













4 PROCEDURES BEFORE OPERATION

This chapter describes the procedures before operating the network interface module.

1. Setting of the communication speed and available network/protocol ( Page 77 Network mode setting)
2. Setting of the IP address/station number
 - CC-Link IE TSN, CC-Link IE Field Network Basic, SLMP, MODBUS/TCP:  Page 78 IP address setting
 - CC-Link IE Field Network:  Page 82 Station number setting
3. Installation of the network interface module ( Page 84 Installation Environment and Installation Position, Page 86 Installation)
4. Connection to a digital signal converter or analog signal converter ( Page 88 Connection to a Digital Signal Converter or Analog Signal Converter)
5. Wiring between the power supply and Ethernet cable ( Page 89 Wiring to Terminal Block for Module Power Supply and FG, Page 92 Wiring of Ethernet Cable)

Restriction

For communications using CC-Link IE Field Network Basic or SLMP, connect the Ethernet cable to P1. Do not use P2.

6. Parameter setting (network configuration setting)
 - CC-Link IE TSN (to configure slave station parameter automatic setting):  Page 142 Slave station parameter automatic setting
 - CC-Link IE TSN:  Page 148 Slave station parameter processing
 - CC-Link IE Field Network:  Page 179 Slave station parameter processing
 - CC-Link IE Field Network Basic:  Page 203 Network configuration setting
 - CC-Link IE TSN, CC-Link IE Field Network:  Page 112 Command execution of slave station
7. Creation of programs
8. Start of data link ( User's manual for the master module to be used)

Point

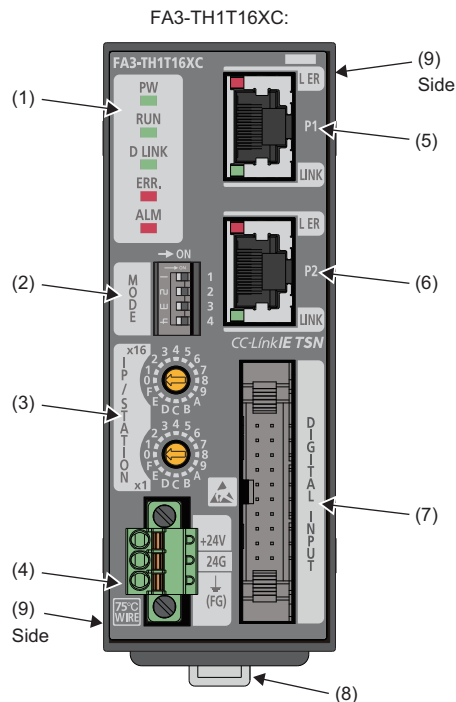
- For the CSP+ for the network interface module, please consult your local Mitsubishi Electric representative.
- When using a network interface module (analog input/output) and an analog signal converter, warm up the devices for 30 minutes to keep the accuracy.

Network interface module replacement procedure

1. Power off the network interface module only.
2. Prepare a new network interface module and perform the steps 1 to 5 mentioned above. Match the settings of the IP address/station number setting switches and network setting switches with the settings of the old network interface module.
3. Power on the network interface module.
4. Set the parameters again so that the operation is the same as that of the old network interface module.
5. Check that the RUN LED and D LINK LED of the network interface module are on and the ERR. LED is off.

4.1 Part Names

The part names are shown below.



No.	Name	Description	Reference
(1)	Operating status LED	PW LED Green	On: Power-on Off: 24VDC power supply is off
		RUN LED Green	On: Operating normally Flashing: Unit test in progress Off: A major error has occurred or setting of the network setting switch is disabled.
		D LINK LED Green	On: Data link in operation (cyclic transmission being performed) SLMP command being received or communication status being monitored (SLMP) Connection being established (MODBUS/TCP) Flashing: Data link stop (cyclic transmission stopped) Connection not established (MODBUS/TCP) Off: Data link not performed (disconnected) SLMP command not being received or communication status monitoring timeout (SLMP)
		ERR. LED Red	On: Moderate error or major error occurred Flashing (0.2s interval): Setting error of the network setting switch ^{*1} Flashing (0.5s interval): Minor error occurred Off: Operating normally
		ALM LED Red	On: Alarm occurred Flashing: Input signal error detected (FA3-AT1T8X, FA3-AT1M8X) Off: Operating normally
(2)	Network setting switch	Set the communication speed of CC-Link IE TSN and the network/protocol.	Page 77 Network mode setting
(3)	IP address/station number setting switches	Set the fourth octet of IP address or the station number.	Page 78 IP address setting Page 82 Station number setting
(4)	Terminal block for module power supply and FG	A terminal block to connect a module power supply (24VDC) and FG	Page 89 Wiring to Terminal Block for Module Power Supply and FG

No.	Name			Description	Reference
(5)	P1			RJ45 connector to connect an Ethernet cable to. Use P1 for CC-Link IE Field Network Basic, SLMP, or MODBUS/TCP.	☞ Page 92 Wiring of Ethernet Cable
	Communication status LED	L ER LED	Red	On: The data the network interface module has received are abnormal. Off: The data the network interface module has received are normal.	—
		LINK LED	Green	On: Link-up in progress Off: Link-down in progress	☞ Page 291 When the P1 LINK LED or P2 LINK LED turns off
(6)	P2			Same as P1.	☞ Page 92 Wiring of Ethernet Cable
	Communication status LED	L ER LED	Red	However, this port is not used for CC-Link IE Field Network Basic, SLMP, and MODBUS/TCP. (In such a case, connect an Ethernet cable to P1.)	☞ Page 291 When the P1 LINK LED or P2 LINK LED turns off
		LINK LED	Green		
(7)	A connector for the digital signal converter or analog signal converter			A connector for connecting to the digital signal converter or analog signal converter.	☞ Page 88 Connection to a Digital Signal Converter or Analog Signal Converter
(8)	DIN rail hook			A hook for mounting the network interface module on a DIN rail.	☞ Page 86 How to mount modules on a DIN rail
(9)	Hole for the mounting bracket			Holes to install the bracket	☞ Page 87 How to mount the module using the mounting bracket

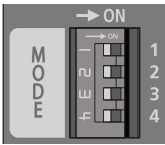
*1 This error occurs if the module is powered on while the network setting switch is set to N/A (N/A is the combinations of switch 2 to 4 that are not allowed to be set).

Point

Change the network setting switches or IP address/station number setting switches when the power is not supplied to the network interface module. (If the setting switches are changed when the power is being supplied to the module, the setting value is not stored and the ERR. LED flashes.)

Network mode setting

The communication speed and the network/protocol are set using the network setting switches.



Setting method

Set the communication speed of CC-Link IE TSN using switch 1.

The setting is ignored on a network other than CC-Link IE TSN.

Switch 1	Communication speed	Remarks
Off	1Gbps	• Fixed to 1Gbps on CC-Link IE Field Network.
On	100Mbps	• Fixed to 100Mbps on CC-Link IE Field Network Basic and SLMP. • 100Mbps/10Mbps (auto-negotiation) on MODBUS/TCP.

Set the network/protocol using switches 2 to 4 in combination.

The setting of MODBUS/TCP is valid only for the MODBUS/TCP-compatible device. (Page 12 OVERVIEW)

Switch 2	Switch 3	Switch 4	Available network/protocol
Off	Off	Off	CC-Link IE TSN
On	Off	Off	CC-Link IE Field Network
Off	Off	On	CC-Link IE Field Network Basic
Off	On	Off	SLMP
On	On	Off	MODBUS/TCP
Off	On	On	Setting prohibited (If any protocol is set, the module does not operate normally, the RUN LED is turned off, and the ERR LED flashes at 0.2-second intervals. No data is stored to Latest error code (RWr0) and error history. Page 292 When the ERR. LED flashes at 0.2-second intervals and the RUN LED turns off)
On	Off	Off	
On	Off	On	
On	On	On	



The factory default is CC-Link IE TSN. The setting can be changed by turning on each switch as follows.

- Switch 2: CC-Link IE Field Network
- Switch 3: SLMP
- Switch 4: CC-Link IE Field Network Basic

Precautions

Do not change the network setting switch while the power is supplied to the network interface module.

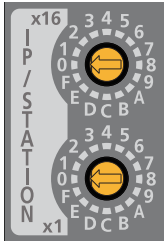
If the switch is changed, the error code (FA3-TH: 0201H, FA3-AT: 1031H) is stored in Latest error code (RWr0).

Returning the network setting switch to its previous position and turning on and off Error clear request flag (RWW0.b10 (FA3-TH), RYA (FA3-AT)) eliminates the error and turns off the ERR. LED.

IP address setting

In the CC-Link IE TSN, CC-Link IE Field Network Basic, SLMP, or MODBUS/TCP system, set the fourth octet of IP address using the IP address/station number setting switches on the front of the network interface module.

The setting of the IP address/station number setting switches is enabled when the network interface module is powered on. Therefore, set the switches when the module is powered off.



Point

When operating the IP address/station number setting switches, use a flathead screwdriver with a tip width of 2.5mm or less.


Setting method

Set the fourth octet (decimal) of the IP address using the IP address/station number setting switches x1 and x16 (hexadecimal).

Combinations of x1 and x16 are as follows.

		x1															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
x16	0	(1)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
	3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
	4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
	5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
	6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
	7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
	8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
	9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
	A	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
	B	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
	C	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
	D	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
	E	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
	F	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	(2)

(1) When 0 is set: The IP address at next startup setting is used for operation.

(2) When 255 is set:  Page 293 Unit Test

Setting range

When a value in the range of 1 to 254 is set, the IP address and subnet mask are as follows.

- IP address (first to third octet): The first to third octet of the IP address of the master station is used for operation.
- Subnet mask: The subnet mask of the master station is used for operation.

When 0 is set, the following occurs.

- In the CC-Link IE TSN or CC-Link IE Field Network Basic system, the IP address at next startup setting (remote buffer memory: 0000H, 0001H) and the subnet mask of the master station are used for operation.
- In the SLMP system, the value specified in the IP address at next startup setting (remote buffer memory: 0000H, 0001H) is used as the IP address.
- In the MODBUS/TCP system, the value specified in the IP address at next startup setting (MODBUS device: holding register, address: 00F0H, 00F1H) is used as the IP address.

Point

- The default value of the IP address at next startup setting is 192.168.3.250.
- In the CC-Link IE TSN or CC-Link IE Field Network Basic system, do not set an IP address with duplicated fourth octet in the access range of the network used. Duplicated fourth octet causes the duplicated IP address due to the automatic setting of the first to third octet, resulting in failure of data link establishment.
- In the SLMP system, avoid IP address duplication with other Ethernet devices in the access range of the network used. Otherwise, SLMP commands cannot be sent/received properly.
- In the MODBUS/TCP system, avoid IP address duplication with other Ethernet devices in the access range of the network used. Otherwise, the TCP connection is not established.

Restriction

The following IP addresses cannot be used. In the following case, the IP address will be 192.168.3.250.

- IP addresses whose host part values are all 0 in binary
- IP addresses whose host part values are all 1 in binary
- IP addresses whose third and fourth octets are 255
- IP addresses outside the range 0.0.0.1 to 223.255.255.254

The following subnet mask cannot be used.

- 0.0.0.0
- Subnet mask which does not have consecutive 1 in the upper side or consecutive 0 in the lower side in binary such as 255.0.255.0 and 0.255.255.0

Automatic setting of the first to third octets of IP address (CC-Link IE TSN)

In the CC-Link IE TSN system, the first to third octets of IP address are automatically set by the network interface module according to the settings of the master station. (The factory default setting is 192.168.3.)

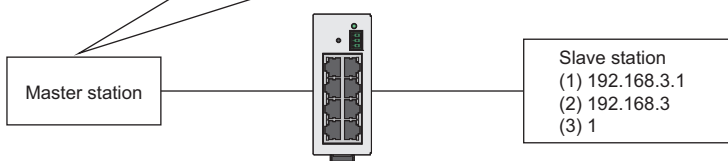
■When there is one master station:

Receives the information of network configuration setting from the master station.

Searches for the IP address with the fourth octet matching the IP address/station number setting switches from the network configuration setting information.

If any address with matched fourth octet is found, the first to third octet is set to the own station based on the matched network configuration setting information.

No.	Model Name	STA#	Station Type	RX Setting Points	RY Setting Points	RW _r Setting Points	RW _w Setting Points	Parameter Automatic Setting	PDO Mapping Setting	IP Address	Subnet Mask
0	Host Station	0	Master Station							192.168.3.253	
1	FA3-TH1T16XC	1	Remote Station	16	16	16	16	<input checked="" type="checkbox"/>	<Detail Setting>	192.168.3.1	255.255.255.0



- (1) IP address of the network interface module
- (2) The first to third octet of network configuration setting
- (3) Setting value of IP address/station number setting switches

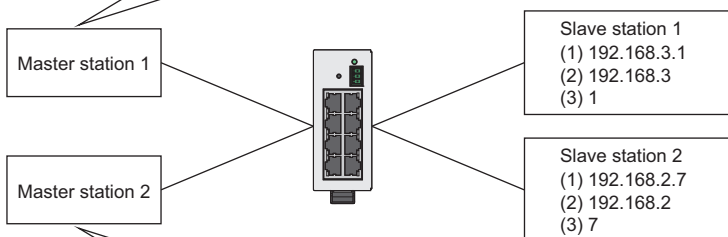
■When there are multiple master stations:

Receives the information of network configuration setting from the master station 1 and 2.

Searches for the IP address with fourth octet matching the IP address/station number setting switches from the network configuration setting information of the master station 1 and 2.

If any address with matched fourth octet is found, the first to third octet is set to the own station based on the matched network configuration setting information.

No.	Model Name	STA#	Station Type	RX Setting Points	RY Setting Points	RW _r Setting Points	RW _w Setting Points	Parameter Automatic Setting	PDO Mapping Setting	IP Address	Subnet Mask
0	Host Station	0	Master Station							192.168.3.253	
1	FA3-TH1T16XC	1	Remote Station	16	16	16	16	<input checked="" type="checkbox"/>	<Detail Setting>	192.168.3.1	255.255.255.0



No.	Model Name	STA#	Station Type	RX Setting Points	RY Setting Points	RW _r Setting Points	RW _w Setting Points	Parameter Automatic Setting	PDO Mapping Setting	IP Address	Subnet Mask
0	Host Station	0	Master Station							192.168.2.253	
1	FA3-TH1T16Y	1	Remote Station	16	16	16	16	<input checked="" type="checkbox"/>	<Detail Setting>	192.168.2.7	255.255.255.0

- (1) IP address of the network interface module
- (2) The first to third octet of network configuration setting
- (3) Setting value of IP address/station number setting switches

- Automatic setting of the first to third octet of IP address is executed only once during the initial communication with the master station after the network interface module is powered on. When the IP address of the network interface module in the network parameter at the master station is changed while the data link between the network interface module and master station is established, power off and on the network interface module as well after the parameter of master station is reflected.
- The subnet mask for automatic setting of the first to third octet of IP address is 255.255.255.0 (fixed). If the subnet mask needs to be set to the value other than 255.255.255.0, set the IP address and subnet mask manually.
- If the module is powered on while the IP address/station number setting switches are set to 0, IP address is not set automatically. Operation starts with the IP address and subnet mask set from the engineering tool of the master station.

Change of IP address (SLMP, MODBUS/TCP)

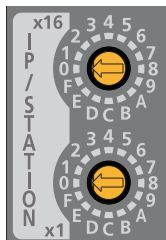
In the SLMP or MODBUS/TCP system, the first to third octets (network number) of IP address are fixed to 192.168.3.

- When changing the IP address in the SLMP system, set an IP address to the IP address at next startup setting (0000H, 0001H) of the remote buffer memory and reset or power on the module.
- When changing the IP address in the MODBUS/TCP system, set an IP address to the IP address at next startup setting (MODBUS device: holding register, address: 00F0H to 00F1H) of the remote buffer memory and reset or power on the module.

Station number setting

In the CC-Link IE Field Network system, set the station number using the IP address/station number setting switches on the front of the network interface module.

The setting of the IP address/station number setting switches is enabled when the network interface module is powered on. Therefore, set the switches when the module is powered off.



Point

When operating the IP address/station number setting switches, use a flathead screwdriver with a tip width of 2.5mm or less.

Setting method

Set the station number (decimal) using the IP address/station number setting switches x1 and x16 (hexadecimal) in combination.

		x1															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
x16	0	—	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
	3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
	4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
	5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
	6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
	7	112	113	114	115	116	117	118	119	120	—	—	—	—	—	—	—
	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	A	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	B	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	C	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	D	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	E	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	F	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	(1)

—: IP address/station number setting switch out-of-range error

(1) When 255 is set: Page 293 Unit Test

Setting range

When 1 to 120 is set, the network number of the master station is used for operation.

When 0 or a value within 121 to 254 is set, IP address/station number setting out-of-range error (station number) occurs and the D LINK LED flashes.



Avoid station number duplication in the access range of the network used. Otherwise, a communication error occurs and the D LINK LED is not turned on.

4.2 Installation Environment and Installation Position

Installation environment

Use the network interface module indoors.

Installation location

Do not install the network interface module in places where:

- Ambient temperature is outside the range of 0 to 55°C;
- Ambient humidity is outside the range of 5 to 95%RH;
- Condensation occurs due to rapid temperature change;
- There are a high level of conductive powders such as dust and iron powder, oil mist, salinity, or organic solvents;
- It is exposed to direct sunlight;
- A strong electric field or strong magnetic field is generated; and
- The module is subject to vibration or shock.

Installation surface

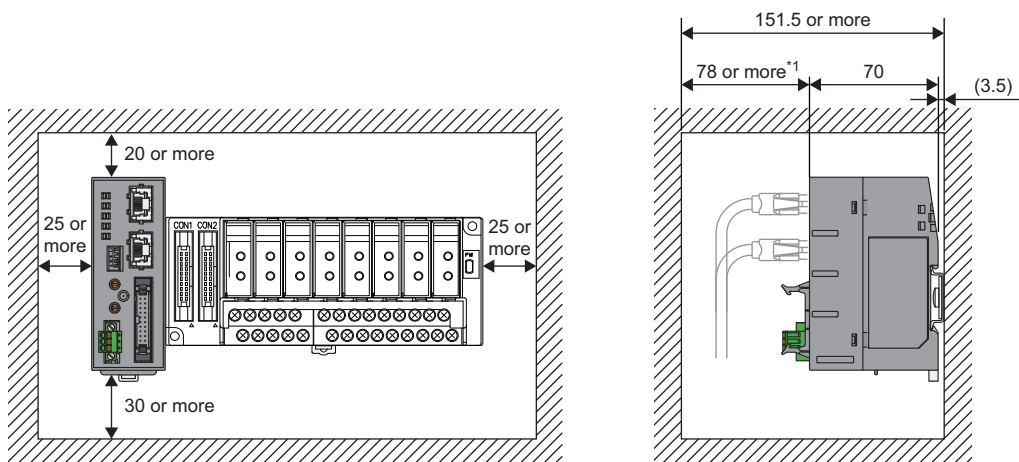
Install the network interface module on a flat surface. Unevenness on the installation surface causes application of an excessive force to the printed-circuit board, which may lead to a malfunction.

Installation position

Install the network interface module in a control panel considering operability, maintainability, and environmental resistance.

Provide clearance between the network interface module and surrounding structures or other network interface modules (except the digital signal converter and the analog signal converter) as shown below.

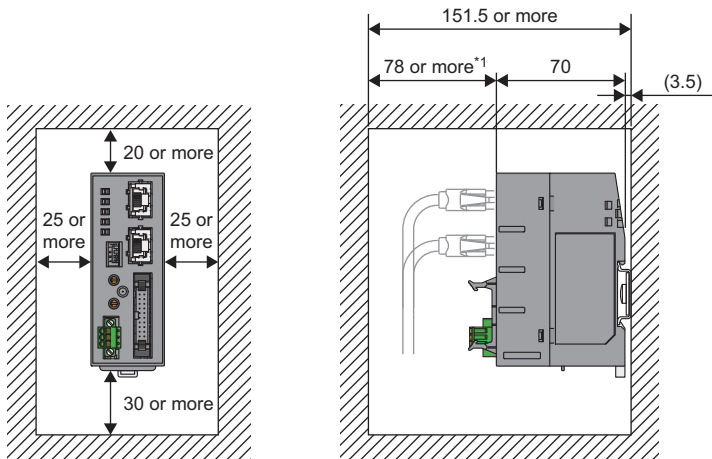
When using the dedicated cable



Unit: mm

*1 The length depends on the bending radius of the Ethernet cables. Check the bending radius in the specifications of the Ethernet cables used.

When using the signal converter connection extension cable

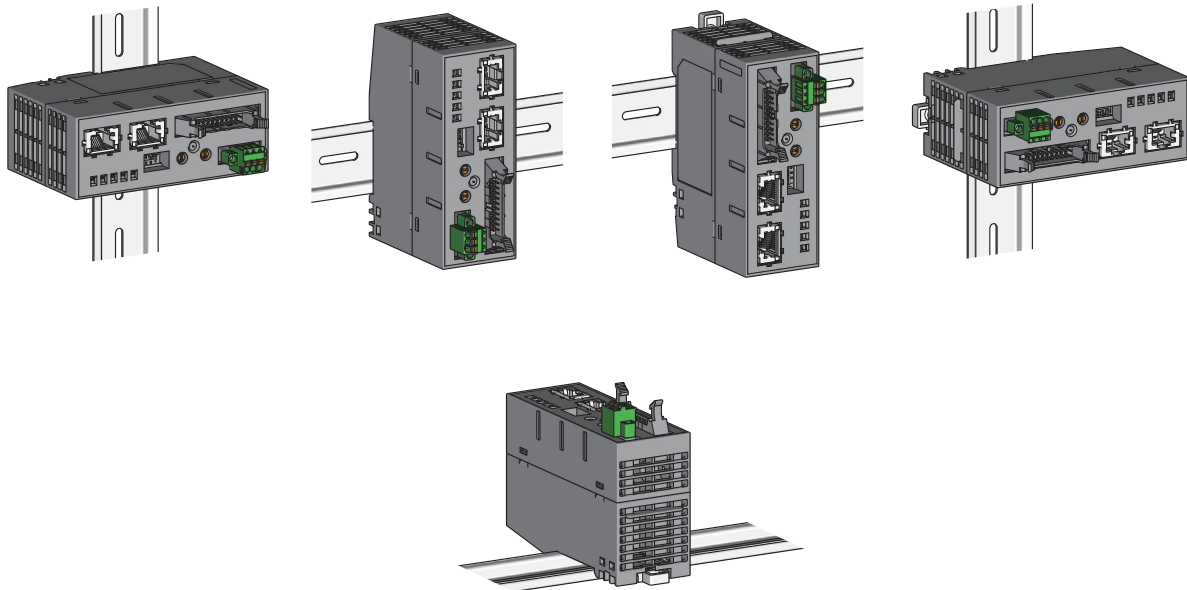


Unit: mm

*1 The length depends on the bending radius of the Ethernet cables. Check the bending radius in the specifications of the Ethernet cables used.

Installation direction

The network interface module can be installed in five orientations by using a DIN rail or mounting brackets.
(The module cannot be installed downward.)



4.3 Installation

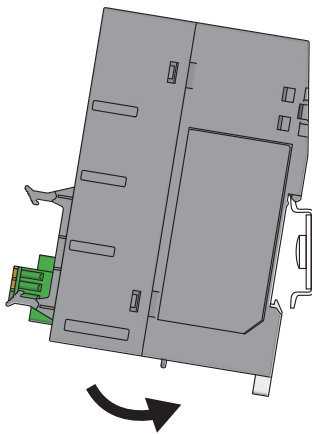
Securely mount the network interface module on a DIN rail or using a mounting bracket. Failure to do so can cause the dropping, short-circuit, or malfunction of the module.

How to mount modules on a DIN rail

DIN rail

- Use the DIN rail of TH35-7.5Fe or TH35-7.5Al (compliant with the JIS C 2812).
- Tighten the mounting screws for the DIN rail at intervals of 200mm or shorter.

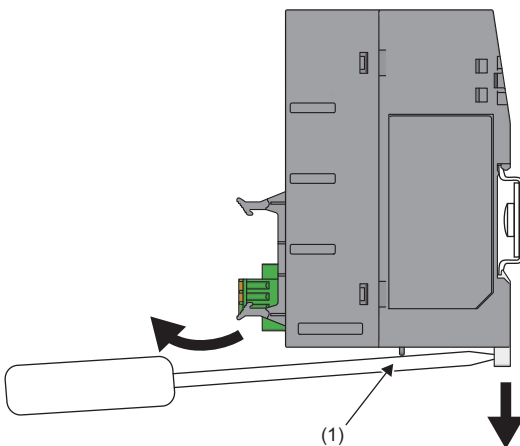
Mounting procedure



1. Hang the fixing tab of the upper side of the network interface module to the DIN rail.
2. Push the module to the DIN rail to snap it into place.

3. Fix the module using DIN rail stoppers as required.

Removal procedure

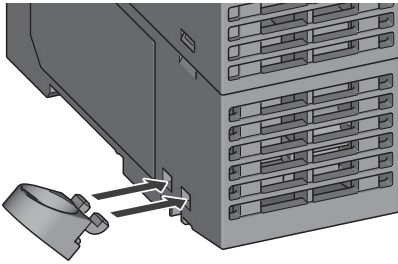


1. Insert the flathead screwdriver into the DIN rail hook.
2. Push down the DIN rail hook by leverage of the screwdriver with the projection (1) under the module as a fulcrum to remove the module from the DIN rail.

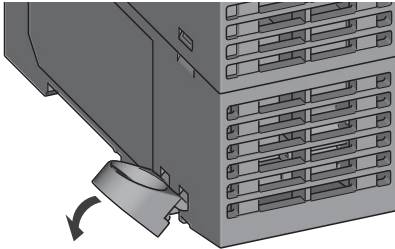
When mounting the module, do not slide it into the DIN rail. Doing so may damage the network interface module.

How to mount the module using the mounting bracket

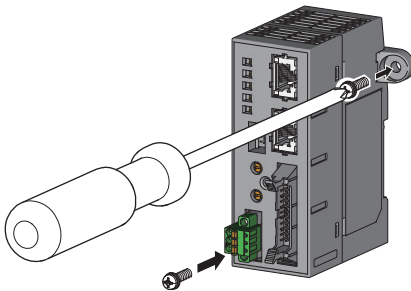
The network interface module can be installed to the control panel directly by using the mounting brackets



1. Set the projection of mounting bracket to the insertion opening of the network interface module.
2. Lift the front of the mounting bracket and insert the projection into the network interface module.



3. Push the mounting bracket in the direction of the arrow until it clicks into place.



4. Tighten two M4 screws with the tightening torque of 0.82 to 1.11N·m to install the module to the control panel.

4.4 Connection to a Digital Signal Converter or Analog Signal Converter

To connect between the network interface module (digital input/output) and the digital signal converter or between the network interface module (analog input/output) and the analog signal converter, use the network interface module cable.

Set the notched edge of connector and push the cable connector into the network interface module connector. Insert the connector to the end to fix the cable securely.

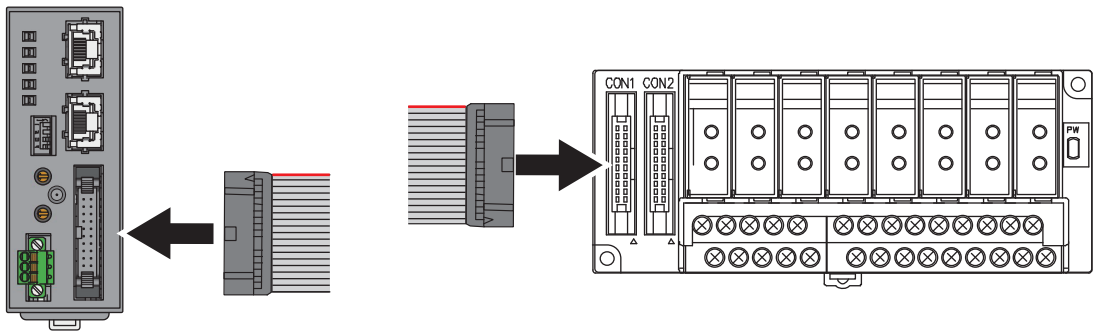
The network interface module cables do not have electrical polarity for connection.

Network interface module cable

Network interface module cables for connecting the network interface module to connectable devices are as shown below.

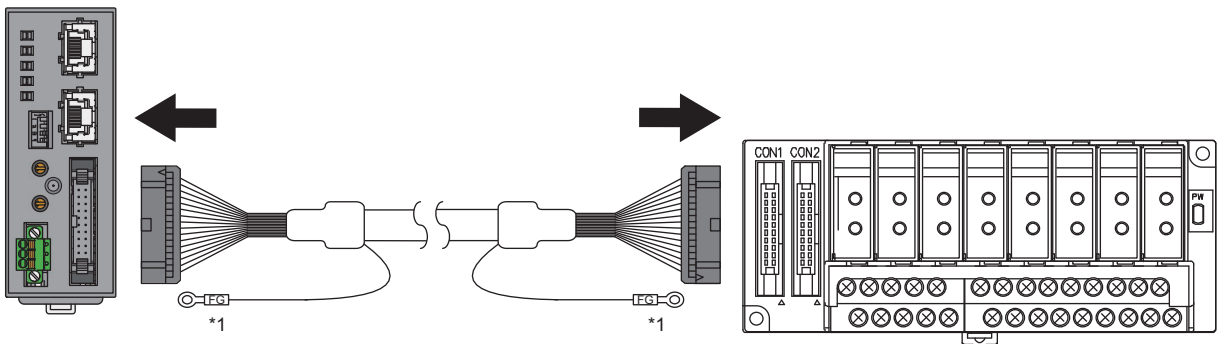
Item	Model	Length	Description
Dedicated cable	—	85mm	Included in the package with "-01C" appended to the model name of the network interface module.
Signal converter connection extension cable	FA3-CB2L10MM1H20	1.0m	Sold separately
	FA3-CB2L20MM1H20	2.0m	
	FA3-CB2L30MM1H20	3.0m	

When using the dedicated cable



When using an analog signal converter, connect the dedicated cable to CON1.

When using the signal converter connection extension cable



When using an analog signal converter, connect the signal converter connection extension cable to CON1.

*1 Ground the FG line to the control panel (both ends).

4.5 Wiring to Terminal Block for Module Power Supply and FG

Wire

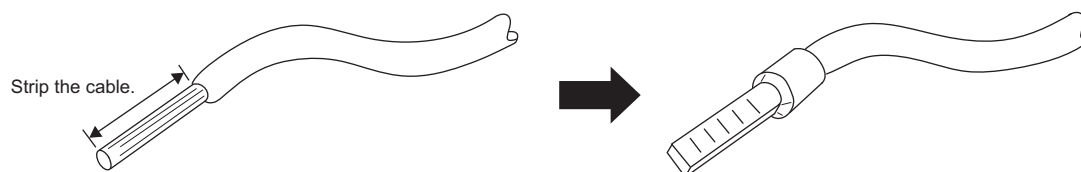
The following table shows the suitable wire for connection to the terminal block for module power supply and FG.

Wire size	Type	Material	Temperature rating
0.14 to 1.5mm ² (26 to 16 AWG)	Stranded wire or solid wire	Copper wire	75°C or higher

The terminal hole size on the terminal block is 2.4mm × 1.5mm.

Terminal processing of wires

Strip the coating from the end of the wire, and install a ferrule solderless terminal to the stripped part.



For the length to strip, refer to the specifications of the ferrule solderless terminal to be used.

If the coating is stripped too long, the conductive part protrudes to the front of the terminal block, resulting in the risk of electric shock or a short circuit between terminals. If the coating is stripped too short, contact failure can occur.

The following table lists the reference products of ferrule solderless terminals and crimping tools.

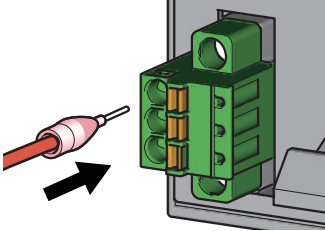
Model (sleeve length)	Applicable wire size	Crimping tool	Inquiry destination
AI 0.34-10 TQ (10mm) AI 0.34-8 TQ (8mm)	0.34mm ² (22 AWG)	CRIMPFOX6	PHOENIX CONTACT GmbH & Co. KG
AI 0.5-10 WH (10mm) AI 0.5-8 WH (8mm)	0.5mm ² (20 AWG)		
A 0.5-10 (10mm) A 0.5-8 (8mm)	0.5mm ² (20 AWG)		
A 0.75-10 (10mm) A 0.75-8 (8mm)	0.75mm ² (18 AWG)		
A 1-10 (10mm) A 1-8 (8mm)	1.0mm ² (18 AWG)		
A 1.5-10 (10mm)	1.5mm ² (16 AWG)		
216-302 (8mm)	0.34mm ² (24 to 22 AWG)	206-1204	WAGO Kontakttechnik GmbH & Co. KG
216-201 (8mm)	0.5mm ² (22 to 20 AWG)		

Connecting and disconnecting the wires

Connection

Confirm that all phases of the external power supply used in the system are shut off in advance.

Insert and push the wire into the wire insertion opening. Pull the wire lightly to check that the wire is securely clamped.



Point

A continuity check can be performed with the test terminals (1). The following test plug is recommended to check continuity.

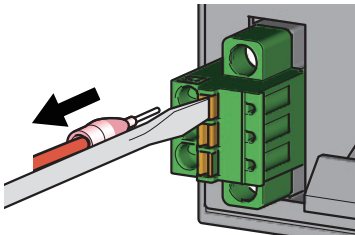
PHOENIX CONTACT GmbH & Co. KG test plug ($\phi 1.0\text{mm}$): MPS-MT 1-S

Disconnection

Confirm that all phases of the external power supply used in the system are shut off in advance.

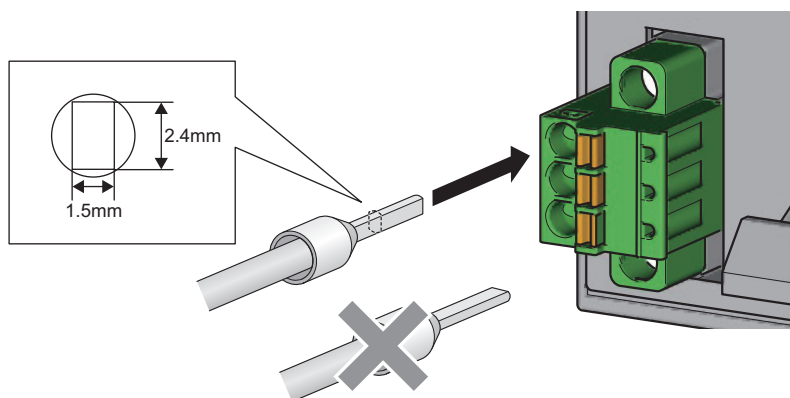
Push the open/close button for the terminal block with a flathead screwdriver.

Pull the wire while pushing the button.



Precautions

- For the wire strip length, follow the specifications of ferrule solderless terminals. Use the dedicated tool to install ferrule solderless terminals to wires.
- Before inserting a ferrule solderless terminal, check the shape of the wire insertion opening and ferrule solderless terminal, and then, insert the ferrule solderless terminal in the correct orientation. Inserting a ferrule terminal of a size larger than the wire insertion opening into the opening may damage the terminal block.
- When using the products other than reference products, use the ferrule solderless terminals whose cross-sectional shape including a processing error is smaller than the following size. Insert the terminal as shown below.

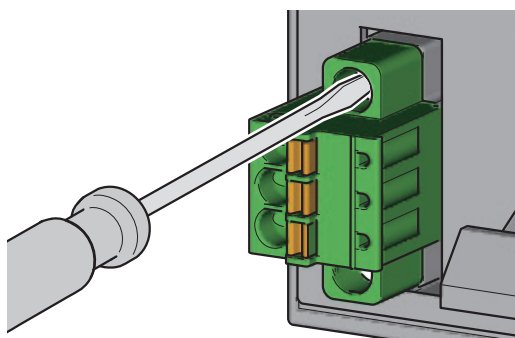


Point

For the shape of ferrule solderless terminal including a processing error, please refer to the manufacturer of ferrule solderless terminals and ferrule solderless terminal tools.

Installing and removing the terminal block

To install the terminal block, tighten the terminal block mounting screw using a flathead screwdriver. Failure to secure the terminal block may cause the dropping, short circuit, or malfunction of the module.



Tighten the terminal block mounting screws within the following specified torque range. Overtightening the screws may damage the network interface module.

Screw type	Tightening torque range
Terminal block mounting screw (M2.5 screw)	0.2 to 0.3N·m

To remove the terminal block, loosen the terminal block mounting screws with a flathead screwdriver.

Precautions

Do not touch the terminal block for module power supply and FG while the network interfaced module is powered. Doing so may result in electric shock, module damage or malfunction.

4.6 Wiring of Ethernet Cable

This section describes Ethernet cable wiring.

Applicable Ethernet cables

For wiring, use Ethernet cables compliant with the following standards.

Communications performance	Standard
1Gbps	Ethernet cable that meets the 1000BASE-T standard Straight cable with category 5e or higher (double shielded, STP)
100Mbps	Ethernet cable that meets the 100BASE-TX standard Straight cable with category 5 or higher (double shielded, STP)
10Mbps	Ethernet cable that meets the 10BASE-T standard Category 3 or higher (unshielded, UTP or double shielded, STP), straight cable

Connecting and disconnecting an Ethernet cable

Connection procedure

1. Power off the network interface module and the external device.
2. With attention to the orientation of the cable, push the Ethernet cable connector into the network interface module until it clicks. Use P1 for CC-Link IE Field Network Basic, SLMP, or MODBUS/TCP.
3. Power on the network interface module.
4. Power on the external device.
5. Check if the LINK LED on the port into which the Ethernet cable is connected is on. ^{*1*2}

^{*1} The time taken for the LINK LED to be turned on after connection of the cable may vary. The LINK LED normally is turned on in a few seconds. However, if link-up processing is repeated due to a condition of a device on the line, the longer time may be required. If the LINK LED is not turned on, refer to the following and take a corrective action.

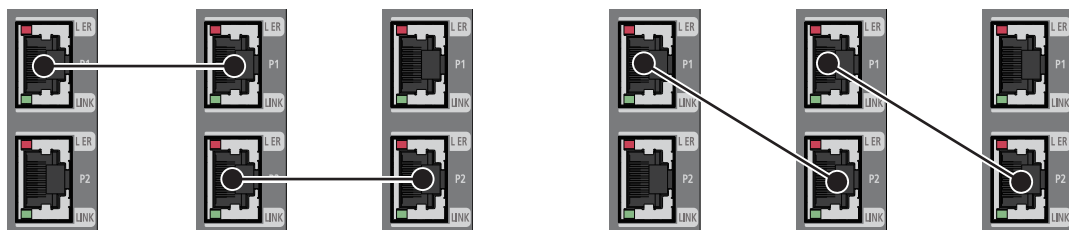
☞ Page 291 When the P1 LINK LED or P2 LINK LED turns off

^{*2} When the communication speed of the network interface module is 100Mbps, and when connecting a 100Mbps device in the CC-Link IE TSN system, enable auto-negotiation of that device.



In the CC-Link IE TSN or CC-Link IE Field Network system, both P1 and P2 connectors can be used.

- Either P1 or P2 can be connected to use only one of them for star topology.
- When both connectors are used in line topology, the cable can be connected between P1s, between P2s, and between P1 and P2.



Disconnection procedure

1. Power off the network interface module.
2. Press the latch down and unplug the Ethernet cable.

Precautions

■Laying Ethernet cables

- The Ethernet cables must be placed in the duct or fixed by clamp. If not, dangling cable may swing or inadvertently be pulled, resulting in damage to the network interface module or cables or malfunction due to poor contact.
- Do not touch the core of the connector of the cable or the network interface module, and protect it from dirt and dust. If any oil from your hand, or any dirt or dust sticks to the core, it can increase transmission loss, causing data link to fail.
- For the Ethernet cables to be used, check that they are not disconnected or short-circuited and that there is no problem with connector connection.

■Broken cable latch

Do not use Ethernet cables with broken latches. Doing so may cause the cable to unplug or malfunction.

■Connecting/disconnecting the Ethernet cable

Hold the connector part when connecting/disconnecting the Ethernet cable. Pulling the cable connected to the network interface module may result in damage to the module or cable or malfunction due to poor contact.

■Connector to which an Ethernet cable is not connected

Attach a connector cover to prevent dirt and dust from entering the network interface module and prevent network interface module failure and malfunction caused by static electricity.

■Maximum segment length for the Ethernet cable (Maximum cable length)

The maximum segment length is 100m. However, the distance may be shorter depending on the operating environment of the cable. For details, contact the manufacturer of the cables used.

■Bending radius of the Ethernet cable

There are restrictions on the bending radius of the Ethernet cable. Check the bending radius in the specifications of the Ethernet cables used.