

SIO Isolator RCB-ISL-SIO

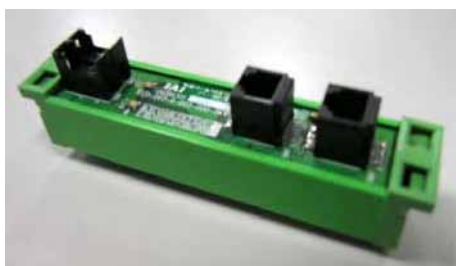
Operation Manual First Edition

Thank you very much for purchasing our product.

Make sure to read this Operation Manual to ensure correct use for safety.

1. Scope

The RC-SIO isolator is used to isolate the SIO (RS485) communication line between the controllers. There are the cases such that the distance to the control box is long, or the communication ground (0V) line is not shared because both the DC24 type controllers and AC100V/200V type controllers are used. In such cases, by means of isolating the communication line using this RC-SIO isolator, the power can be supplied to each of the controllers independently.



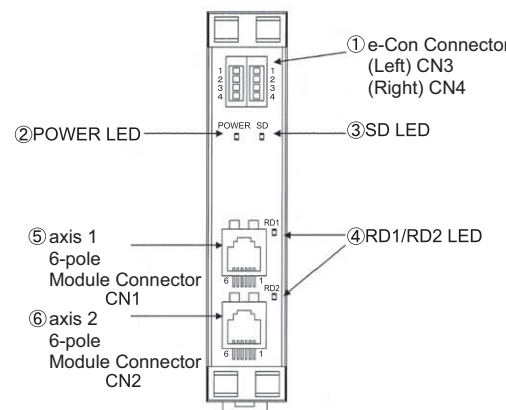
The controllers connectable to this product are as follows.

- PCON-C/CG, CY, SE, CF
- ACON-C/CG, CY, SE,
- RCP2
- ROBOTNET
- ERC2, ERC2-SE
- SCON
- Gateway Unit

2. Specifications

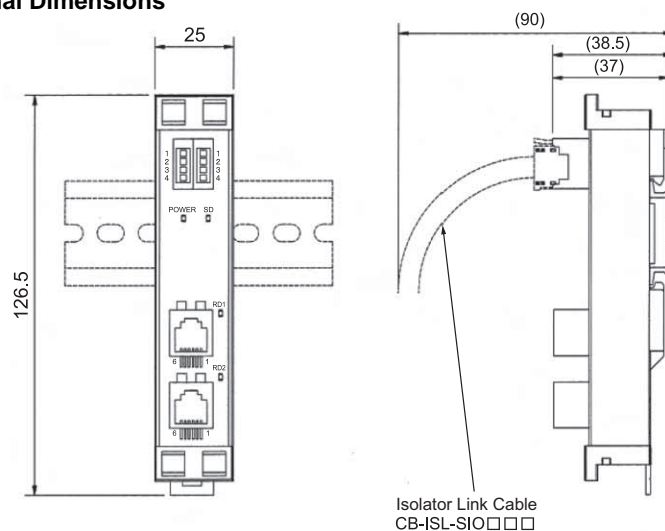
Item	Specifications	Remarks
Power supply	DC5V	Supplied from the axis 1 controller
Number of connectable controllers	2 per SIO module	
Surrounding air temperature	0 to 40°C	
Surrounding humidity	95%RH or less (non-condensing)	
Surrounding environment	There should be no corrosive gas, flammable gas, oil mist and/or dust.	
Isolation resistance	10MΩ or more at DC500V	• Between the e-Con connector and modular connector
Isolation strength	DC60V continuous	• Between the modular connector axis 1 and the axis 2
Protection class	IP20	
Weight	Approx. 40g	
External dimensions	25W×126.5H×37D mm	
Mounting method	35mmDIN rail	
Accessories	• Terminal Resistance (220Ω, 1/4W, with a e-Con connector) • e-Con connector	1 unit 1 unit

3. Names and Functions of Each Section



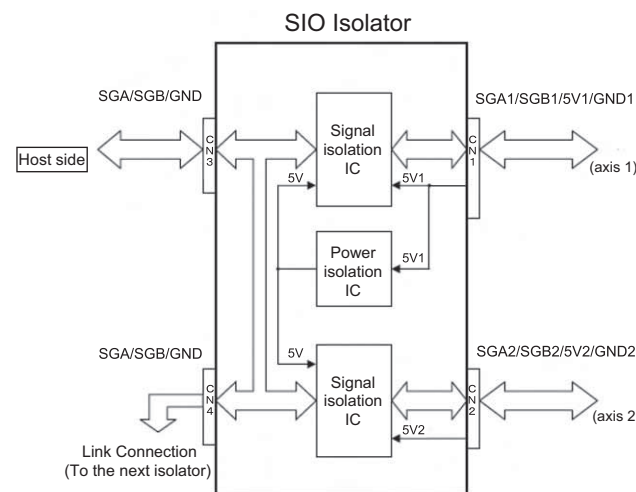
	Name	Functions
①	e-Con Connector	Connector for connecting the communication line (RS485) with the host or linking the connectors when two or more connectors are used.
②	POWER LED	When the 5V power is supplied through CN1 (supplied from the axis 1 controller), it is turned ON in green. However, in the case that the communication speed is slow, it flashes. When the power is not supplied, it is turned OFF.
③	SD LED	It flashes during the data transmission from the controller side to the host side. When the data transmission is stopped, it is turned OFF.
④	RD1/RD2 LED	It is displayed when the data receipt in the 1st/2nd controller from the host side. It is turned ON in green during data receipt operation. When the data receipt is stopped, it is turned OFF.
⑤	axis 1 6-pole Module Connector CN1	Connector for connecting the communication line for the axis 1 controller
⑥	axis 2 6-pole Module Connector CN2	Connector for connecting the communication line for the axis 2 controller

4. External Dimensions



5. Inner Block Diagram

The communication line (RS485) on the host side is isolated from the communication line (RS485) on the controller side using the signal isolation IC. The power to the circuit for the signal isolation IC on the host side is supplied from the axis 1 controller power unit. Therefore, make sure to connect CN1.



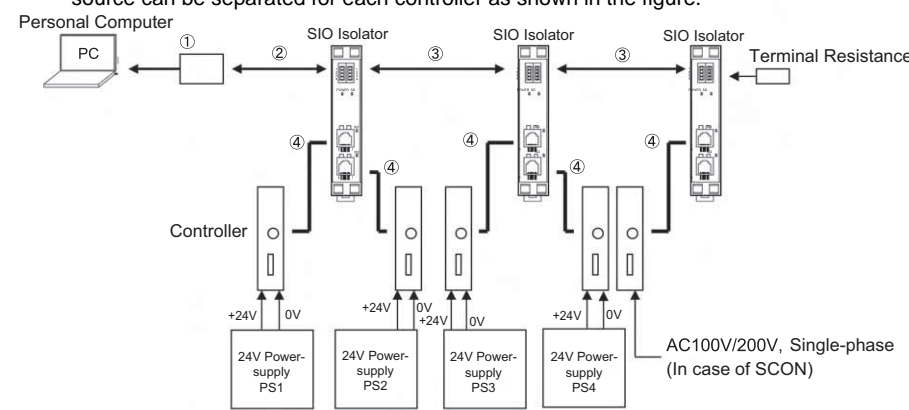
CAUTION

Connect the RCP2 controller to the axis 2 controller (CN2). It can not be connected to the axis 1 controller (CN1).

6. Connection Example

(1) Connection Example 1: In the case that the controller is connected to the host PC through the SIO link :

In the case that the 0V line for the power to each controller can not be shared, or the DC24V type controllers are used together with the AC100V/200V controllers, the power source can be separated for each controller as shown in the figure.



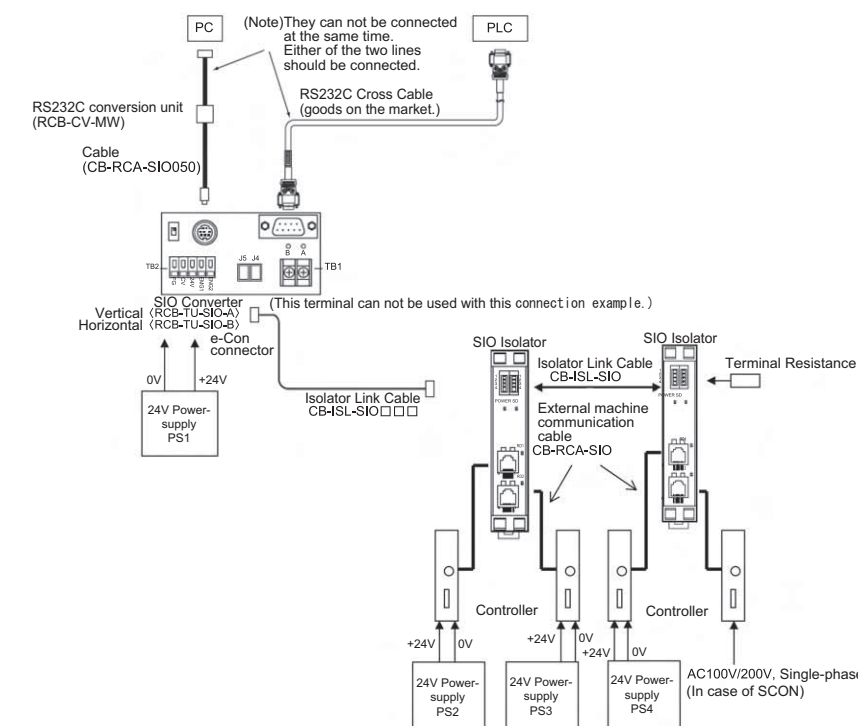
Cable	Name	Model	Remarks
①	USB Cable	CB-SEL-USB	PC Software RCM-101-USB
②	USB Conversion Adaptor	RCB-CV-USB	Accessories
③	Isolator Communication Cable	CB-RCB-SIO	Preparation separately
④	Isolator Link Cable	CB-ISL-SIO	Preparation separately
⑤	External Machine Communication Cable	CB-RCA-SIO	PC Software accessories

CAUTION

1. PC software can not be used with this connection example.
2. Because the power to the primary circuit inside the SIO isolator is supplied from CN1, make sure to connect CN1.

(2) Connection Example 2: In the case that the connector is connected to the host PC or PLC through the SIO converter :

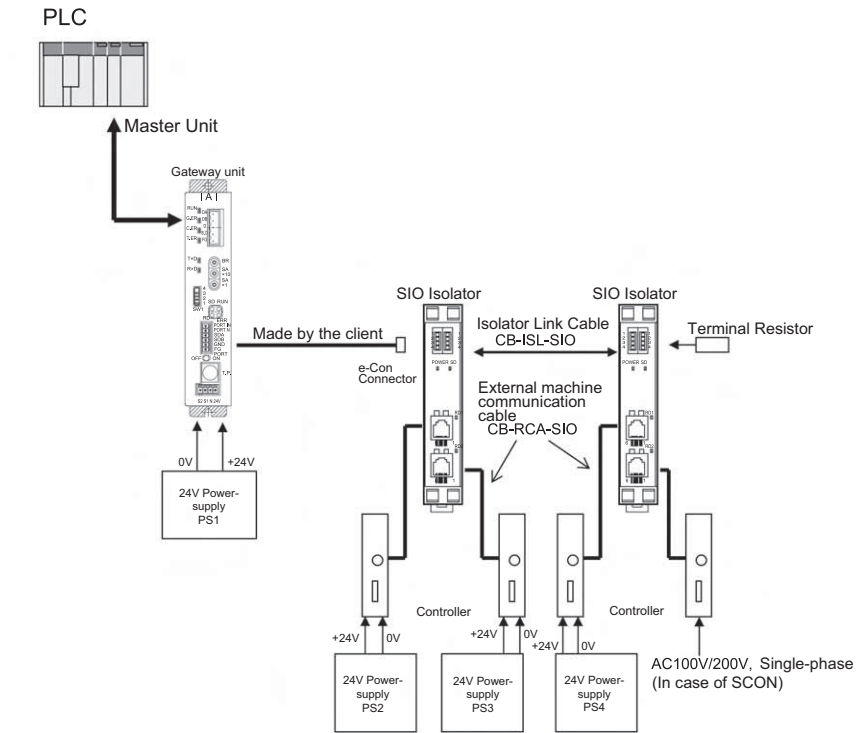
In the case that the 0V line for the power to each controller can not be shared, or the DC24V type controllers are used together with the AC100V/200V controllers, the power source can be separated for each controller as shown in the figure .



CAUTION

Because the power to the primary circuit inside the SIO isolator is supplied from CN1, make sure to connect CN1.

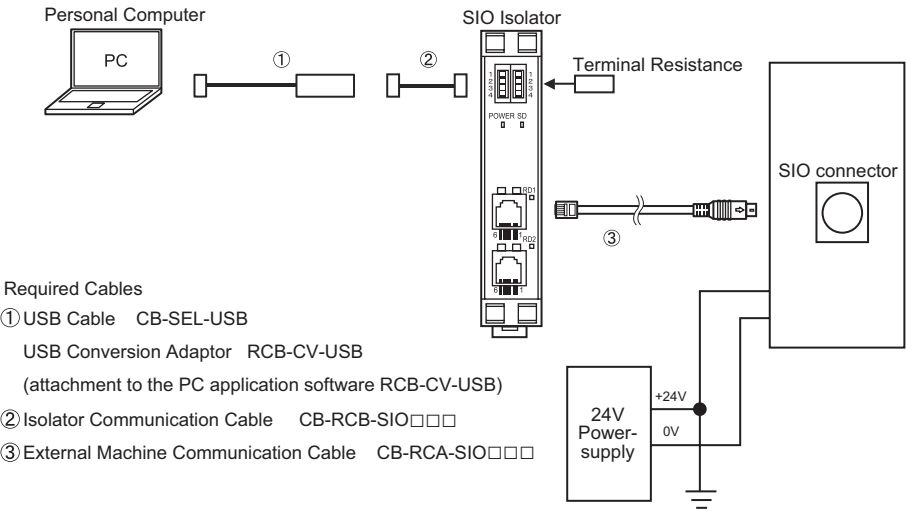
(3) Connection Example 3: In the case of the link connection through the gateway unit:
In the case that the 0V line for the power to each controller can not be shared, or the DC24V type controllers are used together with the AC100/200V controllers, the power source can be separated for each controller as shown in the figure.



CAUTION

Because the power to the primary circuit inside the SIO isolator is supplied from CN1, make sure to connect CN1.

(4) Connection Example 4: In the case that the PC is connected while the positive side of the 24V power is grounded:
Inside the most PCs, the GND (0V) line for the communication is short-circuited to FG (frame ground), when the PC is connected, a short-circuit occurs in the 24V power line which might cause the PC breakdown. In such case, connect the controller (including the gateway and ROBONET) using the SIO isolator and USB conversion adaptor (RCB-CV-USB) as shown in the figure.



Required Cables

- ① USB Cable CB-SEL-USB
USB Conversion Adaptor RCB-CV-USB
(attachment to the PC application software RCB-CV-USB)
- ② Isolator Communication Cable CB-RCB-SIO□□□
- ③ External Machine Communication Cable CB-RCA-SIO□□□

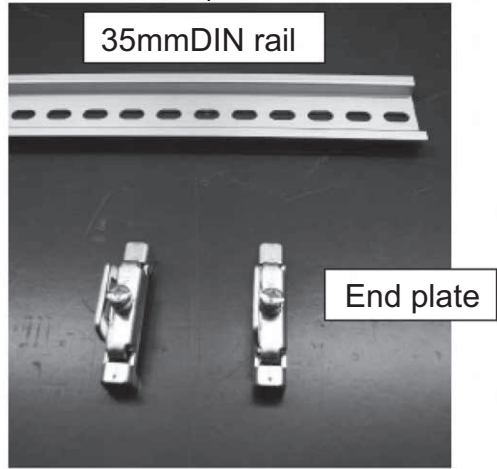
CAUTION

- 1. The RS232C conversion unit RCB-CV-MW (attachment to the PC application software RCM-101-MW) can not be used for the connection between the PC and SIO isolator.
- 2. Connect the external machine communication cable (3) to CN1 for the SIO isolator.

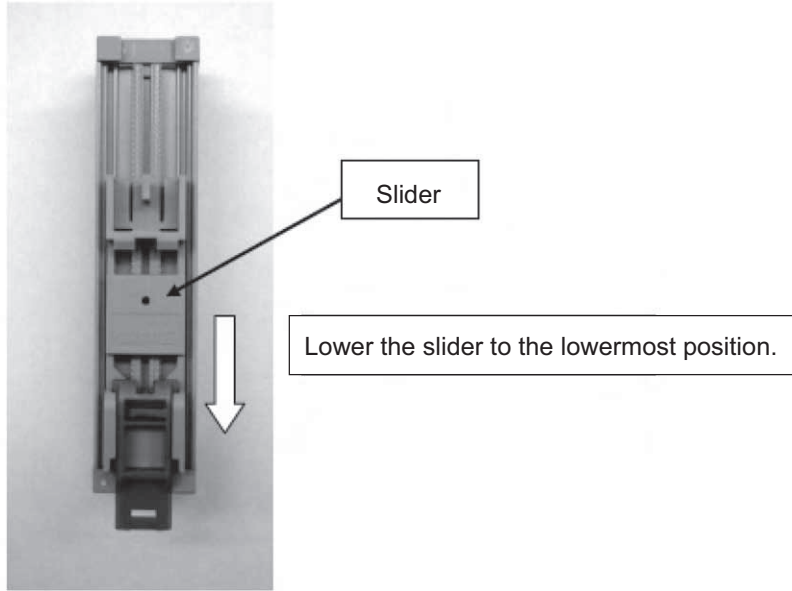
7. Attachment and Wiring

(1) Procedure

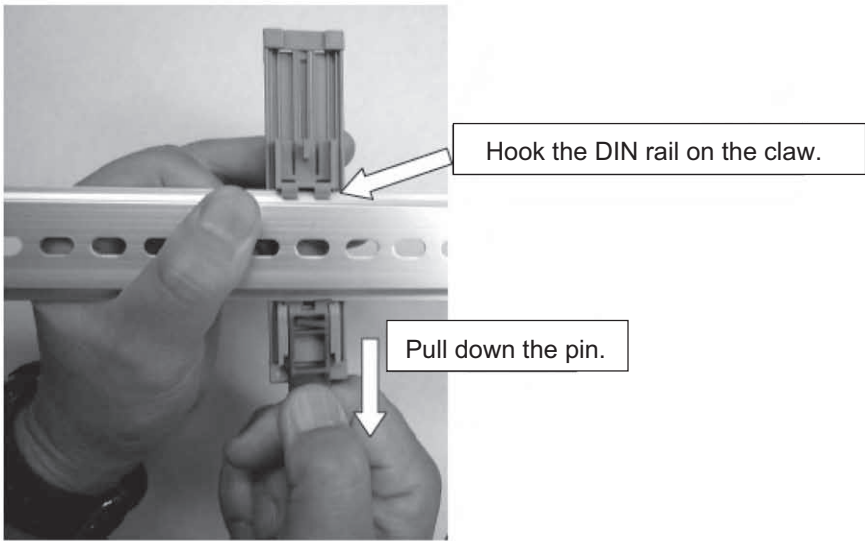
① Because the RC-SIO isolator is attached onto the DIN rail, prepare the following 35mm DIN rail and end plate.



② Lower the slider to the lowermost position on the rear side of the RC-SIO isolator.



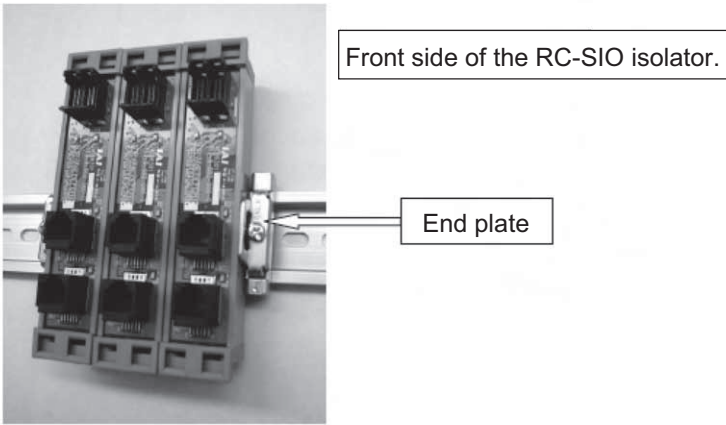
③ There is the DIN rail attachment section on the slider on the rear side of the isolator. Hook the DIN rail on the upper claw in the attachment section as shown in the picture and set the isolator onto the rail with the pin (spring type) on the lower position on the attachment section pulled down. Then, finally, release the pin to lock the isolator.



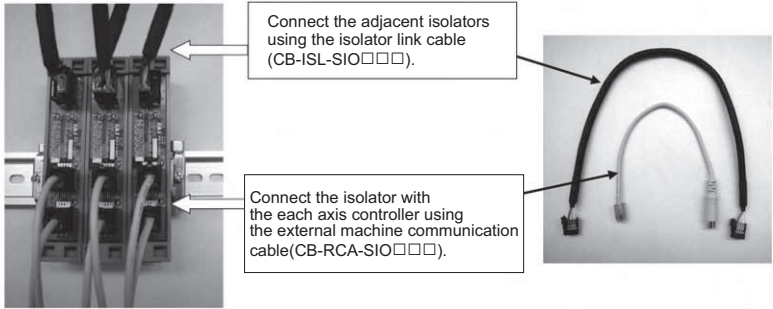
④ Using the same procedure, attach the required number of isolators onto the DIN rail.



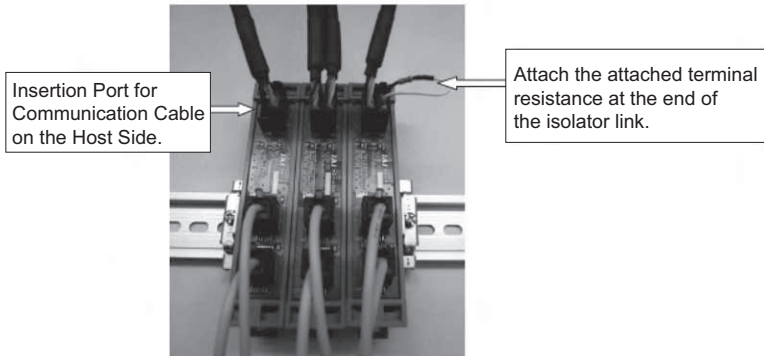
⑤ Fix the both ends of the attached RC-SIO isolators using the end plates.



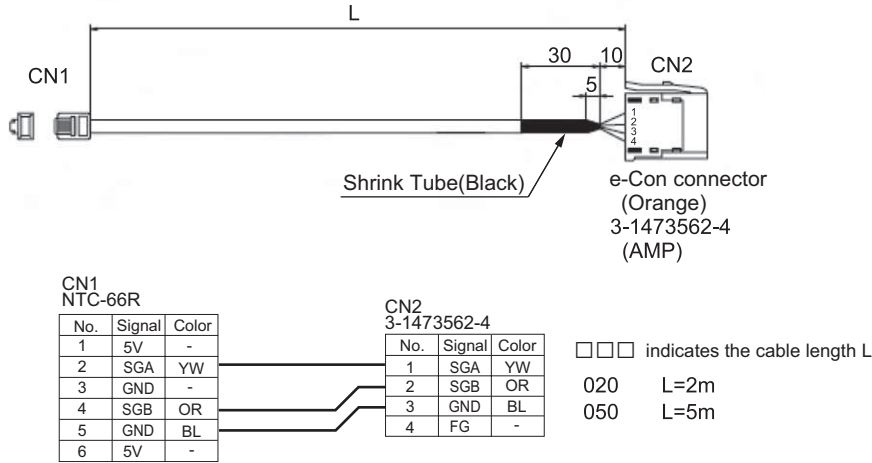
⑥ Connect the cables.



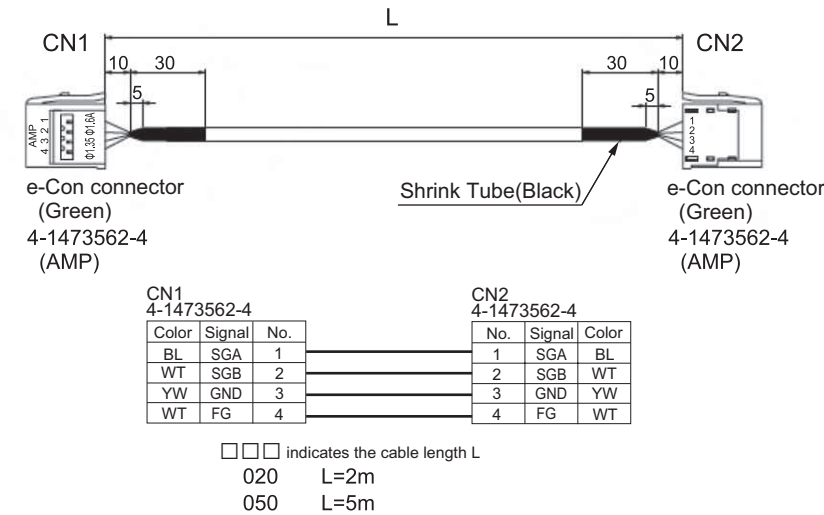
⑦ Insert the terminal resistance.



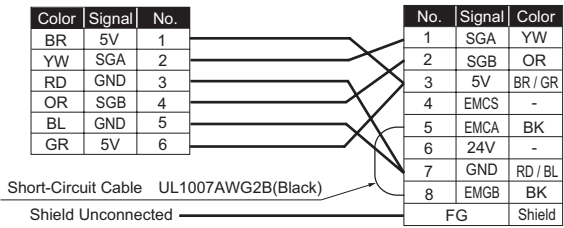
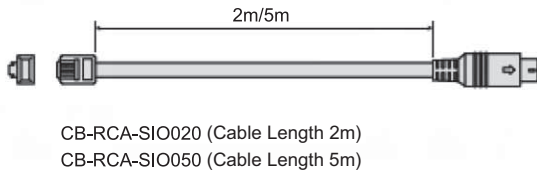
(2) List of the Cables to be used
① Isolator Communication Cable CB-RCB-SIO□□□



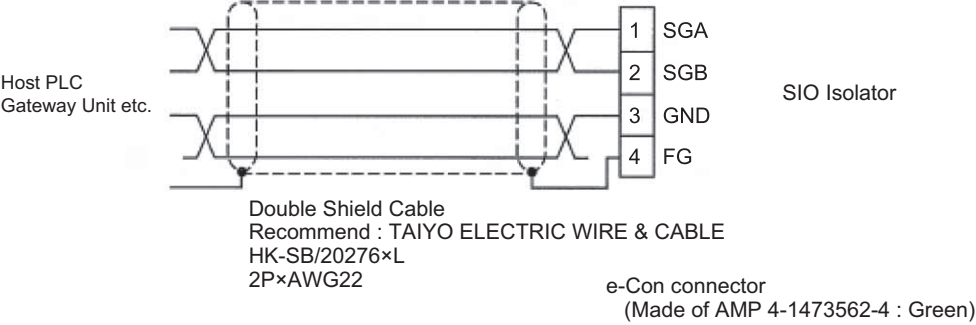
② Isolator Link Cable CB-ISL-SIO□□□



③ External Machine Communication Cable CB-RCA-SIO□□□

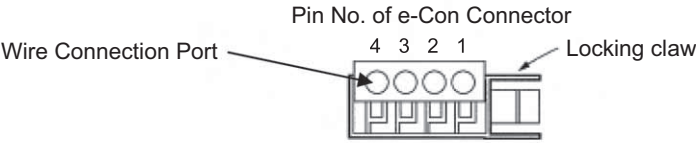
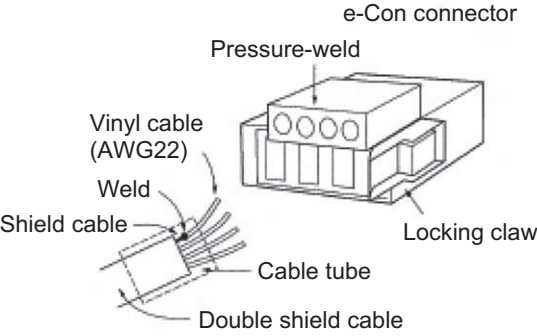


(3) Pressure Welding Method for the e-Con Connector for the Client-made Cable
(RS485 Communication Line)



Use the following procedure for the connection to the attached e-Con connector.

- ①Peel off the jacket 15 to 20 mm from the double shield cable.
- ②Twist the shield wires and weld them onto the vinyl cable equivalent to AWG22.
- ③Cover it with the cable protection tube (perform the terminal treatment using the shrink tube).
- ④Without peeling off the core jacket, insert four core wires into the connector cable insertion holes (SDA, SDB, GND, FG).
- ⑤Keeping the core wires in the holes, pressure-weld the cable press-fitting housing from above.



CAUTION

For the connection to the e-Con connector, use the cable with the same core-wire size (equivalent to AWG22) without peeling off the jacket of that core wires. If the jacket is peeled off, short-circuit might be caused due to a connection error.



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