



Field Network Type
(DeviceNet, CC-Link, PROFIBUS, CompoNet,
EtherNet/IP, EtherCAT, PROFINET)

MSEP

First Step Guide Sixth 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 download 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	Remarks
1	Controller Main Body	Refer to "How to read the model plate", "How to read the model No."	
Accessories			
2	Power Connector	FKC2.5HC/4-ST-5.08 (Supplier : PHOENIX CONTACT)	Recommended Cable Size • Control Power Supply 0.5 to 0.3mm ² (AWG20 to 22) • Motor Driving Power Supply 3.5 to 0.5mm ² (AWG12 to 20)
3	External Brake Input Connector	FMCD1.5/5-ST-3.5 (Supplier : PHOENIX CONTACT)	Recommended cable size 0.5 to 0.2mm ² (AWG20 to 24)
4	Drive Cutoff/Emergency Stop Input Connector	FMCD1.5/8-ST-3.5 (Supplier : PHOENIX CONTACT)	Recommended Cable Size • Emergency Stop 0.5 to 0.2mm ² (AWG20 to 24) • Motor Power External Input 1.25 to 0.5mm ² (AWG16 to 20)
5	System I/O Connector	FMCD1.5/4-ST-3.5 (Supplier : PHOENIX CONTACT)	Recommended cable size 0.5 to 0.2mm ² (AWG20 to 24)
6	I/O Flat Cable (For PIO Type)	CB-MSEP-PIO***	***shows the cable length (Example) *** : 020 = 2 [m]
7	CC-Link Connector (For CC-Link Type)	MSTB2.5/5-ST-5.08 ABGY AU (Supplier : PHOENIX CONTACT)	Terminal Resistance (130Ω1/2W, 110Ω1/2W) enclosed one unit each
8	DeviceNet Connector (For DeviceNet Type)	MSTB2.5/5-ST-5.08 ABGY AU (Supplier : PHOENIX CONTACT)	Prepare a terminal resistor separately if this controller is to be allocated at the terminal.
9	Absolute Battery Box (Option)	MSEP-ABU (Battery AB-7)	For Simple Absolute Type
10	First Step Guide	ME0300	This document
11	Safety Guide	M0194	

2. Teaching Tool (Please purchase separately)

A teaching tool such as PC software is necessary when performing the setup for position setting, parameter setting, etc. that can only be done on the teaching tool.

Please prepare either of the following teaching tools.

No.	Part Name	Model
1	PC Software (Includes RS232C Exchange Adapter + Peripheral Communication Cable)	RCM-101-MW
2	PC Software (Includes USB Exchange Adapter + USB Cable + Peripheral Communication Cable)	RCM-101-USB
3	Teaching Pendant (Touch Panel Teaching)	CON-PTA
4	Teaching Pendant (Touch Panel Teaching with deadman switch)	CON-PDA
5	Teaching Pendant (Touch Panel Teaching with deadman switch + TP Adapter (RCB-LB-TG))	CON-PGA
6	Teaching Pendant (Touch Panel Teaching)	TB-01
7	Teaching Pendant (Touch Panel Teaching with deadman switch)	TB-01D
8	Teaching Pendant (Dead man's switch right mounted touch panel teaching)	TB-01DR

3. Instruction manuals related to this product.

No.	Name	Manual No.
1	MSEP Controller Instruction Manual	ME0299
2	PC Software RCM-101-MW/RCM-101-USB Instruction Manual	ME0155
3	Touch Panel Teaching CON-PTA/PDA/PGA Instruction Manual	ME0295
4	Touch Panel Teaching TB-01/TB-01D/TB-01DR Instruction Manual	ME0324
5	XSEL controller RC Gateway Function Instruction Manual	ME0188

4. How to read the model plate

Model →	MODEL	MSEP-C-5-20PI-N-42PI-PI-10I-20ILA-DV-2-0-ABU
Serial number →	SERIEAL No.	SI-E18392
Manufactured date →	PRODUCT DATE	2012/02/01
Manual No. →	MANUAL No.	ME0299
Input power supply →	CP INPUT	DC24V 2.0A
	MP INPUT	DC24V 7.6A
AXIS No. /OUTPUT		
	0	0-24Vac 3ph 0-333Hz 1.0A
	1	
	2	0-24Vac 3ph 0-333Hz 2.0A
	3	0-24Vac 3ph 0-333Hz 2.0A
	4	0-24Vac 3ph 0-333Hz 1.3A
	5	0-24Vac 3ph 0-333Hz 1.3A
	6	
	7	
⚠ CAUTION: Connect the wiring correctly and properly. use IAI Corporation specified cables.		
Made In Japan		

5. How to read controller model code

(Example) Consists of 5 axes: Axis No.0=pulse motor type, Axis No.2,3=servo motor type, Axis No.4=No connected axis and Axis No.1=Ineffective axis

MSEP-C-5-20PWA1-PWA1-10I-20I-N-DV-2-0-ABU--**

<Series>		<Identification for IAI use only> * There is no identification in some cases
<Type>	C : Standard Type	<Applicable for Simple Absolute Type> ABB : Simple Absolute Type (with absolute battery) ABBN : Simple Absolute Type (with no absolute battery) No indication : Incremental
<Connected Axes>	1 to 8: Number of driver axes	<Power Voltage> 0 : 24V DC
<Detail of Connected Axis>		<I/O Cable Length> 0 : No cable 2 : 2m (Standard) 3 : 3m 5 : 5m
	[Pulse Motor Type] 20P : 20□ pulse motor 20SP : 20□ pulse motor 28P : 28□ pulse motor 28SP : 28□ pulse motor 35P : 35□ pulse motor 42P : 42□ pulse motor 56P : 56□ pulse motor	<I/O Type> NP : NPN Type (Sink type) (Standard) PN : PNP Type (Source type) DV : DeviceNet Type CC : CC-Link Type PR : PROFIBUS-DP Type CN : CompoNet Type EP : EtherNet/IP Type EC : EtherCAT Type PRT : PROFINET-IO Type
	[Servo Motor Type] 2 : 2W servo motor 5 : 5W servo motor 5S : 5W servo motor 10 : 10W servo motor 20 : 20W servo motor 20S : 20W servo motor 30 : 30W servo motor 3D : 3W brushless DC electric motor	
P : Ineffective axis (Pulse motor)	A : Ineffective axis (Servo motor)	
N : Not connected		
[Encoder Type]		
WAI : Incremental / Battery-less Absolute Shared (Pulse Motor Type)		
I : Incremental (Servo Motor Type)		
SA : Simple Absolute (Pulse Motor / Servo Motor)		
[Option]		
HA : High Acceleration/Deceleration Type (when servo motor selected)		
LA : Low Power Consumption Type (when servo motor selected)		
T : High-Output Setting Type (when actuator selected)		

Basic Specifications

List of Specifications

Specification Item	Driver for Servo Motor	Driver for Pulse Motor
Number of Controlled Axes	8 axes MAX.	
Control/Motor Power Supply Voltage	24V DC ±10%	
Brake Release Power Supply Current Consumption	0.15A × Number of axes	
Control Power Current Consumption	1A (Brake release power supply current consumption excluded)	
Control Power In-Rush Current	MAX. 5A 30ms or less	
Motor Current Consumption	Motor Type	Rated
	2W	0.8A
	3W (RCD)	0.7A
	5W	1.0A
	10W (RCL)	1.3A
	10W (RCA/RCA2)	1.3A
	20W	1.3A
	20W (20S Type)	1.7A
Motor Power In-Rush Current	Rated	Low power
	4.6A	1.5A
	6.4A	6.4A
	6.4A	4.4A
	4.4A	5.1A
	4.0A	2.2A
	4.0A	4.0A
	4.0A	4.0A
Heat Generation	26W Max.	
Control System	Vector control (Rectangular waveform drive only for 3W of the motor type)	Weak field-magnet vector control
Encoder Resolution	RCA, RCP2 to RCP5	All Types
	RCA2	RCA2-□□□N
		Except for RCA2-□□□N
	RCL	RA1L • SA1L • SA4L • SM4L
		RA2L • SA2L • SA5L • SM5L
		RA3L • SA3L • SA6L • SM6L
Actuator Cable Length	MAX. 20m (Note) 10m maximum for Simple Absolute type	
Serial Communication Interface (SIO Port: Only for teaching)	RS485 1CH (based on Modbus Protocol) Speed 9.6 to 230.4kbps	

Specification Item	Driver for Servo Motor	Driver for Pulse Motor
External Interface	PIO Type	PIO Type: Signal I/O dedicated for 24V DC (to be selected when purchased NPN/PNP) Number of max. input: 4 points per axis, Number of max. output: 4 points per axis Cable length MAX. 10m
	Field Network Type	DeviceNet, CC-Link, PROFIBUS-DP, CompoNet, EtherNet/IP, EtherCAT, PROFINET-IO (Reference) An operation by RC Gateway Function is available.
Data Setting and Input	PC Software, Touch Panel Teaching, Gateway Parameter Create Tool	
Data Retention Memory	Position data and parameters are saved in the nonvolatile memory. (There is no limitation in number of writing)	
Number of Positioning Points	PIO Type: 2 or 3 points	Field Network Type: 256 points (There is no limit for simple direct and direct indication modes) (The number of positioning points differs depending on the operation mode select by the parameter setting.)
LED Display (Mounted on Front Panel)	8 LED lamps for driver status display (for each driver board) Status LED 4 points (PIO Type), 7 points (Field Network Type)	
Electromagnetic Brake Compulsory Release	Brake release available for each axis by compulsory release signal input (24V DC input)	
Protective functions (Note3)	Overcurrent Protection (Equipped with a built-in cutoff circuit using a semiconductor for each slot)	
Protection Function against Electric Shock	Class I basic insulation	
Insulation Resistance	500V DC 10MΩ	
Mass	620g, For simple absolute type, 690g plus 1950g for absolute battery box (for 8-axis type)	
Cooling Method	Forced air-cooling	
External Dimensions	123W × 115H × 95D	
Environment	Surrounding Air Temperature	0 to 40°C
	Surrounding Humidity	5%RH to 85%RH (Should be no-condensing or freezing)
	Surrounding Environment	[Refer to Installation Environment]
	Surrounding Storage Temperature	-20 to 70°C 0 to 40°C for absolute battery
	Surrounding storage humidity	5%RH to 85%RH (Should be no-condensing or freezing)
	Usable Altitude	1000m or lower above sea level
	Vibration Durability	Frequency 10 to 57Hz/ Swing width : 0.075mm Frequency 57 to 150Hz/ Acceleration : 9.8m/s ² XYZ Each direction Sweep time: 10 min. Number of sweep: 10 times
	Shock Resistance	150mm/s ² 11ms Semi-sine wave pulse XYZ Each direction 3 times
	Protection Class	IP20

Note 1 The current becomes maximum when the excitation phase of the servo-motor is detected, which is performed during the initial servo-motor ON processing after the power is injected. (Normal: Approx. 1 to 2 sec, MAX.: 10 sec).

Note 2 The current is maximized at the excitation phase detection conducted in the first servo-on process after the power is supplied (ordinary 100ms).

Note 3 For servo-motor, the protection is triggered with the current greater in 1.4 times than the maximum load current.

Note 4 High-output type driver board can control one axis per board.

< Calculation of 24V DC Power Capacity >

For the calculation of 24V DC power capacity, figure out the numbers for (1) to (5) below, and then follow Step (7).

(1) Control Power Current Consumption: 0.8A.....(1)

(2) Current Consumption of Motor Power Supply:
Total of motor current consumption of connected actuator.....(2)

(3) Current Consumption at Excitation Phase Detection:
Maximum current in the total of maximum motor current to turn the servo on at the same time.....(3)

(4) Control Power In-Rush Current: 5A.....(4)

(5) Motor Power In-Rush Current: Number of slots × 10A.....(5)

(6) Current consumption of brake power supply: Number of actuators with brake × 0.15A.....(6)

(7) Selection of Power Supply:
Usually, the rated current is to be approximately 1.3 times higher than 1) + 2) + 6) above considering approximately 30% of margin to the load current. However, considering the current of 3) to 5), even though it is a short time, select a power supply with "peak load corresponding" type or that with enough capacity. For the current of 3) to 5), it can be avoided from the current consumption occurred at the same time by the timing for the emergency stop release (motor power-on) and servo-on being changed. In the case that the capacity margin is not sufficient, voltage might be dropped in a moment. In particular, be careful of the power unit with the remote sensing function.

(Note) Make short-circuit on 0V side when separate power sources are used for the control power and motor power.

(Reference) Selection of Power Supply Protection Circuit Breaker

It is recommended that the power supply protection is conducted on the primary side (AC power side) of the 24V DC power supply unit.

Pay attention to the in-rush current of 24V DC power supply unit and rated cutoff current of the circuit breaker.

• Rated Breaking Current > Short-circuit Current = Primary Power Supply Capacity/Power Voltage

• (Reference) In-rush Current of IAI Power Supply Unit PS241 = 50 to 60A, 3msec

• Specifications of DeviceNet Interface

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- Rated Breaking Current > Short-circuit Current = Primary Power Supply Capacity/Power Voltage
- (Reference) In-rush Current of IAI Power Supply Unit PS241 = 50 to 60A, 3msec

● Specifications of DeviceNet Interface

Item	Specification			
Communication Protocol	DeviceNet2.0			
	Group 2 Dedicated Server			
	Network-Powered Insulation Node			
Baud Rate	Automatically follows the master			
Communication System	Master-Slave System (Polling)			
Number of Occupied Channels	MAX. 16CH (Input, Output)			
Number of Occupied Node	1 node			
Communication Cable Length (Note 2)	Baud Rate	Max. Network Length	Total Branch Line Length	Max. Branch Line Length
	500kbps	100m	39m	6m
	250kbps	250m	78m	
	125kbps	500m	156m	
Communications Cable	Use the dedicated cable.			
Connector (Note 1)	MSTBA2.5/5-G-5.08-ABGY AU (Manufactured by PHOENIX CONTACT or equivalent)			
Consumption Current of Communication Power Supply	60mA			
Communication Power Supply	24V DC (Supplied from DeviceNet)			

Note 1 The cable-side connector is a standard accessory. (PHOENIX CONTACT MSTB2.5/5-ST-5.08ABGY AU)

Note 2 For T branch communication, refer to the Instruction Manuals for the master unit and programmable controller (PLC) to be mounted.

● Specifications of CC-Link Interface

Item	Specification						
Communication Protocol	CC-Link ver1.1 or ver2						
Station Type	Remote Device Station (MAX. four stations occupied)						
Baud Rate	10M/5M/2.5M/625K/156kbps						
Communication System	Broadcast Polling System						
Number of Connectable Stations	MAX. 63 stations						
Communication Cable	Baud Rate (bps)	10M	5M	2.5M	625k	156k	
Length (Note 2)	Total Cable Length (m)	100	160	400	900	1200	
Communications Cable	Use the dedicated cable.						
Connector (Note 1)	MSTBA2.5/5-G-5.08-ABGY AU (Manufactured by PHOENIX CONTACT or equivalent)						

Note 1 The cable-side connector is a standard accessory. (PHOENIX CONTACT MSTBA2.5/5-ST-5.08-ABGY AU)

Note 2 For T branch communication, refer to the Instruction Manuals for the master unit and programmable PLC to be mounted.

● Specifications of PROFIBUS-DP Interface

Item	Specification		
Communication Protocol	PROFIBUS-DP		
Baud Rate	Automatically follows the master		
Communication System	Hybrid System (Master-Slave System or Token Passing System)		
Occupied Domain	MAX. 32 byte (Input, Output)		
Number of Connectable Stations	MAX. 32 stations/segments available up to 126 stations with repeater		
Communication Cable Length (Note 2)	MAX. Total Network	Baud Rate	Cable Type
	100m	12,000/6,000/3,000kbps	Type A Cable
	200m	1,500kbps	
	400m	500kbps	
	1000m	187.5kbps	
	1200m	9.6/19.2/93.75kbps	
Communications Cable	STP cable AWG18		
Connector (Note 1)	9-pin female D-sub Connector		
Transmission Path Format	Bus/Tree/Star		

Note 1 Please prepare a 9-pin male D-sub connector for the cable-end connector.

● Specifications of CompoNet Interface

Item	Specification
Communication System	CompoNet dedicated protocol
Communication Type	Remote I/O communication
Baud Rate	Automatically follows the master
Communication Cable Length	Follows CompoNet specifications
Slave Type	Word-Mixed Slave
Available Node Addresses for Setting	0 to 63 (Setting conducted on controller parameter)
Communications Cable (Please prepare separately)	Round Cable (JIS C3306, VCTF2-core) Flat cable I (with no sheathed) Flat cable II (sheathed)
Connector (Controller Side)	XW7D-PB4-R (Manufactured by OMRON or equivalent)

● Specifications of EtherNet/IP Interface

Item	Specification
Communication Protocol	IEC61158 (IEEE802.3)
Baud Rate	10BASE-T/100BASE-T (Autonegotiation setting is recommended)
Communication Cable Length	Follows EtherNet/IP specifications (Distance between hub and each node: 100m max.)
Number of Connection	Master Unit
Available Node Addresses for Setting	0.0.0.0 to 255.255.255.255
Communications Cable (Please prepare separately)	Category 5 or more (Double shielded cable braided with aluminum foil recommended)
Connector	RJ45 Connector × 1pc

● Specifications of EtherCAT Interface

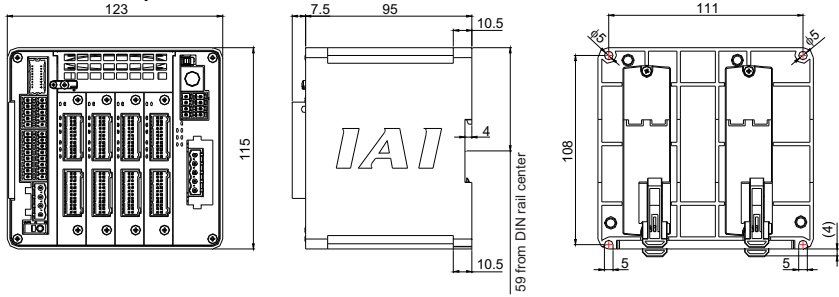
Item	Specification
Communication Protocol	IEC61158 type 12
Physical Layer	100Base-TX (IEEE802.3)
Baud Rate	Automatically follows the master
Communication Cable Length	Follows EtherCAT® specifications (Distance between each node: 100m max.)
Slave Type	I/O slave
Available Node Addresses for Setting	0 to 127 (17 to 80: When connected to the master (CJ1W-NC*82) manufactured by OMRON)
Communications Cable (Please prepare separately)	Category 5 or more (Double shielded cable braided with aluminum foil recommended)
Connector	RJ45 Connector × 2pcs (Input × 1, Output × 1)
Connect	Daisy chain only

● Specifications of PROFINET-IO Interface

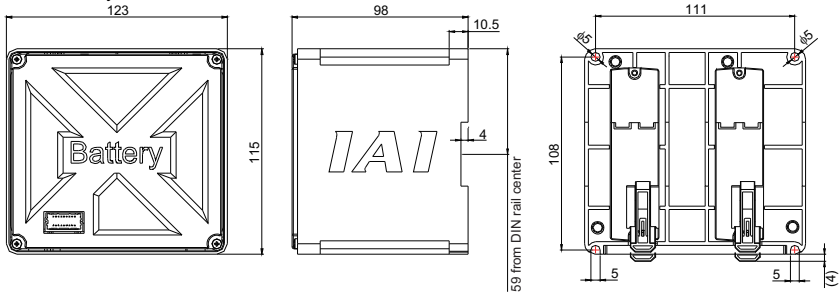
Item	Specification
Communication Protocol	IEC61158 (IEEE802.3), IEC61784
Baud Rate	100Mbps
Communication Cable Length	Distance between each segment: 100m Max.
Number of Connection	Master Unit
Available Node Addresses for Setting	0.0.0.0 to 255.255.255.255
Communications Cable (Please prepare separately)	Category 5 or more (Double shielded cable braided with aluminum foil recommended)
Connector	RJ45 Connector × 1pc
GSDML File Version	Ver 2.3

External Dimensions

Controller Main Body



Absolute Battery Box



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 is out of the range between 5%RH and 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 1.7 Noise Elimination and Mounting Method]

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

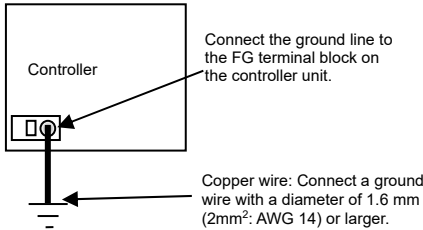
- Location subject to electrostatic noise
- Location where high electrical or magnetic field is present
- Location with the mains or power lines passing nearby

2. Storage and Preservation Environment

- Storage and preservation environment follows the installation environment. Especially in a long-term storage, consider to avoid condensation of surrounding air. Unless specially specified, moisture absorber protection is not included in the package when the machine is delivered. In the case that the machine is to be stored in an environment where dew condensation is anticipated, take the condensation preventive measures from outside of the entire package, or directly after opening the package.

Installation and Noise Elimination

1. Noise Elimination Grounding (Frame Ground)



Earth Terminal
Class D grounding (Formerly Class-III grounding :
Grounding resistance at 100Ω or less)

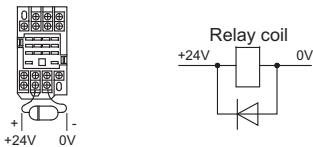
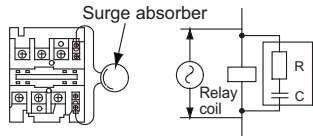
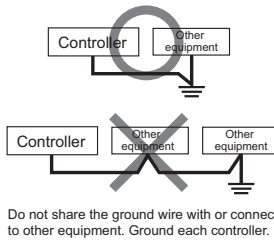
2. Precautions regarding wiring method

- 1) Wire is to be twisted for the 24V DC power supply.
- 2) Separate the signal and encoder lines from the power supply and power lines.

3. Noise Sources and Elimination

Carry out noise elimination measures for electrical devices on the same power path and in the same equipment. The following are examples of measures to eliminate noise sources.

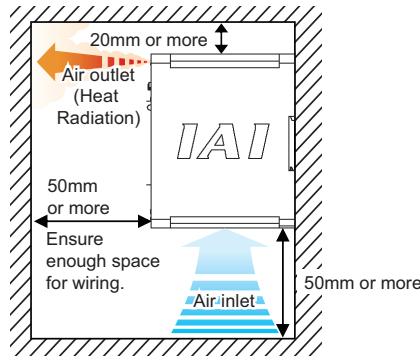
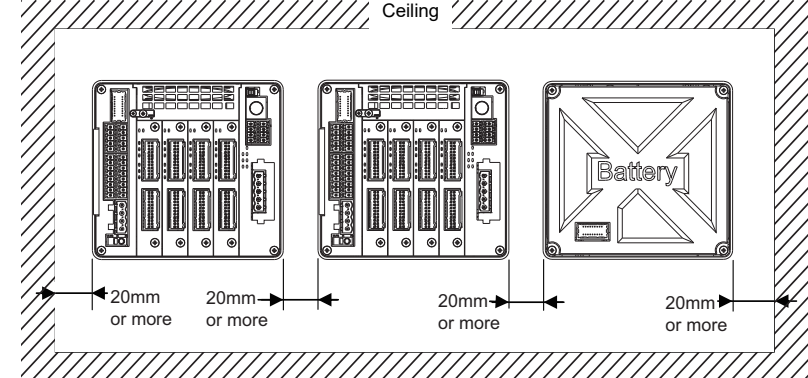
- 1) AC solenoid valves, magnet switches and relays
[Measure] Install a Surge absorber parallel with the coil.
- 2) DC solenoid valves, magnet switches and relays
[Measure] Mount the windings and diodes in parallel. Select a diode built-in type for the DC relay.



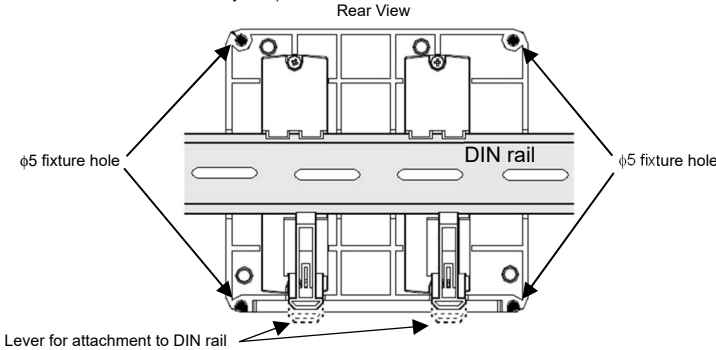
4. Cooling Factors and Installation

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

Pay a special attention to the battery unit since the performance of it would drop both in the low and high temperatures. Keep it in an environment in the room temperature as much as possible. (Approximately 20°C is the recommended temperature.)



For the attachment of the unit, use the fixture holes on the four corners or attach on the DIN rail. (Attachment should be the same for the absolute battery box.)



Operation Pattern Selected

This controller possesses 5 pattern of control method as the PIO type and 6 as Field Network. Set the most suitable operation pattern for your use with Gateway Parameter Setting Tool.

● Operation Patterns for PIO Type

Operation Pattern	Description	Example for Electric Cylinder Connection	Example for Air Cylinder Connection (Reference)
PIO Pattern 0 Single Solenoid System (Standard Point-to-Point Movement)	The actuator point-to-point movement is available using the same control function as for the air cylinder. The target position setting (forward position and backward position) is available. Speed and acceleration settings in the actuator movement are available. The pressing operation is available.		
PIO Pattern 0 Double Solenoid System (Standard Point-to-Point Movement)			

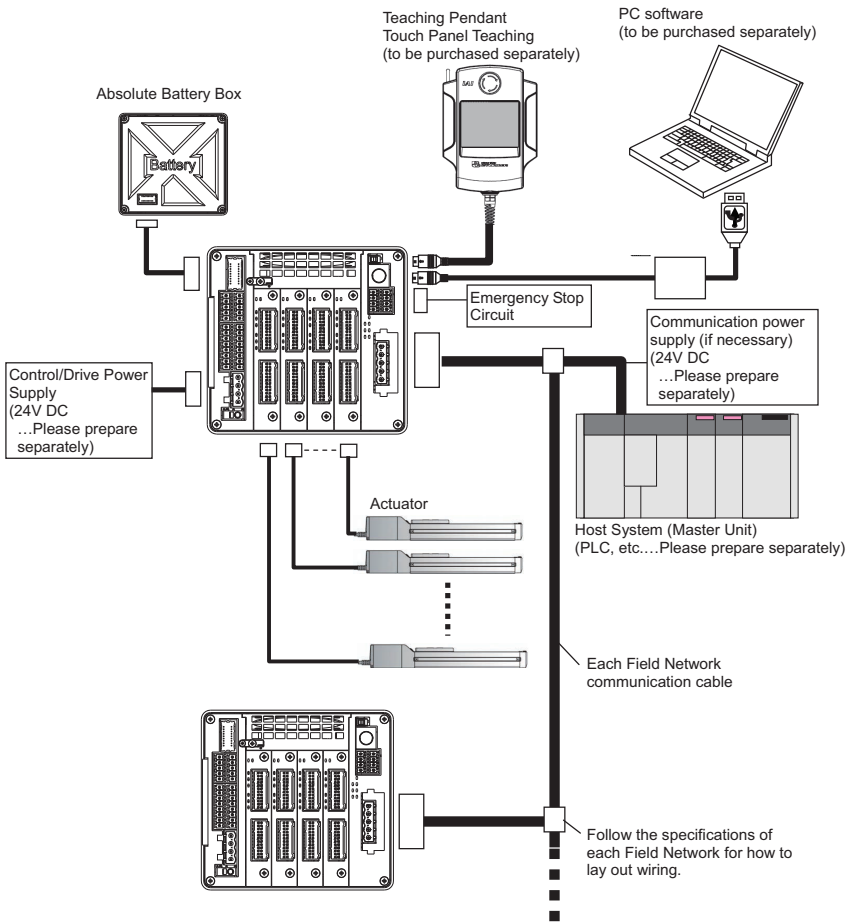
Operation Pattern	Description	Example for Electric Cylinder Connection	Example for Air Cylinder Connection (Reference)
PIO Pattern 1 Single Solenoid System (Point-to-Point Movement, Movement Speed Setting)	The actuator point-to-point movement is available using the same control function as for the air cylinder. The movement speed can be changed while the actuator is moving if the movement speed change signal is input. The target position setting (forward position and backward position) is available. Speed and acceleration settings in the actuator movement are available. The pressing operation is available.		
PIO Pattern 1 Double Solenoid System (Point-to-Point Movement, Movement Speed Setting)			
PIO Pattern 2 Single Solenoid System (Point-to-Point Movement, Target Position Setting (Position Data) Change)	The actuator point-to-point movement is available using the same control function as for the air cylinder. The target position and operation condition can be changed while the actuator is moving if the target position change signal is input. The target position setting (forward position and backward position) is available. Speed and acceleration settings in the actuator movement are available. The pressing operation is available.		
PIO Pattern 2 Double Solenoid System (Point-to-Point Movement, Target Position Setting (Position Data) Change)			
PIO Pattern 3 (2-Input, 3-Point Movement)	The actuator 3-Point Movement is available using the same control function as for the air cylinder. The target position setting (forward position, backward position and intermediate position) is available. Speed and acceleration settings in the actuator movement are available. Pressing operation is available at the points except for the intermediate point.		
PIO Pattern 4 (3-Input, 3-Point Movement)	The actuator 3-Point Movement is available using the same control function as for the air cylinder. The target position setting (forward position, backward position and intermediate position) is available. Speed and acceleration settings in the actuator movement are available. Pressing operation is available at the points except for the intermediate point.		
PIO Pattern 5 (Continuous Reciprocating Operation)	The actuator's point-to-point reciprocating operation is performed between the forward position and backward position. The target position setting (forward position and backward position) is available. Speed and acceleration settings in the actuator movement are available. The pressing operation is available.		

• Operation Patterns for Fieldbus Type

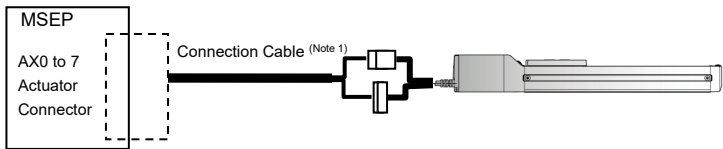
Operation Pattern	Description	Overview
Positioner 1/ Simple Direct Mode	In Positioner 1 Mode, 256 points of position data can be registered at the maximum and is able to stop at the registered positions. Monitoring of the current position is also available. In Simple Direct Mode, the target position can be indicated directly by inputting a value. Monitoring of the current position is also available.	
Direct Numeric Specification Mode	The target position, speed, acceleration/deceleration and pressing current limit can be indicated with inputting a number. Monitoring of not only the current position, but also the current speed and indicated current are available.	

Operation Pattern	Description	Overview
Positioner 2 Mode	This is the operation mode of the position data of 256 points at maximum set in the position table. The monitoring of the current position is not available. This mode is that the transferred data is reduced from Positioner 1 Mode.	
Positioner 3 Mode	This is the operation mode of the position data of 256 points at maximum set in the position table. The monitoring of the current position is not available. This is the mode to control with the minimized number of signals to perform the positioning operation by reducing the amount of sent and received data from Positioner 2 Mode.	
SEP I/O	The same control as PIO is available.	Refer to PIO type

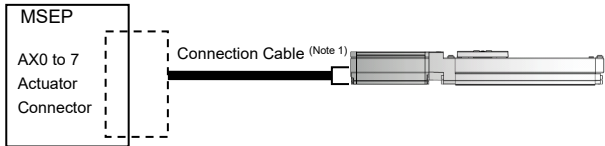
Wiring



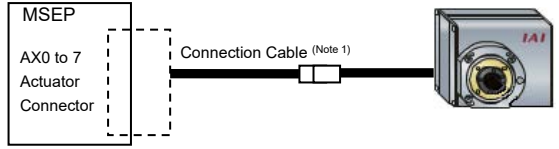
1) Connection to RCP2 Series



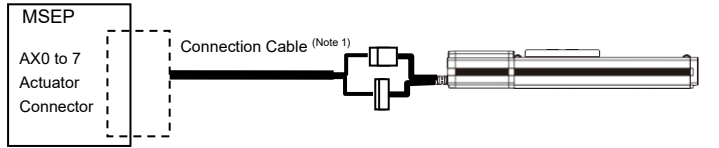
2) Connection to RCP3, RCP4, RCP5, RCA2 RCD and RCL Series



3) Connection to RCP2 Small Rotary Series



4) Connection to RCA Series



Note 1 Connection Cable Model Codes: 000; Cable length Example) 030 = 3m

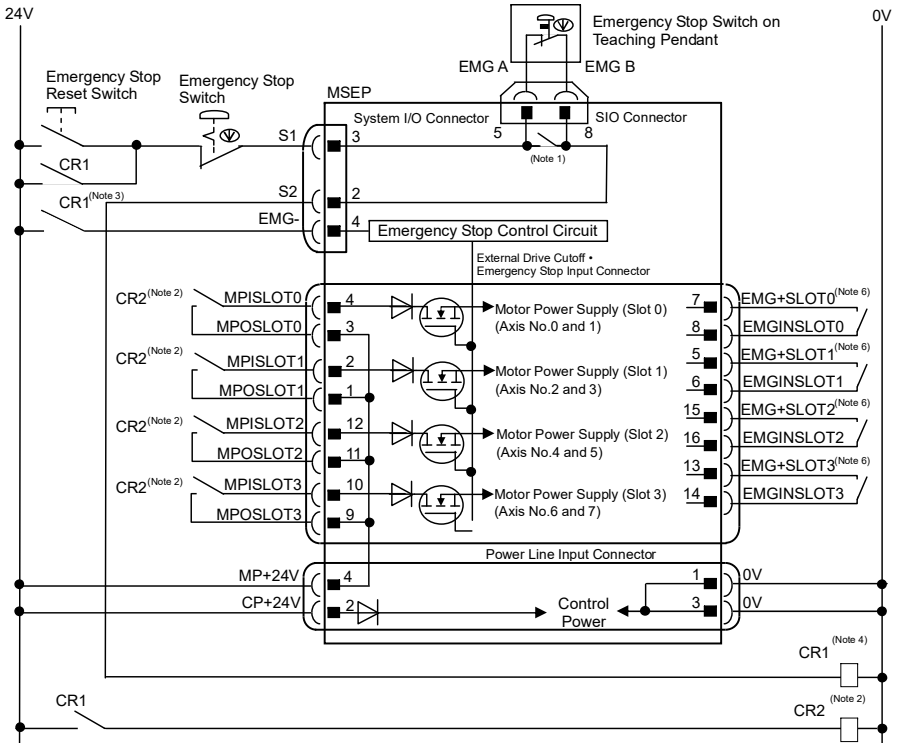
Model	Cable	Remarks
RCP2 (Other than Small Rotary)	CB-PSEP-MPA 000	Robot cable from 0.5 to 20m
Small Rotary Type RCP2-RTBL, RTCL, RTBSL, RTCSL, RTBBL, RTCBL	CB-RPSEP-MPA 000	Robot cable from 0.5 to 20m
RCA	CB-ASEP-MPA 000	Robot cable from 0.5 to 20m
RCP3, RCA2, RCL	CB-APSEP-MPA 000	Robot cable from 0.5 to 20m
RCP4 (Other than GR* Type), RCD (Adaptation controller symbol : D3)	CB-CA-MPA 000 -RB CB-CA-MPA 000	Robot cable from 0.5 to 20m (Note 2) Standard cable from 0.5 to 20m (Note 2)
RCP4 (GR* Type), RCP5, RCD (Adaptation controller symbol : D5)	CB-CAN-MPA 000 -RB CB-CAN-MPA 000	Robot cable from 0.5 to 20m (Note 2) Standard cable from 0.5 to 20m (Note 2)

Note 2 The cable maximum length for RCD is 10m for both the standard cable and the robot cable.

Caution: Follow the content described in the model code record card inserted to the controller when connecting actuators.
Wrong connection will issue an error such as the encoder wire breakage.

Power Supply and Emergency Stop Circuit

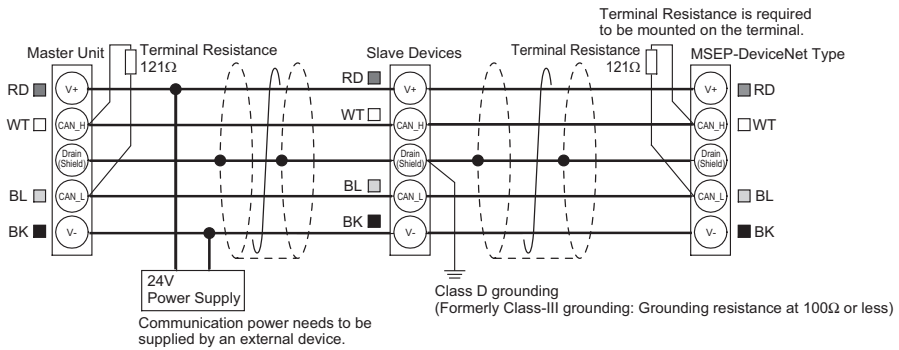
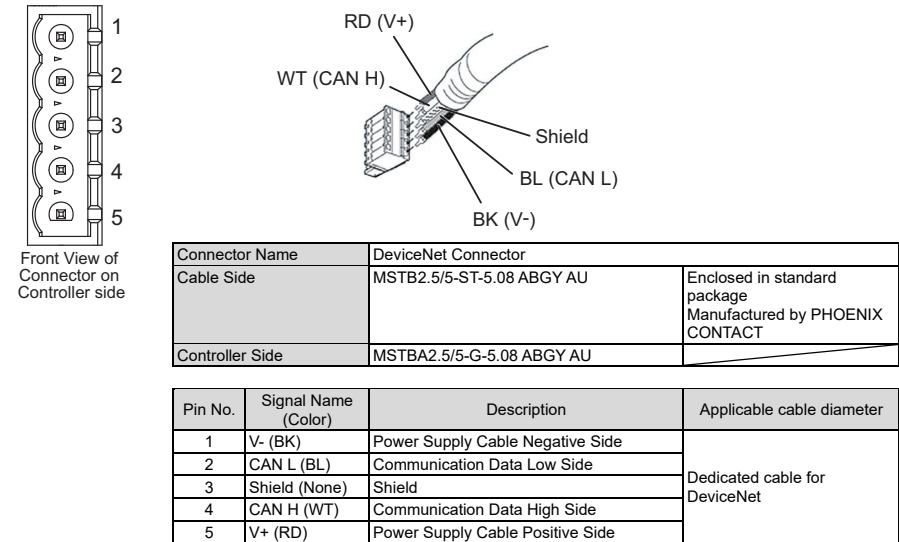
The following diagram shows an example of how the emergency stop switch for the teaching pendant may be included in the emergency stop circuit you may construct.



- Note 1 When the teaching pendant is not connected, S1 and S2 become short-circuited inside the controller.
 Note 2 When the motor driving source is cut off externally for a compliance with the safety category, connect a contact such as a contactor to the wires between MPISLOT* and MPOSLOT*.
 Note 3 The rating for the emergency stop signal (EMG-) to turn ON/OFF at contact CR1 is 24V DC and 10mA.
 Note 4 For CR1, select the one with coil current 0.1A or less.
 Note 5 If supplying power with using a 24V DC, having it turned ON/OFF, keep the 0V connected and have the +24V supplied/cut (cut one side only).
 Note 6 By cutting out the connection between EMG+SLLOT* and EMGINSLOT*, only the disconnected slot number can be made in the condition of an emergency stop. (*: Slot Number)

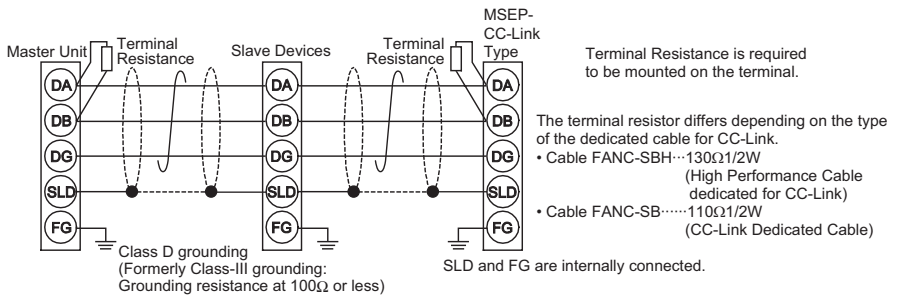
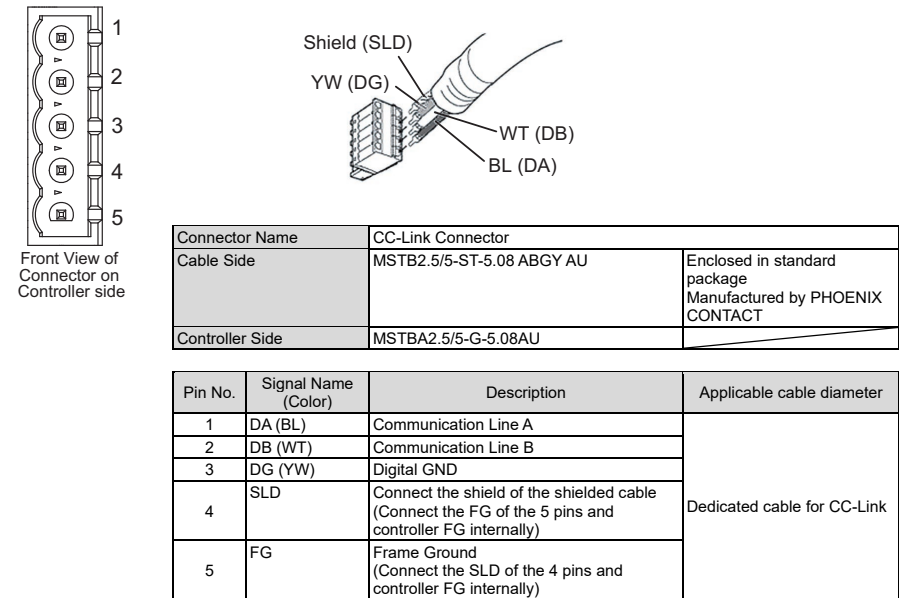
DeviceNet Type

Refer to the instruction manuals for each Field Network master unit and mounted PLC for the details.



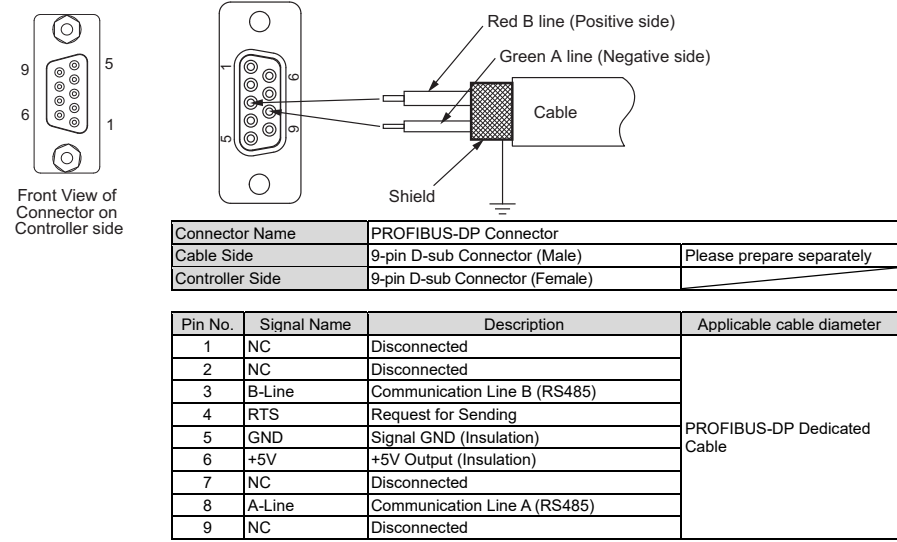
CC-Link Type

Refer to the instruction manuals for each Field Network master unit and mounted PLC for the details.



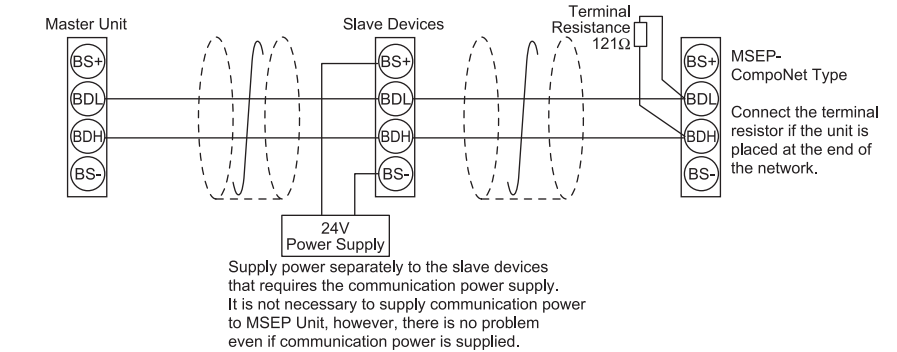
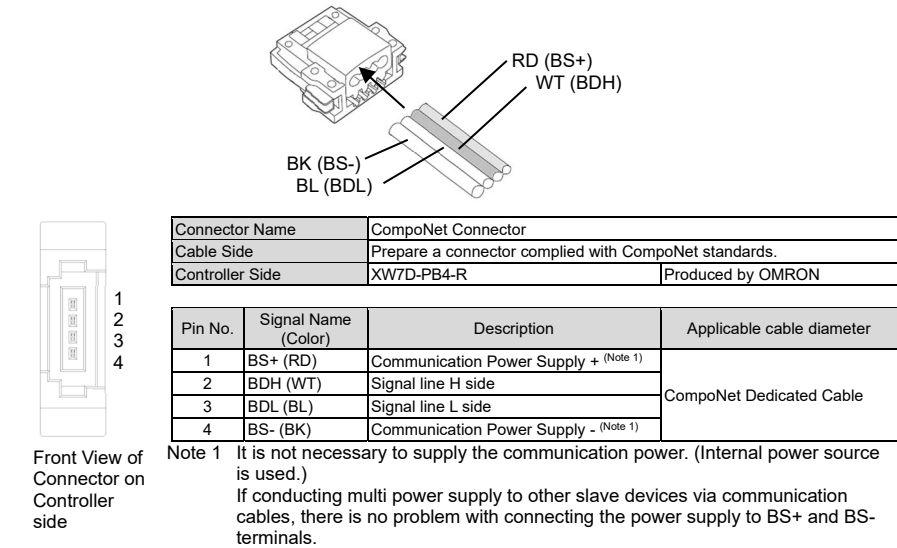
PROFIBUS-DP Type

Refer to the instruction manuals for each Field Network master unit and mounted PLC for the details.



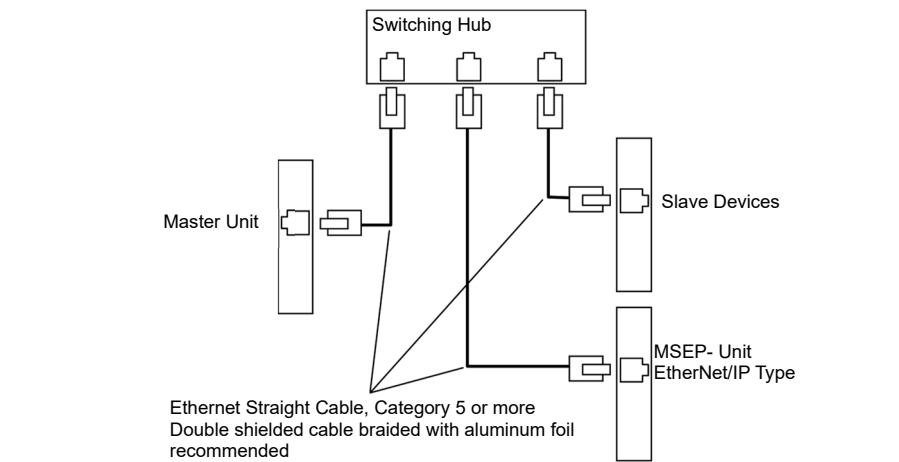
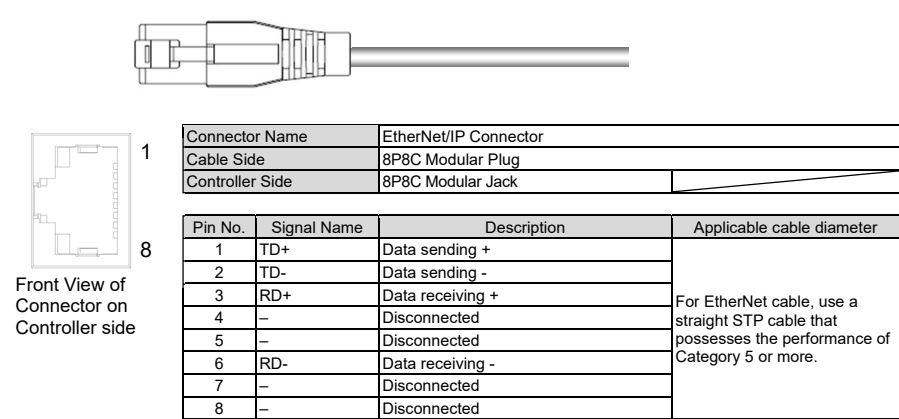
CompoNet Type

Refer to the instruction manuals for Field Network master unit and mounted PLC for the details.



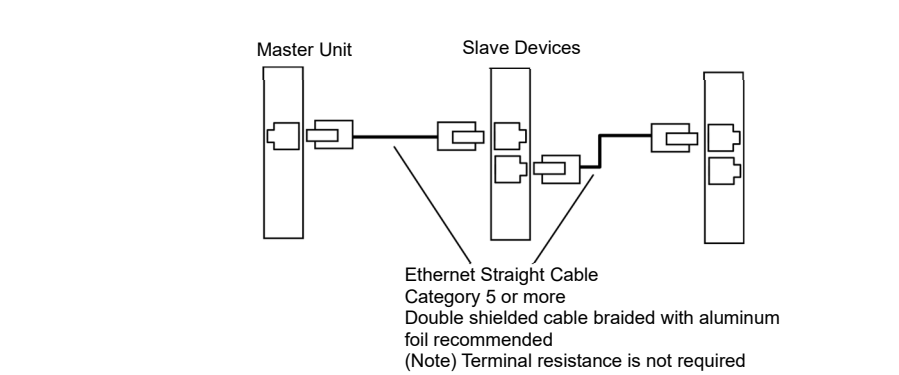
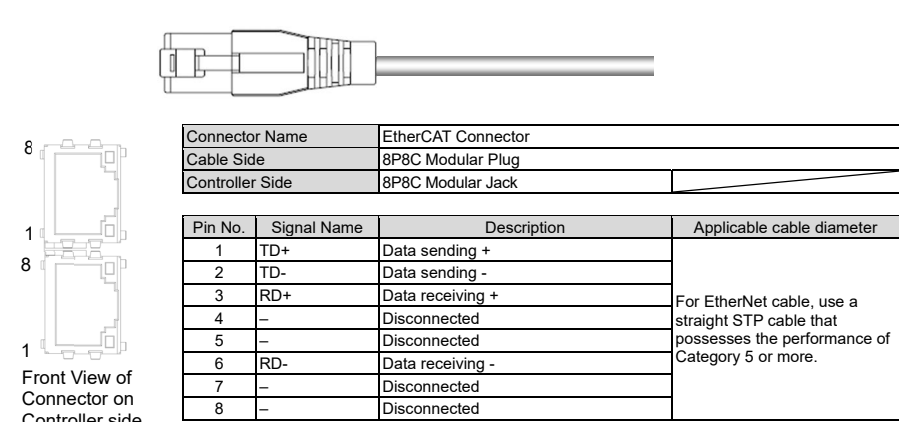
EtherNet/IP Type

Refer to the instruction manuals for Field Network master unit and mounted PLC for the details.



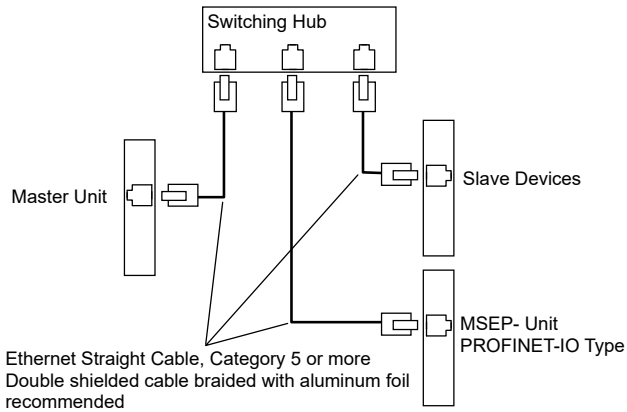
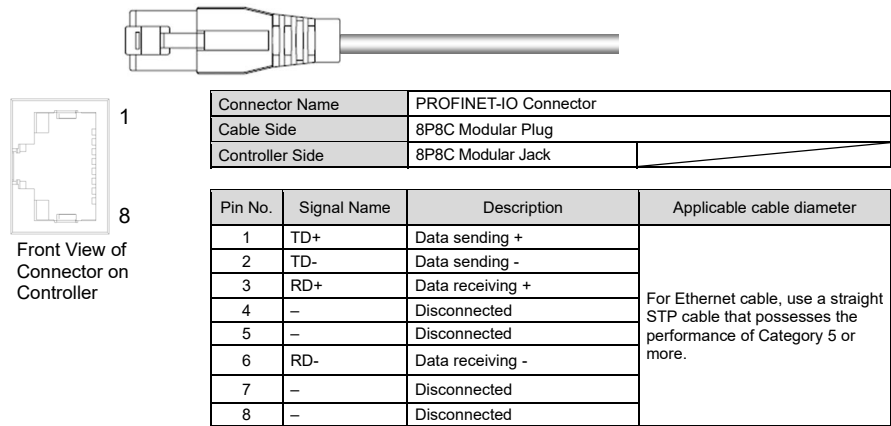
EtherCAT Type

Refer to the instruction manuals for Field Network master unit and mounted PLC for the details.



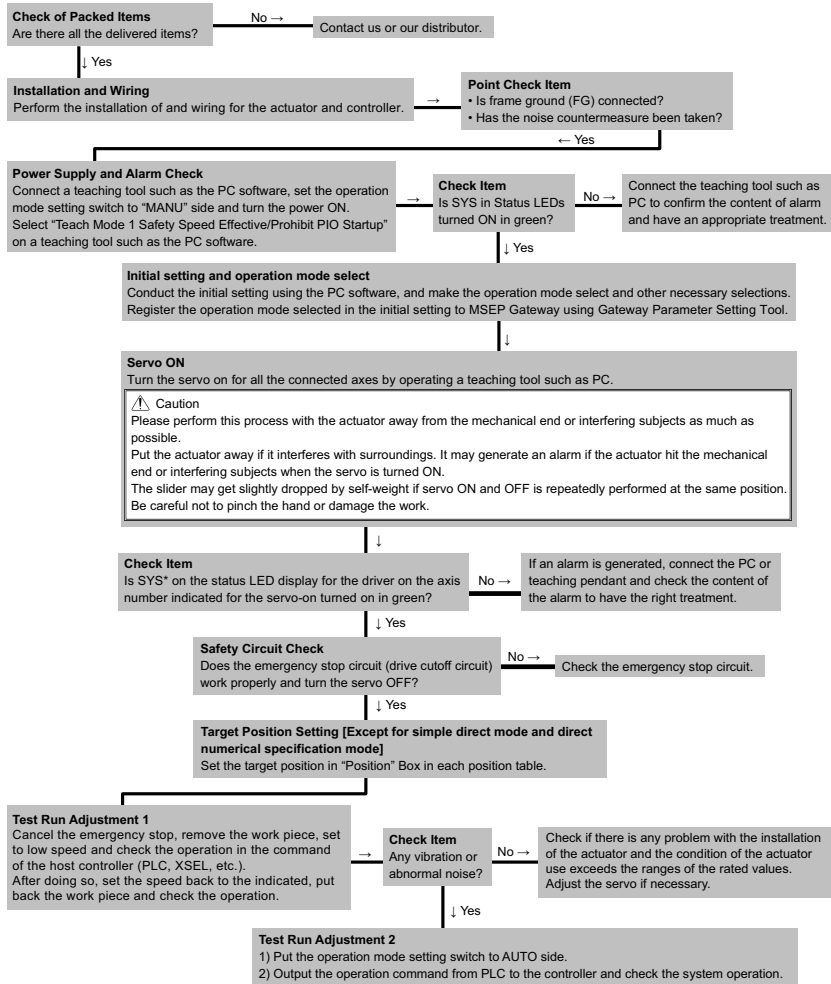
PROFINET-IO Type

Refer to the instruction manuals for Field Network master unit and mounted PLC for the details.



Starting Procedures

When using this product for the first time, make sure to avoid mistakes and incorrect wiring by referring to the procedure below. "PC" stated in this section means "PC software".



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