL +1-310-891-6015 FAX +1-310-891-0815 Chicago Office: 110 East State Parkway, Schaumburg, IL 60173 TEL +1-847-908-1400 FAX +1-847-908-1399 Atlanta Office: 1220 Kennestone Circle, Suite 108, Marietta, GA 30066 TEL +1-678-354-9470 FAX +1-678-354-9471 website: www.intelligentactuator.com

Technical Support available in Europe

IAI Industrieroboter GmbH

Ober der Röth 4, D-65824 Schwalbach am Taunus, Germany TEL +49(0)6196-88950 FAX +49(0)6196-889524 website:www.iai-automation.com

Technical Support available in Great Britain



Duttons Way, Shadsworth Business Park, Blackburn, Lancashire, BB1 2QR, United Kingdom TEL +44(0)1254-685900 website: www.lcautomation.com

IAI (Shanghai) Co., Ltd.

SHANGHAI JIAHUA BUSINESS CENTER A8-303, 808, Hongqiao Rd. Shanghai 200030, China TEL+86-21-6448-4753 FAX +86-21-6448-3992 website: www.iai-robot.com

IAI Robot (Thailand) Co., Ltd.

825 PhairojKijja Tower 7th Floor, Debaratana RD., Bangna-Nuea, Bangna, Bangkok 10260, Thailand TEL +66-2-361-4458 FAX +66-2-361-4456 website:www.iai-robot.co.th