

Simple Absolute Unit ACON/PCON/PSEL-ABU

First Step Guide Fourth Edition

Thank you for purchasing our product.

Make sure to read the Safety Guide and detailed Instruction Manual as well as this First Step Guide to ensure correct use.

This Instruction Manual is original.

Warning : Read the instruction manual carefully and follow the instruction manual when handling this equipment.
Please downloaded the user's manual from our website.
You can download it free of charge. User registration is required for first time users.
URL: www.iai-robot.co.jp/data_dl/CAD_MANUAL/
Keep a printout of the introduction manual near the equipment in which this product is installed so that it can be checked at all times, or display it on your computer, tablet terminal, etc. so that you can check it immediately.
If you need a bound copy of the instruction manual, order it from the nearest sales office listed in the First Step Guide or at the end of the instruction manual. It will be provided for a fee.

- Using or copying all or part of this Instruction Manual without permission is prohibited.
- The company names, names of products and trademarks of each company shown in the sentences are registered trademarks.

Product Check

This product is comprised of the following parts if it is of standard configuration.

If you find any fault in the contained model or any missing parts, contact us or our distributor.

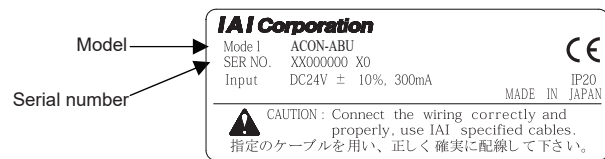
1. Parts

No.	Part Name	Model	Reference
1	Controller Main Body	Refer to "How to read the model plate", "How to read the model"	
Accessories			
2	Backup Battery	AB-7	1 pc
3	ACON Connection Cable	CB-AC-PJ002	For ACON controller
4	PCON/PSEL Connection Cable	CB-PC-PJ002	For PCON/PSEL controller
5	First Step Guide	ME0286	
6	Safety Guide	M0194	

2. Instruction Manuals related to this product

No.	Name	Manual No.
1	Simple Absolute Unit Instruction Manual	ME0179
2	ACON-C/CG Controller Instruction Manual	ME0176
3	PCON-C/CG/CF Controller Positioner Type Instruction Manual	ME0170
4	ACON-CY Controller Instruction Manual	ME0167
5	PCON-CY Controller Instruction Manual	ME0156
6	ACON-SE Controller Instruction Manual	ME0171
7	PCON-SE Controller Instruction Manual	ME0163
8	PSEL Controller Instruction Manual	ME0172
9	PC Software RCM-101-MW/ RCM-101-USB Instruction Manual	ME0155
10	Touch Panel Teaching CON-PT/PD/PG Instruction Manual	ME0227
11	Teaching Pendant CON-T/TG Instruction Manual	ME0178
12	Simple Teaching Pendant RCM-E Instruction Manual	ME0174
13	Data Setter RCM-P Instruction Manual	ME0175
14	Touch Panel Display RCM-PM-01 Instruction Manual	ME0182

3. How to read the model plate



4. How to read the model

ACON-ABU

<Controller Model Code> **ACON** : For ACON controller
 <Series Name> **ABU** : Main body + Battery + Cable Set Model Code
PCON : For PCON/PSEL controller

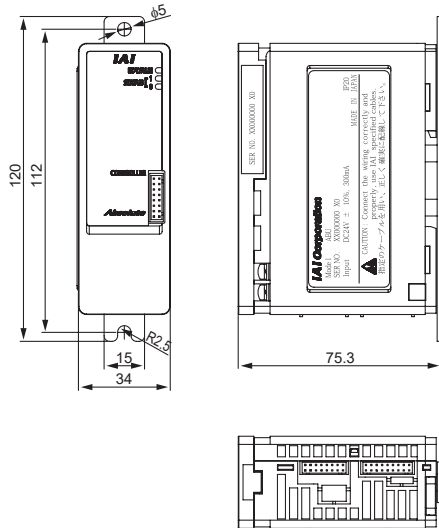
Basic Specifications

Using Simple Absolute R Unit enables to make the applicable control axes to the absolute system.

Item		Specifications
Power Supply		24V DC±10%
Current Consumption		300mA or less (It gets the highest when charging battery)
Heat Generation		7.2W
Number of Controllable Axes		1-axis
Backup Battery (Absolute Battery)	Name	Ni-MH battery
	Model	AB-7
	Supplier	FDK Corporation
	Rated	3.6V 3300mAh
	Nominal	3.6V 3700mAh
	Product Life	About 3 years (reference) It varies significantly by the effects of the usage condition (especially temperature).
	Charging Time	About 72 hours
Environment	Surrounding air temperature	0 to 40°C
	Surrounding humidity	95%RH or less (non-condensing)
	Surrounding environment	[Refer to Installation Environment section]
	Surrounding storage temperature	-25 to 70°C
	Surrounding storage humidity	95%RH or less (non-condensing)
	Vibration durability	XYZ Each direction 10 to 57Hz Pulsating amplitude 0.035mm (continuous) 0.075mm (intermittent) 57 to 150Hz 4.9m/s ² (continuous) 9.8m/s ² (intermittent)
	Protection class	IP20
Cooling Method		Natural Air Cooling
Insulation Resistance		Between power supply terminal and FG 500V DC 10MΩ or more
External Dimensions		34W × 105H × 73.3D [mm]
Weight		Approx. 312g (including backup battery)

Note : Please have the battery charged for more than 72 hours before using for the first time or after replacing with a new one. (Keep the ABU power ON. Operating the actuator during the battery charge would not cause any problem.)
Also charge the battery when the ABU power is OFF for more than the battery retention time.
[Refer to Absolute Battery Retention Time Condition Setting section for the details of the battery retention time.]

External Dimensions



Installation Environment

This product is capable for use in the environment of pollution degree 2^{*1} or equivalent.

*1 Pollution Degree 2 : Environment that may cause non-conductive pollution or transient conductive pollution by frost. (IEC60664-1)

1. Installation Environment

Do not use this product in the following environment.

- Location where the surrounding air temperature exceeds the range of 0 to 40°C
- Location where condensation occurs due to abrupt temperature changes
- Location where relative humidity exceeds 85%RH
- Location exposed to corrosive gases or combustible gases
- Location exposed to significant amount of dust, salt or iron powder
- Location subject to direct vibration or impact
- Location exposed to direct sunlight
- Location where the product may come in contact with water, oil or chemical droplets
- Environment that blocks the air vent [Refer to Installation and Noise Elimination Section]

When using the product in any of the locations specified below, provide a sufficient shield.

- Location subject to electrostatic noise
- Location where high electrical or magnetic field is present
- Location with the mains or power lines passing nearby

2. Storage and Preservation Environment

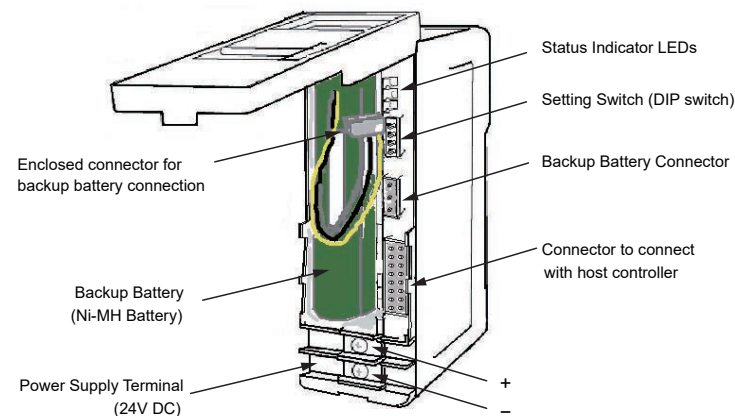
The storage and preservation environment should comply with the same standards as those for the installation environment. In particular, when the machine is to be stored for a long time, pay close attention to environmental conditions so that no condensation forms. Unless specially specified, moisture absorbency protection is not included in the package when the machine is delivered. In the case that the machine is to be stored and preserved in an environment where condensation is anticipated, take the condensation preventive measures from outside of the entire package, or directly after opening the package.

3. Installation

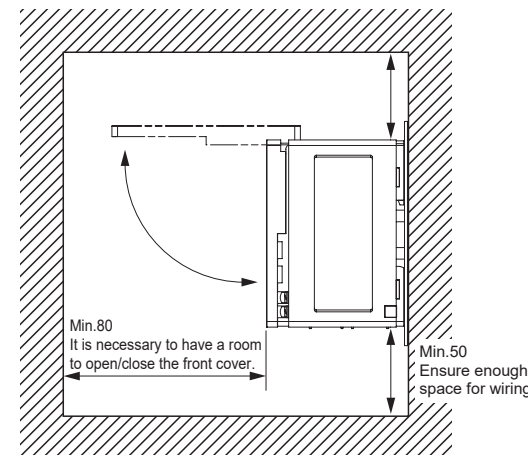
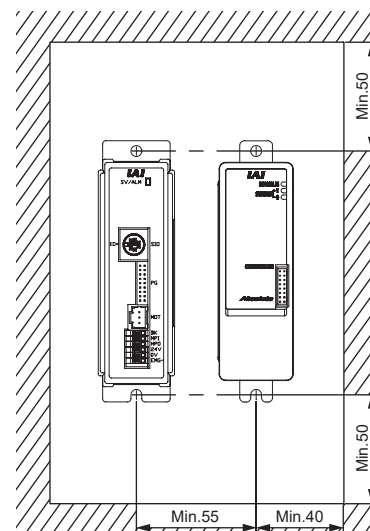
Design and Build the system considering the size of the controller box, location of the controller and cooling factors to keep the ambient temperature around the controller below 40°C.

Names of the Parts and Installation

1. Names of the Parts

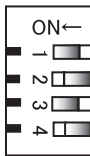


2. Installation



Absolute Battery Retention Time Condition Setting

Setting Switch



Left side is ON

It is able to limit the current consumption assuming the possibility of transient encoder rotation movement occurred during the power is OFF so the retention time of the current values by the backup battery can last as much as possible.

Also, make sure the enclosed connector for backup battery connection is removed from the Simple Absolute Unit when conducting this operation.

Setting Switch

Switch	Function	Set in delivery
1	For the encoder rotation speed setting secured by the absolute while the power is OFF	OFF
2	For the encoder rotation speed setting secured by the absolute while the power is OFF	ON
3	For updating (Keep it OFF while in use.)	OFF
4	Not for use (Keep it ON while in use. Turning it OFF will issue a wire breakage error.)	ON

Encoder allowable max. rotation speed setting possibly be occurred while the power is OFF

Setting Switch		Encoder Max. Rotation Speed [rpm]		Battery Retention Time (reference)
1	2	When the connected actuator is a model other than RCA2-***N;	When the connected actuator is RCA2-***N;	
OFF	OFF	100	75	20 days
ON	OFF	200	150	15 days
OFF	ON	400	300	10 days (Set in delivery)
ON	ON	800	600	5 days

The retention times described above are the reference assuming that the backup battery is used for the first time under the room temperature (20°C) and there is no encoder rotation while the power is OFF or the operation is transient of a single encoder.



Note : In the following cases, the absolute data (current position data) cannot be guaranteed. Be careful.

- 1) When the number of encoder rotation exceeded the set value while the power is OFF.
- 2) When the operation is continued through even though the number of encoder rotation is within the set value. This function is purposed to guarantee the absolute data (current position data) in a case the encoder is rotated unexpectedly on the assumption that the actuator would not move while the power is OFF.
- 3) When the backup battery is already exhausted.

Regarding Electric Charge and Discharge

Before using for the first time or after the battery replacement, charge the battery for 72 hours or more continuously.

While 24V is supplied to the controller, the battery is charged.

1-hour battery charge enables to retain the encoder data for the duration indicated in the following table^(Note).

Leaving the controller turned OFF for more than the data retainable duration will cause to lose the data.

Charge the battery as early as possible.

The battery has its product life. The data retainable time decreases as the battery life gets consumed.

Replace the battery with a new one if a big drop of the retainable time is confirmed.

(Note) Data retainable time per hour of battery charge

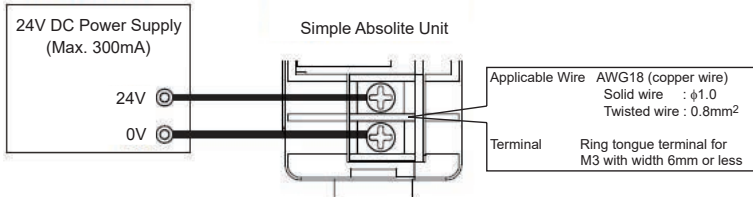
* Values shown in the table are reference time assuming the battery is new.

Setting of encoder maximum rotation speed	100 (75)	200 (150)	400 (300)	800 (600)
Data Holding Time (reference)	6.6H	5.0H	3.3H	1.6H

Wiring

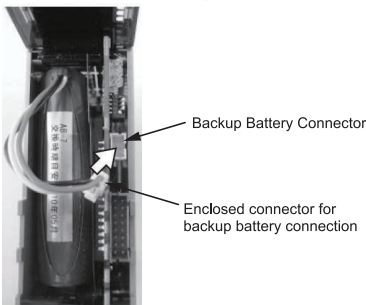
1. Connection of Power Supply

Simple absolute Unit requires 24V DC power to be supplied for the purposes such as to charge the backup battery.



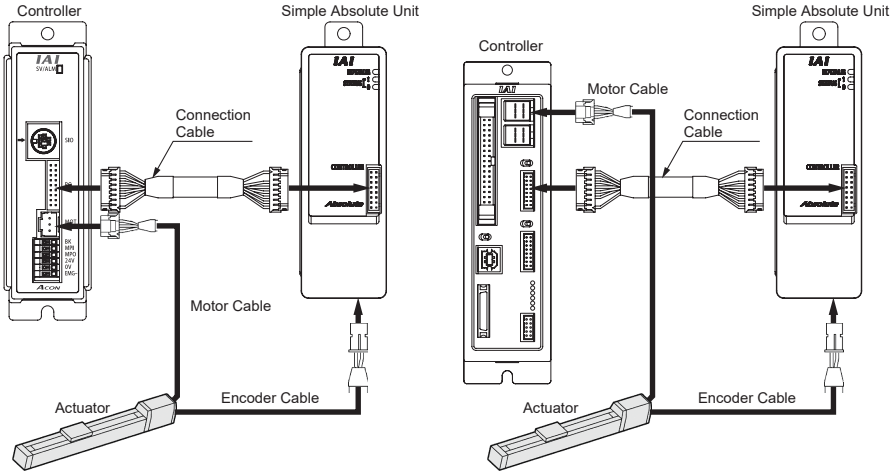
2. Connection of Backup Battery

Connect the connector enclosed to the backup battery.

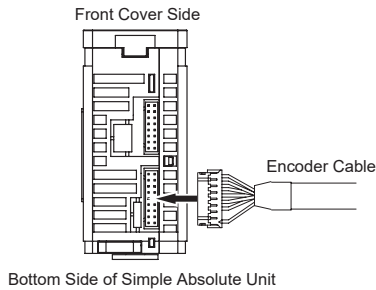


3. Connection to Controller and Actuator

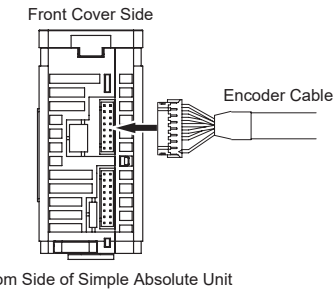
ACON and PCON/PSEL have the encoder connector plug in the different position from each other. Pay special attention to connect the cable to the right ones.



• When connecting with ACON



• When connecting with PCON or PSEL



Absolute Reset

Refer to Instruction Manual for the details of how to perform an absolute reset.

1. When using a teaching tool

It is a way to perform an absolute reset using a teaching tool such as the PC software and teaching pendant.

(1) Parameter Check and Settings

For ACON and PCON, set Parameter No. 83 ABS Unit [0: Not used, 1: Used] to "1". For PSEL, set Axis Parameter No. 38 Encoder ABS/INC Type [0: INC, 1: ABS] to "1".

If you purchased a controller and Simple Absolute Unit together, the parameter should already be set as described above at the delivery. Please confirm it is set as it is described in case.

(2) Alarm Reset

When a teaching tool is connected, a message of "0EE: Absolute Encoder Error" for ACON and PCON, and "41C: ABS Unit Encoder Error (2)" for PSEL will appear. Reset the alarm.

(3) Home Return (Absolute Reset)

Turn the servo ON and execute a home-return operation for ACON and PCON. The absolute reset process is finished once the home-return operation is completed.

For PSEL, follow the steps of the absolute reset shown in the menu on the teaching tool.

2. When Using PIO (for ACON and PCON-C/CG/CY only)

It is a way to perform an absolute reset using the PIO (24V I/O) control signal.

(1) Parameter Check and Settings

For ACON and PCON, set Parameter No. 83 ABS Unit [0: Not used, 1: Used] to "1".

If you purchased a controller and Simple Absolute Unit together, the parameter should already be set as described above at the delivery. Please confirm it is set as it is described in case.

(2) Alarm Reset

When the controller gets turned ON, an alarm "0EE: Absolute Encoder Error" will appear. Turn ON the alarm reset signal of PIO to reset the alarm.

(3) Servo ON

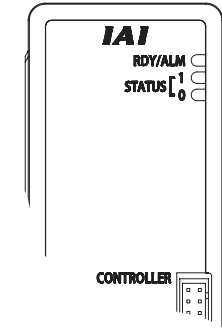
Turn ON the pause signal if it exists in the PIO patterns. Turn ON the servo-on signal of PIO. If the process has been carried out in a normal condition, SV lamp on the front panel turns on in green.

(4) Home Return (Absolute Reset)

Turn ON the home return signal of PIO to execute a home-return operation. The absolute reset is finished if the home-return operation completes in normal condition and home return complete signal turns ON.

Troubleshooting

There are monitor LEDs provided on simple absolute unit for status monitoring. On these LEDs, it is possible to check the unit status at the startup or when there is any trouble.



LED	Displayed Color	LED	Displayed Color	Description
RDY/ALM	GN	STATUS1	GN	Absolute reset complete
	RD	STATUS1	RD	Absolute reset incomplete
STATUS0	GN	—	—	Circuit error, Please contact us if the error does not recover even after a reboot.
	OR	—	—	Absolute battery is 4.2V or more (fully charged)
	RD	—	—	Absolute battery less than 3.2V to 4.2V
				Absolute battery is 3.2V or less (not connected or voltage is dropped)



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