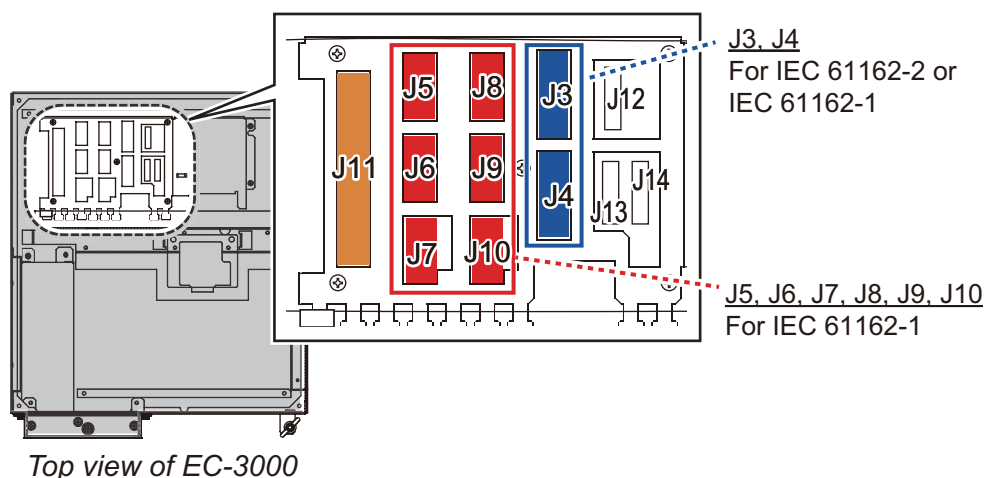# 2.4 Processor Unit

Note: The interface ports approved for interconnecting navigation equipment are shown in the figure below. For details, see section 2.4.3 "How to select the serial input/output format".

J3, J4
For IEC 61162-2 or
IEC 61162-1

J5, J6, J7, J8, J9, J10
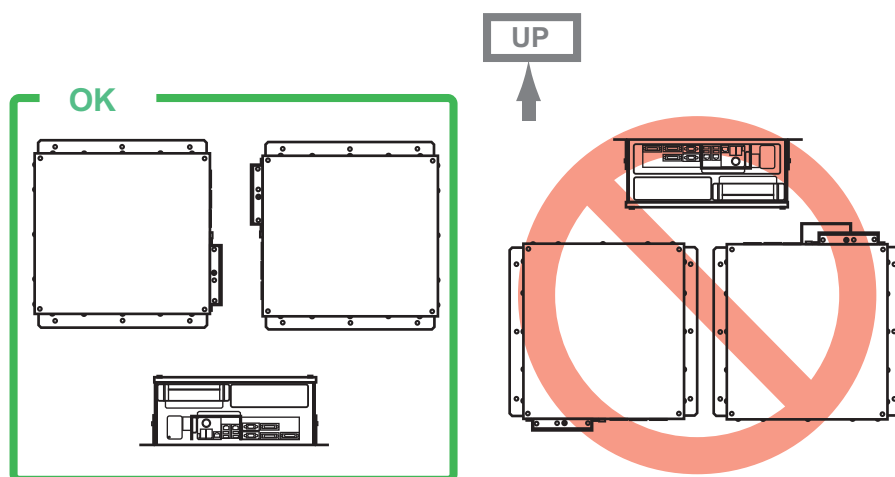For IEC 61162-1

Top view of EC-3000

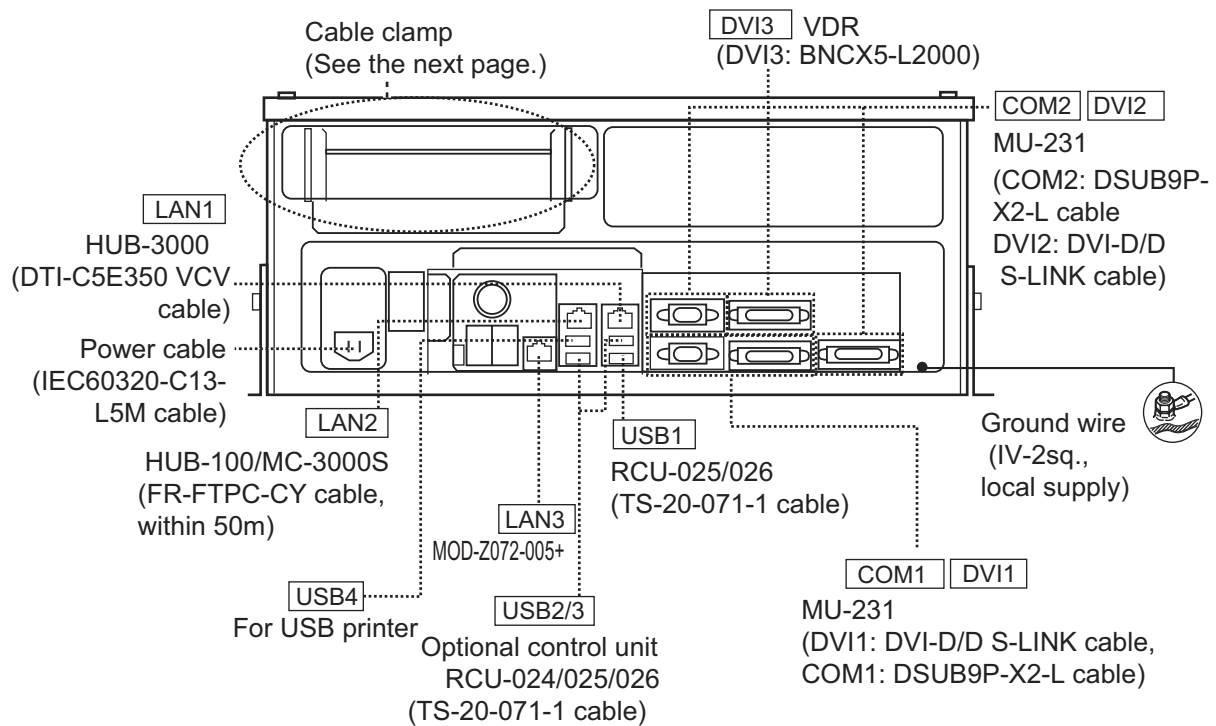## 2.4.1 How to connect cables to terminals in the processor unit

Use screws (M3×6, supplied) to attach the wiring plate 1 and wiring plate 2 to the processor unit. Connect the cables shown below to the connectors at the front of the processor unit. Bind cables to the appropriate fixing metal with the cable ties (supplied).

For the cables from the monitor unit, DSUB9P-X2-L5/10M) and ground wire, connect them to the processor unit directly (without fixing to a wiring plate). Tighten the fixing screws on these connectors to prevent disconnection from the processor unit.

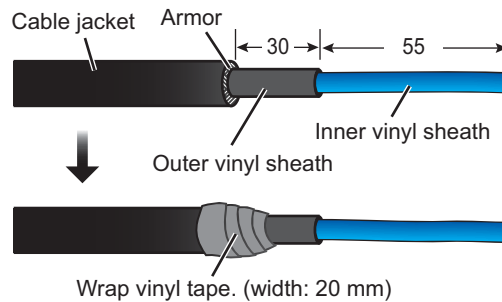**Note:** Connect the cables so that they do not interfere with the opening or closing of the DVD tray.

Cable clamp
(See the next page.)

DVI3 VDR
(DVI3: BNCX5-L2000)

COM2 DVI2

MU-231
(COM2: DSUB9P-
X2-L cable
DVI2: DVI-D/D
S-LINK cable)

LAN1
HUB-3000
(DTI-C5E350 VCV
cable)

Power cable
(IEC60320-C13-
L5M cable)

LAN2
HUB-100/MC-3000S
(FR-FTPC-CY cable,
within 50m)

USB1
RCU-025/026
(TS-20-071-1 cable)

Ground wire
(IV-2sq.,
local supply)

LAN3
MOD-Z072-005+

COM1 DVI1
MU-231
(DVI1: DVI-D/D S-LINK cable,
COM1: DSUB9P-X2-L cable)

USB4
For USB printer

USB2/3
Optional control unit
RCU-024/025/026
(TS-20-071-1 cable)

Cables connected at wiring plate 1	Cables connected at wiring plate 2
? USB cables from the control units ? Printer cable ? LAN cable (type: DTI-C5E350 VCV) from the HUB-3000 ? LAN cable (type: FR-FTPC-CY) from the HUB-100/MC-3000S	? Power cable (Type: IEC60320-C13-L5M) ? LAN cable to the LAN3 port

How to fabricate the LAN cable

Fabricate the LAN cable (FR-FTPC-CY, DTI-C5E350 VCV), as shown below. (Wrap both edges of the armor with vinyl tape.) Make sure the shield of the cable contacts the shell of the modular plug.
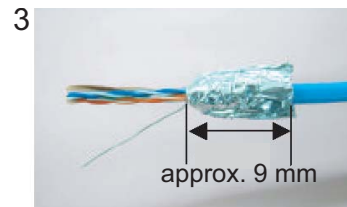
Note: For a locally supplied LAN cable, expose the armor and clamp the armor with the cable clamp.

Cable jacket　Armor

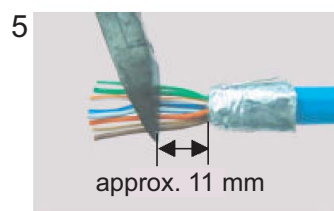← 30 → ← 55 →

Inner vinyl sheath

Outer vinyl sheath

Wrap vinyl tape. (width: 20 mm)

1

Expose inner vinyl sheath.

2

25 mm

Remove the outer sheath by approx 25 mm. Be careful not to damage inner shield and cores.

3

approx. 9 mm

Fold back the shield, wrap it onto the outer sheath and cut it, leaving 9 mm.

4

approx. 9 mm

Fold back drain wire and cut it, leaving 9 mm.
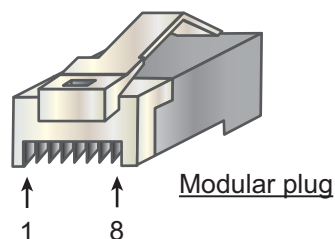
5

approx. 11 mm

Straighten and flatten the core in order and cut them, leaving 11 mm.
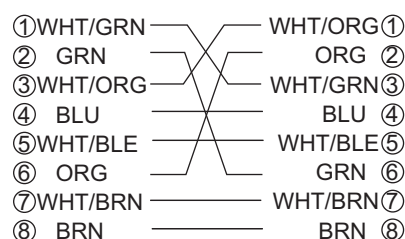
6

Drain wire

Insert the cable into the modular plug so that the folded part of the shield enters the modular plug. The drain wire must be on the tab side of the jack.
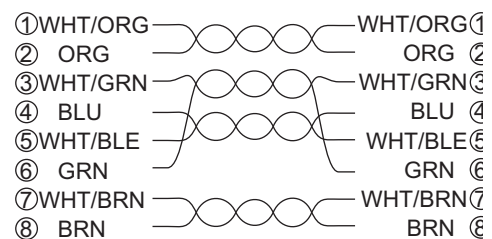
7

Using special crimping tool MPT5-8 (PANDUIT CORP.), crimp the modular plug. Finally check the plug visually.

Modular plug

1   8

[Crossover cable]

① WHT/GRN ——— WHT/ORG ①
② GRN ——— ORG ②
③ WHT/ORG ——— WHT/GRN ③
④ BLU ——— BLU ④
⑤ WHT/BLE ——— WHT/BLE ⑤
⑥ ORG ——— GRN ⑥
⑦ WHT/BRN ——— WHT/BRN ⑦
⑧ BRN ——— BRN ⑧

[Straight cable]

① WHT/ORG ——— WHT/ORG ①
② ORG ——— ORG ②
③ WHT/GRN ——— WHT/GRN ③
④ BLU ——— BLU ④
⑤ WHT/BLE ——— WHT/BLE ⑤
⑥ GRN ——— GRN ⑥
⑦ WHT/BRN ——— WHT/BRN ⑦
⑧ BRN ——— BRN ⑧

2-27

IPX2 kit

The optional IPX2 kit (Type: OP24-23, Code No.: 001-171-780) protects the connectors shown below to waterproofing standard IPX2.

Contents of IPX2 kit

Name	Type	Code No.	Qty	Remarks
Binding Screw	#4-40UNCX3/16	000-176-619-10	10	
Connector Gasket 1	24-014-0107	100-367-730-10	2	For D-sub connectors
Connector Gasket 2	24-014-0108	100-367-741-10	3	For DVI connectors
Rainproof Cover	24-014-0109	100-372-202-10	1	
Gasket Clamping Plate	24-014-0114	100-372-210-10	2	For D-sub connectors
	24-014-0115	100-372-220-10	3	For DVI connectors

1. Set the connector gasket to the unused connector not used.

2. Fasten two binding screws to fix the connector gasket.

Gasket clamping plate   Connector gasket
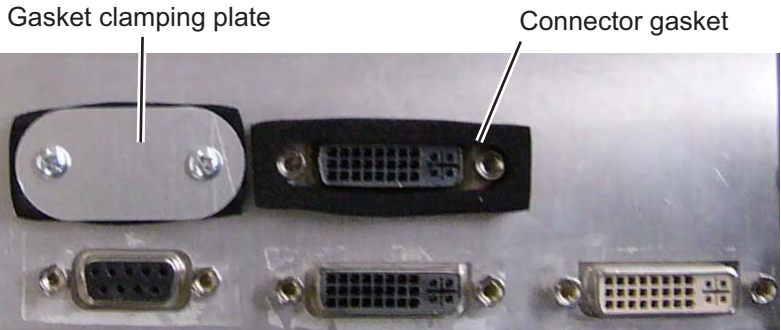
3. Peel the paper from the double-sided tape on the rainproof cover, then attach the cover to the position shown below by using four screws pre-attached to the processor unit.
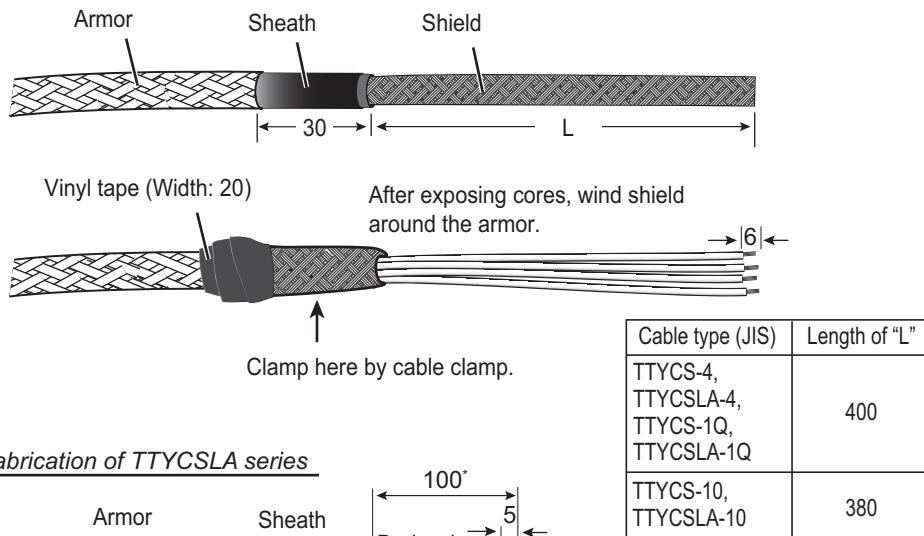

Screws to fix the rainproof cover

Processor unit

Rainproof cover
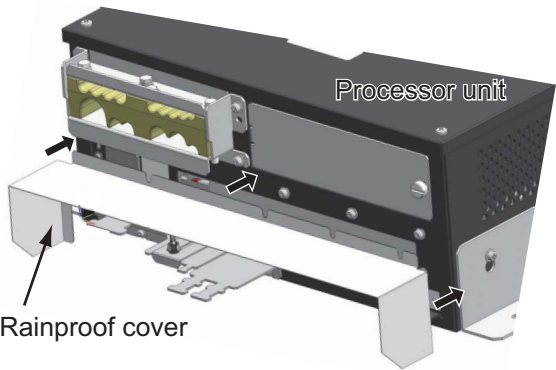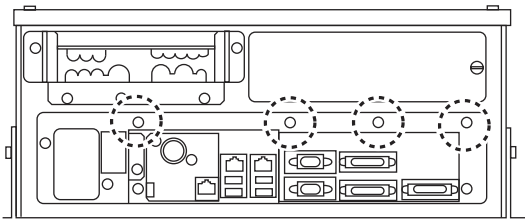
2.4.2 How to connect cables inside the processor unit
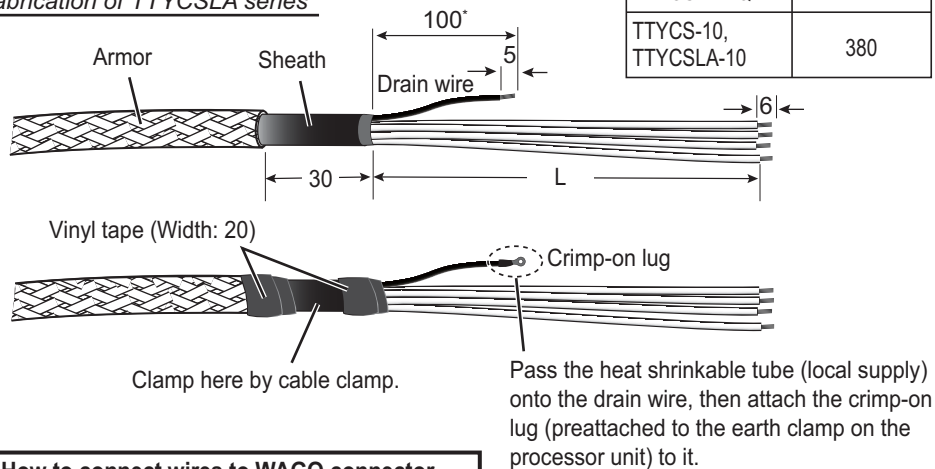
How to fabricate the cables

Fabricate the JIS cables (see the Appendix for equivalent cables if not available locally) as shown below. Connect the cables to the WAGO connectors on the I/O Board (24P0124) inside the processor unit.

For locations of cables and cores, see the sticker on the reverse side of the top cover. (All dimensions in millimeters)
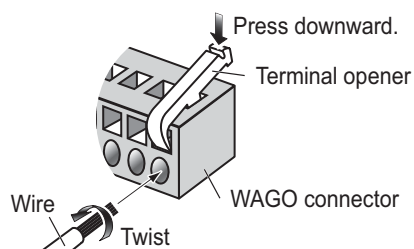
Fabrication of TTYCS series

Armor   Sheath   Shield

|← 30 →|←   L   →|

Vinyl tape (Width: 20)

After exposing cores, wind shield around the armor.

→|6|←

Clamp here by cable clamp.

Cable type (JIS)	Length of "L"
TTYCS-4, TTYCSLA-4, TTYCS-1Q, TTYCSLA-1Q	400
TTYCS-10, TTYCSLA-10	380

Fabrication of TTYCSLA series

|←   100[*]   →|
5 →| |←

Armor   Sheath
Drain wire

→|6|←

|← 30 →|←   L   →|

Vinyl tape (Width: 20)

Crimp-on lug

Clamp here by cable clamp.

Pass the heat shrinkable tube (local supply) onto the drain wire, then attach the crimp-on lug (preattached to the earth clamp on the processor unit) to it.

How to connect wires to WAGO connector

Press downward.

Terminal opener

Wire
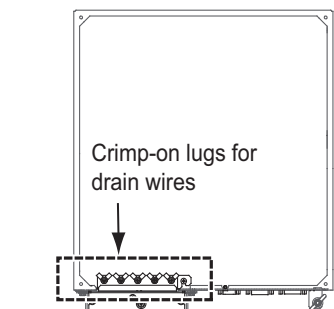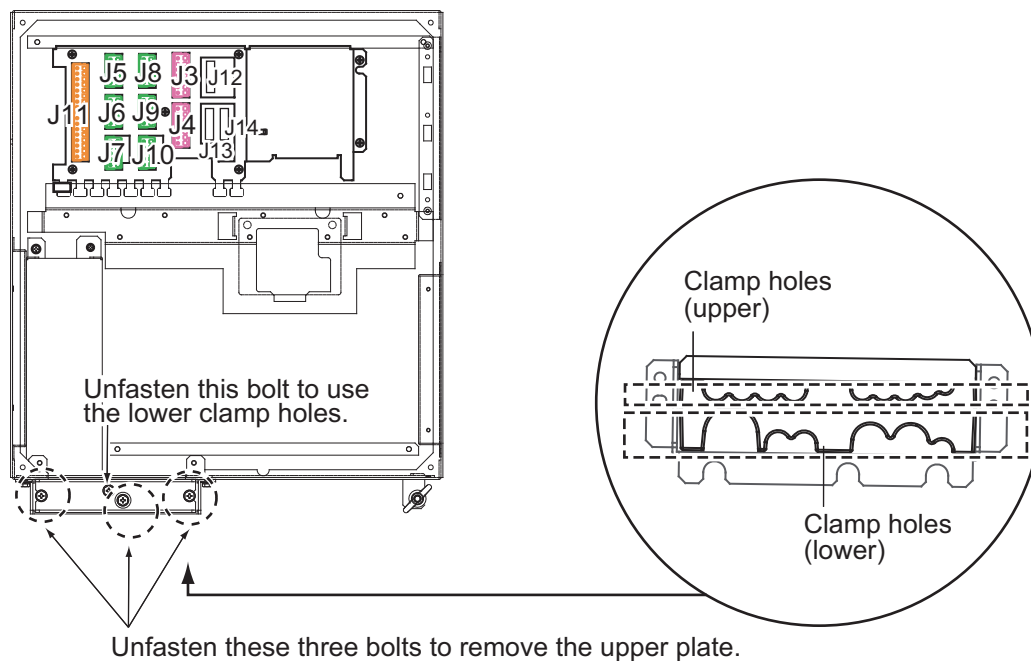
Twist

WAGO connector

<Procedure>
1. Twist the cores.
2. Press the terminal opener downward.
3. Insert the wire to hole.
4. Remove the terminal opener.
5. Pull the wire to confirm that it is secure.

Crimp-on lugs for drain wires

Processor unit, cover removed

How to connect the cables

1. Unfasten four screws (M4×8) to remove the top cover from the processor unit.

2. Unfasten the three bolts circled below to remove the upper plate of the cable clamp.

Unfasten this bolt to use the lower clamp holes.

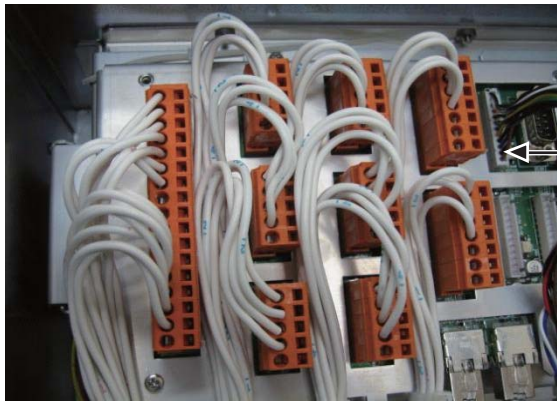Unfasten these three bolts to remove the upper plate.

Clamp holes (upper)

Clamp holes (lower)

Processor unit, top view

3. Pass the cables through the clamp holes, then fasten the bolts removed at step 2 to fix the cables.

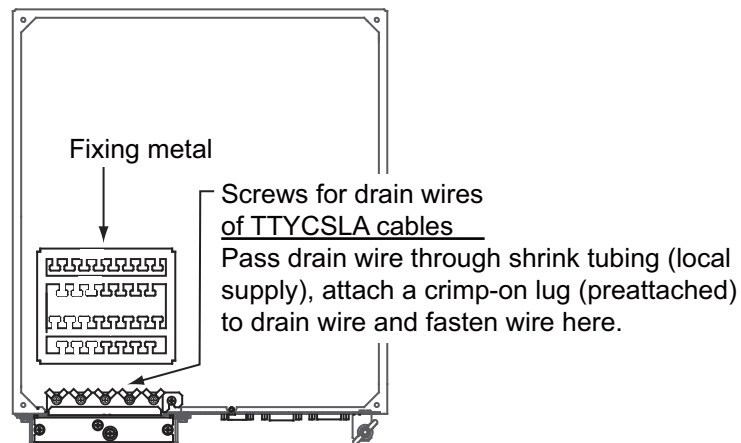Lay shields of cables under this clamp then tighten the clamp.
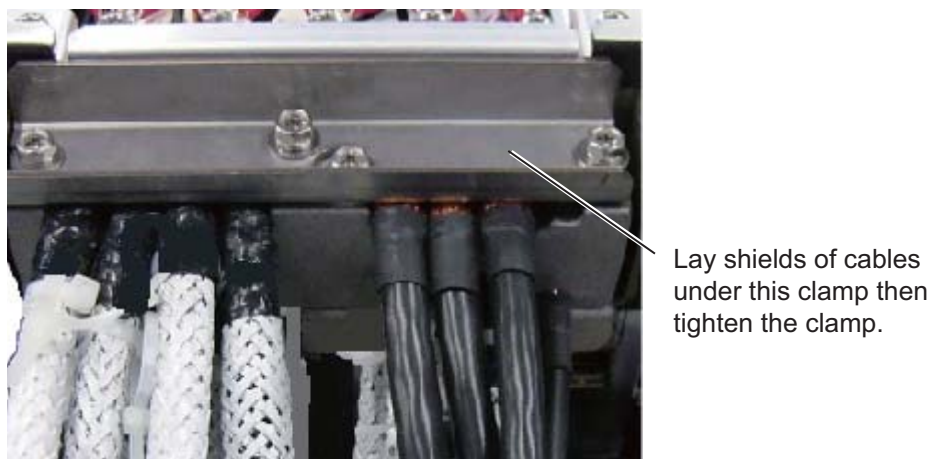
4. Connect the WAGO connectors to the I/O Board, referring to the interconnection diagram.


J12 (main control unit)

For J13 and J14 (sub control units), see the figure at step 2 in this procedure.

5. Bind the cables to the fixing metal in the processor unit with the cable ties (supplied).

Fixing metal

Screws for drain wires of TTYCSLA cables
Pass drain wire through shrink tubing (local supply), attach a crimp-on lug (preattached) to drain wire and fasten wire here.

6. For the drain wire of the TTYCSLA series cable, attach shrink tubing (local supply) to drain wire, fasten a crimp-on lug (pre-attached at location shown below) to drain wire then fasten the wire with a screw.
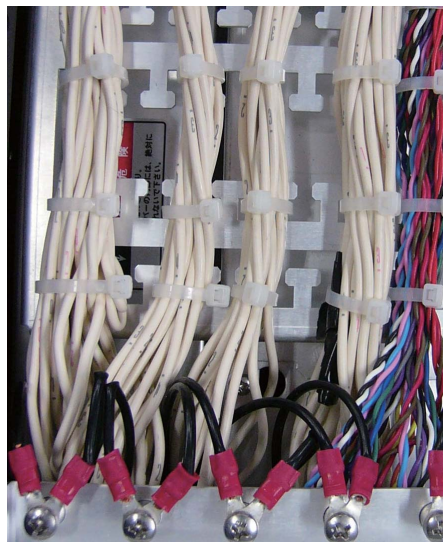

Example of wiring inside the processor unit

2.4.3   How to select the serial input/output format

How to set the termination resistors

Use the jumper blocks JP1 and JP2 on the I/O Board (24P0124) to set the termination resistor J3 and J4 ON or OFF. The default setting is ON.

? When setting the starting/ending terminal for the multipoint connection, or multipoint is not connected (CH1 or CH2): termination resistor ON

? When not setting the starting/ending terminal for the multipoint connection (CH1 or CH2): termination resistor OFF
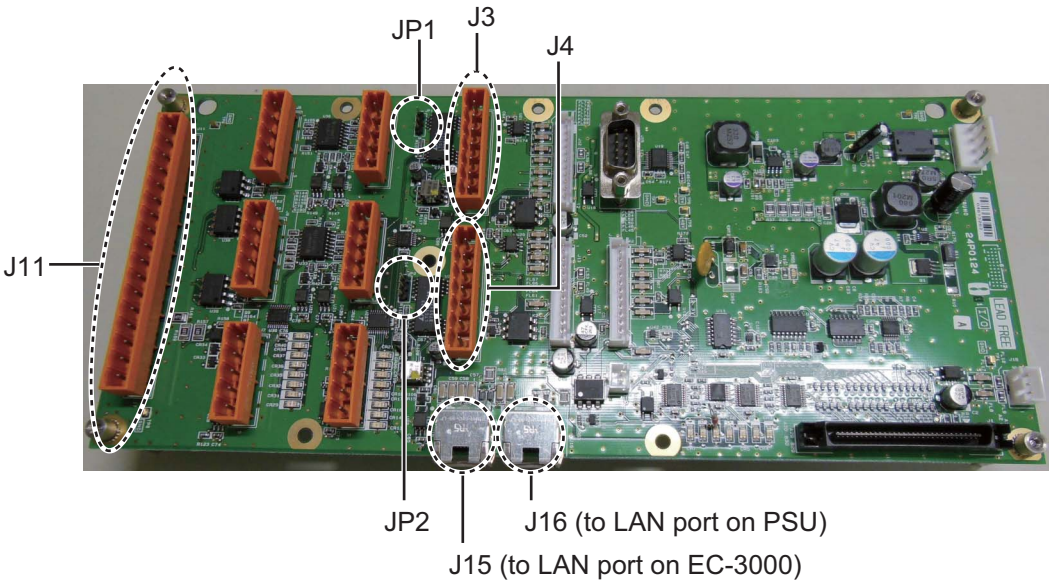
Processor unit, I/O Board (24P0124)

Jumper block J1		Connector J3
1-2	SHORT	Termination resistor: ON (default setting)
2-3	OPEN	
1-2	OPEN	Termination connector: OFF
2-3	SHORT	

Jumper block J2		Connector J4
1-2	SHORT	Termination resistor: ON (default setting)
2-3	OPEN	
1-2	OPEN	Termination connector: OFF
2-3	SHORT	

How to select the serial input/output format

Use the connectors J3 and J4 to set the input/output format for serial CH1/CH2, from IEC-61162-1 or IEC-61162-2. For connectors J5 to J10, use the TTYCS-1Q or TTYCSLA-1Q cable.

Connector J3

Pin#	Signal	In/Out	Description	IEC61162-2	IEC61162-1
1	TD1-A	Out	Serial CH1, output IEC61162-1/2	TTYCS(LA)-4	TTYCS(LA)-4
2	TD1-B	Out	Serial CH1, output IEC61162-1/2		
3	RD1-A	In	Serial CH1, input IEC61162-2		No connection
4	RD1-B	In	Serial CH1, input IEC61162-2		
5	ISOGND1	-	Isolation GND (CH1)		
6	RD1-H	In	Serial CH1, input IEC61162-1	No connection	TTYCS(LA)-4
7	RD1-C	In	Serial CH1, input IEC61162-1		

Connector J4

Pin#	Signal	In/Out	Description	IEC61162-2	IEC61162-1
1	TD2-A	Out	Serial CH2, output IEC61162-1/2	TTYCS(LA)-4	TTYCS(LA)-4
2	TD2-B	Out	Serial CH2, output IEC61162-1/2		
3	RD2-A	In	Serial CH2, input IEC61162-2		No connection
4	RD2-B	In	Serial CH2, input IEC61162-2		
5	ISOGND2	-	Isolation GND (CH2)		
6	RD2-H	In	Serial CH2, input IEC61162-1	No connection	TTYCS(LA)-4
7	RD2-C	In	Serial CH2, input IEC61162-1		

Connector J5

Pin#	Signal	In/Out	Description	Remarks
1	TD3-A	Out	Serial CH3, output IEC61162-1	Use TTYCS(LA)-1Q, IEC61162-1 only
2	TD3-B	Out	Serial CH3, output IEC61162-1	
3	RD3-H	In	Serial CH3, input IEC61162-1	
4	RD3-C	In	Serial CH3, input IEC61162-1	
5	GND	-	GND	

2-33

Connector J6

Pin#	Signal	In/Out	Description	Remarks
1	TD4-A	Out	Serial CH4, output IEC61162-1	Use TTYCS(LA)-1Q,
2	TD4-B	Out	Serial CH4, output IEC61162-1	IEC61162-1 only
3	RD4-H	In	Serial CH4, input IEC61162-1	
4	RD4-C	In	Serial CH4, input IEC61162-1	
5	GND	-	GND	

Connector J7

Pin#	Signal	In/Out	Description	Remarks
1	TD5-A	Out	Serial CH5, output IEC61162-1	Use TTYCS(LA)-1Q,
2	TD5-B	Out	Serial CH5, output IEC61162-1	IEC61162-1 only
3	RD5-H	In	Serial CH5, input IEC61162-1	
4	RD5-C	In	Serial CH5, input IEC61162-1	
5	GND	-	GND	

Connector J8

Pin#	Signal	In/Out	Description	Remarks
1	TD6-A	Out	Serial CH6, output IEC61162-1	Use TTYCS(LA)-1Q,
2	TD6-B	Out	Serial CH6, output IEC61162-1	IEC61162-1 only
3	RD6-H	In	Serial CH6, input IEC61162-1	
4	RD6-C	In	Serial CH6, input IEC61162-1	
5	GND	-	GND	

Connector J9

Pin#	Signal	In/Out	Description	Remarks
1	TD7-A	Out	Serial CH7, output IEC61162-1	Use TTYCS(LA)-1Q,
2	TD7-B	Out	Serial CH7, output IEC61162-1	IEC61162-1 only
3	RD7-H	In	Serial CH7, input IEC61162-1	
4	RD7-C	In	Serial CH7, input IEC61162-1	
5	GND	-	GND	

Connector J10

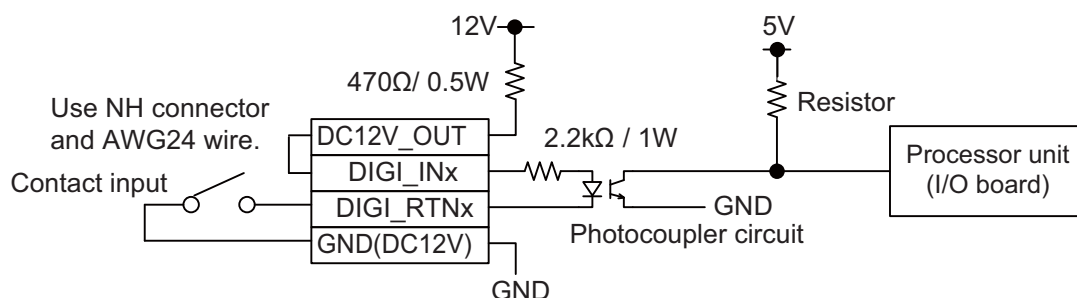| Pin#	Signal	In/Out	Description	Remarks
1	TD8-A	Out	Serial CH8, output IEC61162-1	Use TTYCS(LA)-1Q,
2	TD8-B	Out	Serial CH8, output IEC61162-1	IEC61162-1 only,
3	RD8-H	In	Serial CH8, input IEC61162-1	For PSU
4	RD8-C	In	Serial CH8, input IEC61162-1	
5	GND	-	GND	

How to set contact input/output

The connector J11 can be used for the connection of contact input or voltage input. Refer to the figures shown below to make the wiring which complies with the input specification.

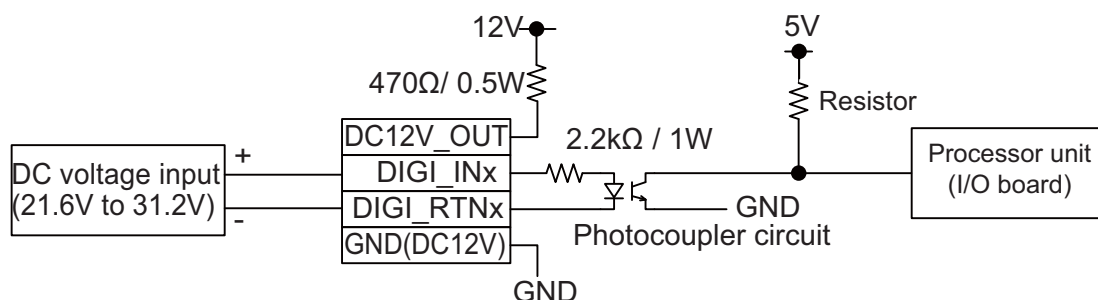**Note:** The input must not exceed the range of the input voltage, to prevent malfunction.
-Setting for voltage input: 21.6V to 31.2V
-Setting for contact input: Voltage cannot be input (contact signal only).

? (Setting for contact input)

? (Setting for voltage input)

Connector J11

Pin #	Signal name	In/Out	Description	Contact input	Voltage input
1	SYS_FAIL-A	Out	System fail output	TTYCS(LA)-10	TTYCS(LA)-10
2	SYS_FAIL-B	Out	System fail output		
3	PWR_FAIL-A	Out	Power fail output		
4	PWR_FAIL-B	Out	Power fail output		
5	NC1-A	Out	Alarm output (NC1)		
6	NC1-B	Out	Alarm output (NC1)		
7	NC2-A	Out	Alarm output (NC2)		
8	NC2-B	Out	Alarm output (NC2)		
9	NO1-A	Out	Alarm output (NO1)		
10	NO1-B	Out	Alarm output (NO1)		
11	NO2-A	Out	Alarm output (NO2)		
12	NO2-B	Out	Alarm output (NO2)		
13	DC12V_OUT	Out	ACK input	#13-#14: short	No connection
14	DIGI_IN1	In	ACK input		TTYCS(LA)-10
15	DIGI_RTN1	Out	ACK input	TTYCS(LA)-10	
16	GND (DC12V)	In	ACK input		No connection
17	GND	-	GND	NO connection	

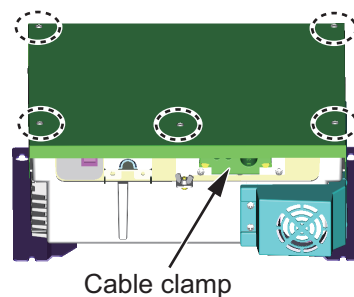**Note:** NC1/2 and NO1/2 are output with a fixed value.

2.5 Power Supply Unit

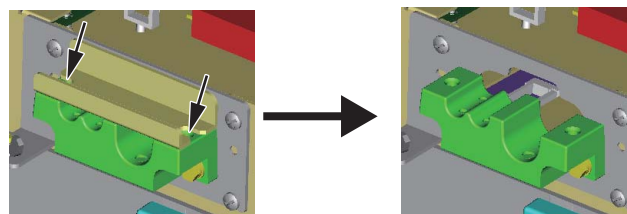Wire the unit as shown below. See the interconnection diagram for details.

- PSU-014: For FAR-3220W
- PSU-015: For FAR-3330SW

PSU-014   PSU-015

Fuse holder   Fan   Fuse holder (2 pcs.)   Fan
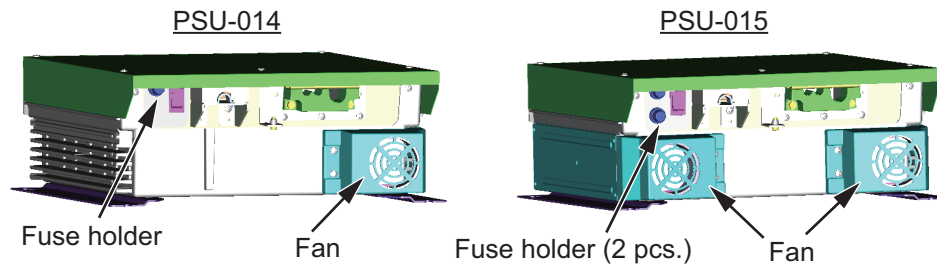
1. Unfasten five screws to open the cover of the power supply unit.

Cable clamp

2. Unfasten four screws from the cable clamp to separate the cable clamp assembly.

Cable clamp

3. Pass the LAN cable of the antenna cable and serial cable through the cable clamp.

2. Pass the cable to next lane.

1. Insert the cable.

Set the cable.

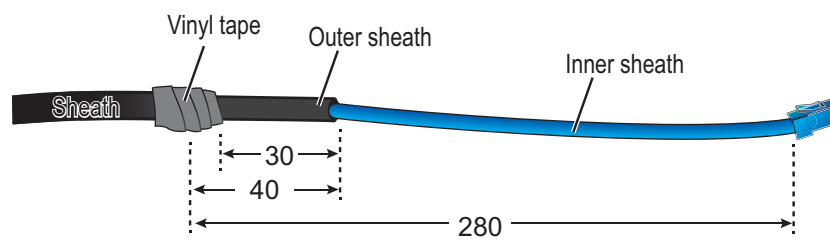LAN cable   Serial cable
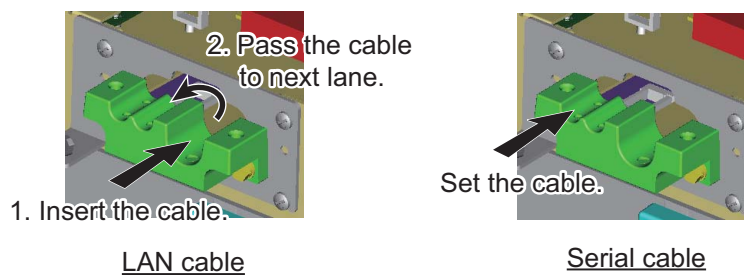
4. As shown below, fabricate the serial cable (TTYCS(LA)-1Q) that connects between the processor unit and the power supply unit.
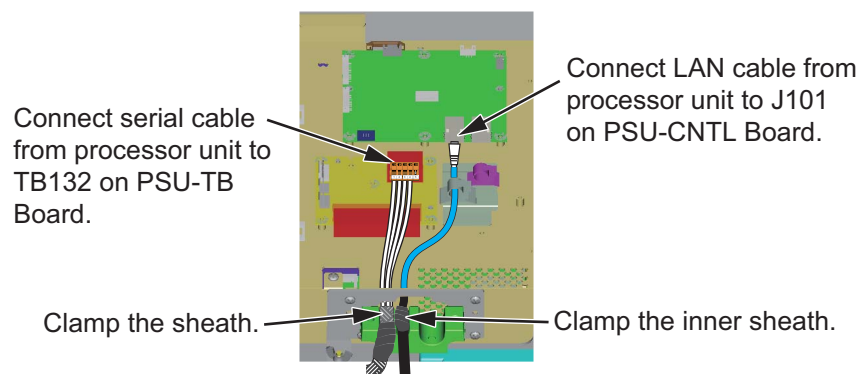   TTYCYS(LA)-1Q
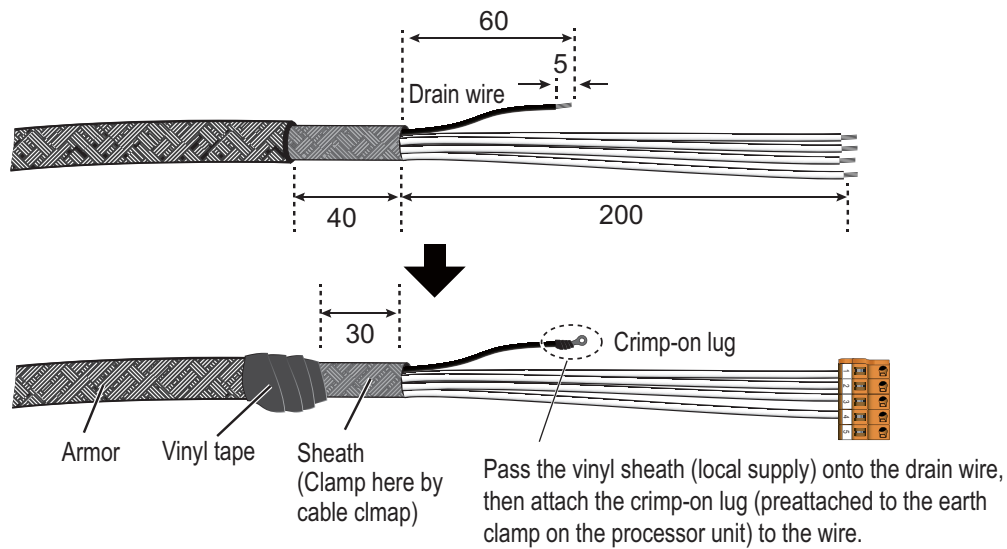
   LAN cable
   See "How to fabricate the LAN cable" on page 27 for how to attach the LAN cable connector.

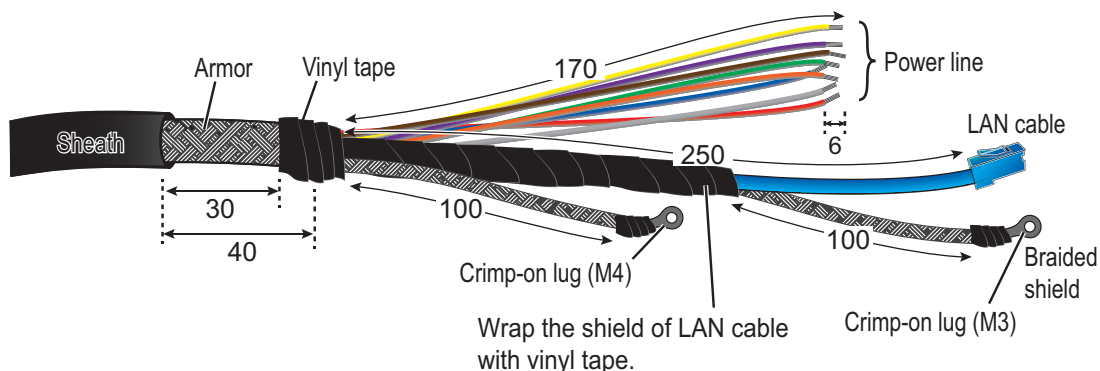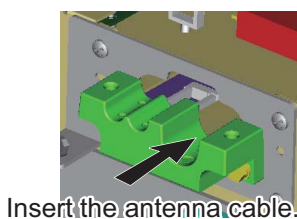5. Connect the cable fabricated at step 4 as shown below.

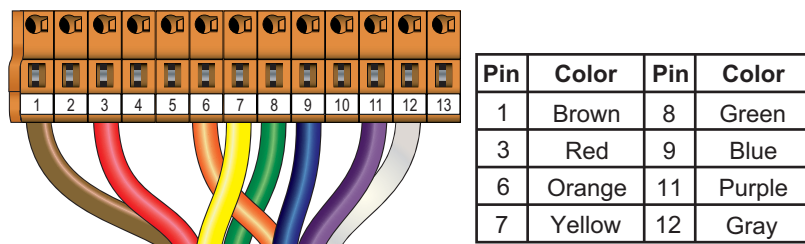6. Fabricate the antenna cable as shown below.
   <u>RW-00135</u>
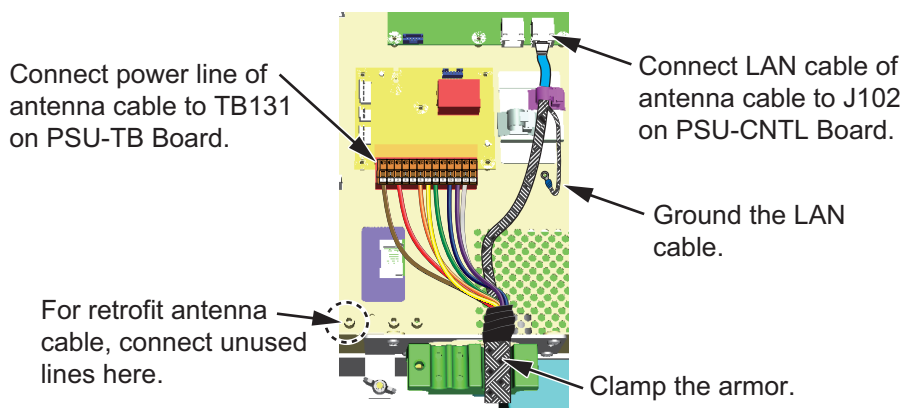   See "How to fabricate the LAN cable" on page 27 for how to attach the LAN cable connector.

7. Pass the antenna cable as shown below through the cable clamp.

8. Connect the power line of the antenna cable to the 13-pin WAGO connector.

Pin	Color	Pin	Color
1	Brown	8	Green
3	Red	9	Blue
6	Orange	11	Purple
7	Yellow	12	Gray

9. Connect the power line and the LAN cable of the antenna cable as shown below.

Connect power line of antenna cable to TB131 on PSU-TB Board.

Connect LAN cable of antenna cable to J102 on PSU-CNTL Board.

Ground the LAN cable.

For retrofit antenna cable, connect unused lines here.

Clamp the armor.

10. Connect the shield wires of the antenna cable and serial cable for processor unit.

Grounding point (for antenna cable)

Grounding point
(for serial cable for processor unit)
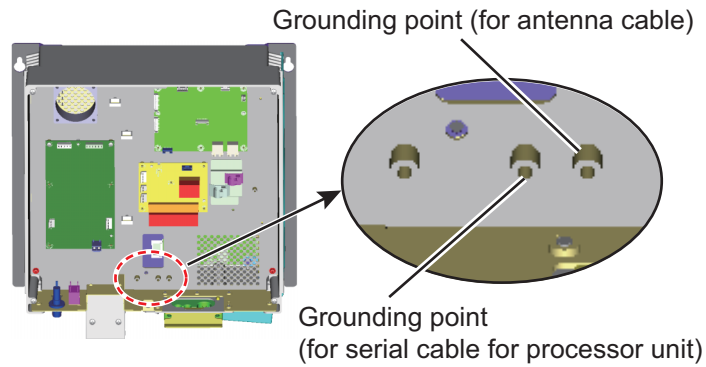
11. Reattach the cable clamp assembly.

12. Remove the connector cover for the power cable (2 places).

Connector cover of power cable   Plastic cover
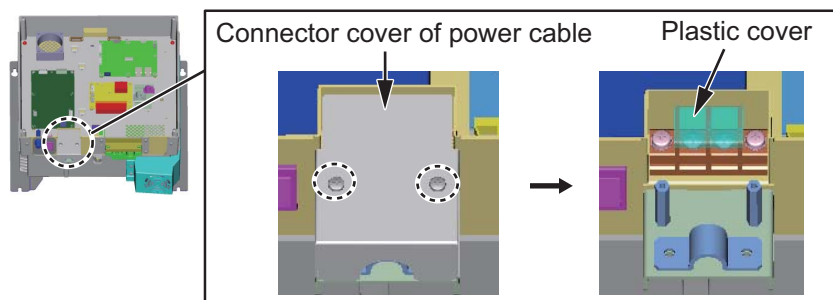
13. Fabricate the power cable (DPYC-2.5) as shown below.

Armor   Vinyl tape   Sheath (Clamp here.)   FV2-4

25
35   30
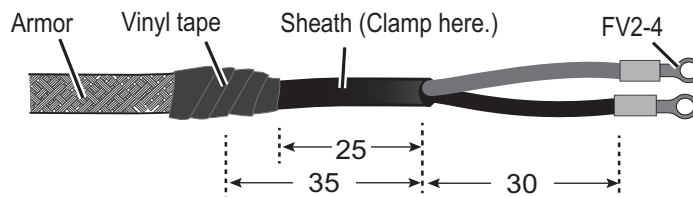
14. Pull up the plastic cover and connect the power cable.
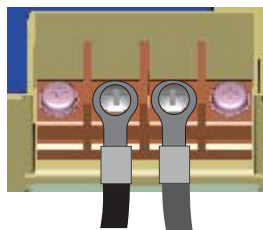
15. Remount the connector cover for the power cable.

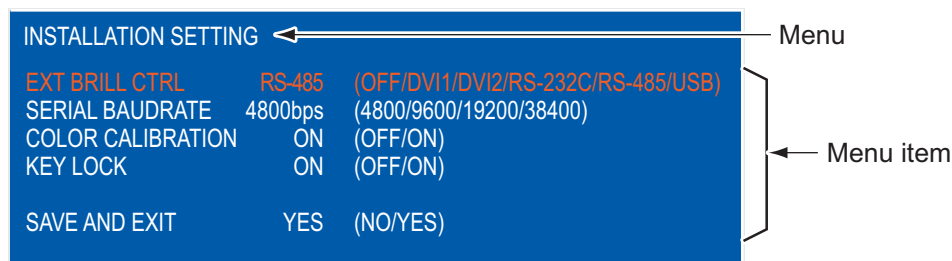16. Reattach the cover of the power supply unit.

2.6   Monitor Unit

For how to wire the monitor unit MU-231, see the operator's manual supplied with the monitor unit.

Mounting considerations

- Standard type
  - Connect the radar main monitor to the DVI1 and COM1 ports.
  - Connect the sub radar monitor to the DVI2 and COM2 ports.
- VDR connection, ask your dealer
  To connect a VDR, it is necessary to output data in analog format. See the installation manuals for the VDR to prepare the cables to use. To connect a VDR to the DVI3 port, use the optional DVI-BNCX5-L2000 cable to output the RGB signal from the DVI-I. Adjustment of the output is necessary.

The [INSTALLATION SETTING] menu appears only when the power is turned on for the first time after installation of the monitor unit.

```
INSTALLATION SETTING  ◄──────────────────────── Menu

EXT BRILL CTRL        RS-485    (OFF/DVI1/DVI2/RS-232C/RS-485/USB)
SERIAL BAUDRATE       4800bps   (4800/9600/19200/38400)
COLOR CALIBRATION     ON        (OFF/ON)                          ◄── Menu item
KEY LOCK              ON        (OFF/ON)

SAVE AND EXIT         YES       (NO/YES)
```

Adjust the settings referring to the following table.

EXT BRILL CTRL	SERIAL BAUD RATE	COLOR CALIBRATION	KEY LOCK	DVI PWR SYNC*
RS-485	4800bps	ON	ON	ON

*: [DVI PWR SYNC] is the slide switch at the bottom rear of the monitor unit. Confirm that this switch is set to [ON] (default setting). See Slide switch below for details.

Slide switch

Set the slide switch to "ON" (default setting). This setting automatically powers the monitor unit on or off according to the DVI signal input. The power switch of the monitor unit is inoperative.

Note: The OFF position provides control of the monitor unit power with the power switch of the monitor unit.
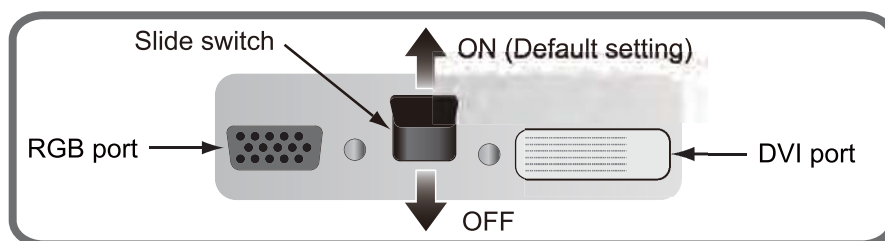
How to open the [INSTALLATION SETTING] menu

Turn off the monitor unit. While you hold the **DISP** key, press the **BRILL** key to turn on the monitor unit. Press and hold the **DISP** key for more than five seconds.

Note: When the [DVI PWR SYNC] slide switch is ON, turn on the connected external equipment while you press the **DISP** key to turn on the monitor unit.

2.7 Sensor Adapters (option)

A maximum of eight MC-3000S can be connected to a sensor network (for the redundant connection: 16). The MC-3000S (serial input/output, IEC61162-2/1, 4ch) can connect a maximum of 10 sensor adapters, using the MC1.5-W cables. The maximum number of MC-3010A units is five.

When fabricating the MC1.5-W cables, use the lot terminal (ferrule type, supplied) to maintain performance. Use the ferrule-type terminals (supplied) to connect the cables to the terminals in the sensor adapters. This connection requires a crimping tool (CRIMPFOX10S, option). For the relations between the connectors and rod terminals, see page AP-2. Also, the stickers attached on the reverse side of the covers show the detailed connections.

How to attach ferrule-type terminal
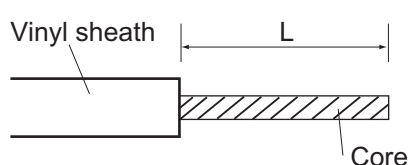
Ferrule-type terminal	Length of "L"
AI 1.5-6 BK (BLK)	
AI 0.34-6 TQ (BLU)	6 mm
AI 0.75-6 GY (GREY)	
AI 1-6 RD (RED)	
AI 0.14-8 GY(GREY)	8 mm

Vinyl sheath — L — Core
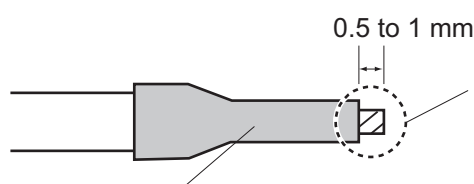
0.5 to 1 mm

After attaching the rod terminal, confirm that the core protrudes 0.5 to 1 mm past the terminal.

Ferrule-type rod terminal:
After attaching the rod terminal, use the optional crimping tool CRIMPFOX 10S to crimp.

Attach the cables to the applicable pins.

Pin no.	Cable color	Signal
1	Red	24V_OUT or 24V_IN
2	Black	24V_GND
3	White	MODBUS-A
4	Blue	MODBUS-B
5	Gray	GND

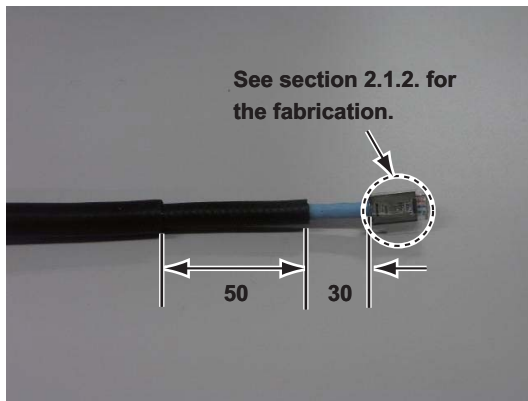**Note 1:** Use the MC1.5-W cable between the sensor adapters.

Note 2: The total length of the MC1.5-W cables must be less than 6 m to prevent malfunction.
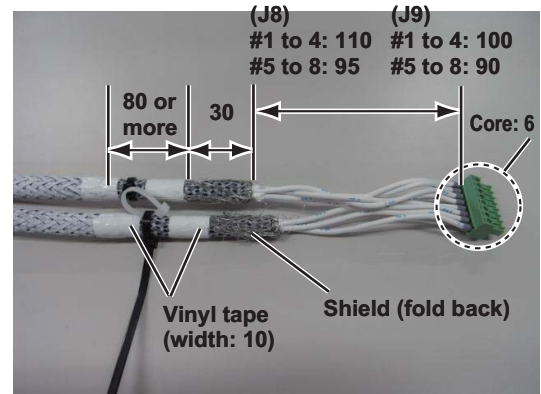
2.7.1   MC-3000S

Use the LAN cable FR-FTPC-CY cable to connect the MC-3000S and the processor unit. With HUB-100, a maximum of eight MC-3000S can be connected.

Fabrications

LAN cable (FR-FTPC-CY)

See section 2.1.2. for the fabrication.

50   30

TTYCS-1Q cable

(J8) #1 to 4: 110 #5 to 8: 95
(J9) #1 to 4: 100 #5 to 8: 90
80 or more   30   Core: 6
Vinyl tape (width: 10)   Shield (fold back)

MC1.5-W-L600/1000/2000/3000 cable

Vinyl tape   Shield (fold back)   Core: 6
10   20   100

TTYCSLA-1Q cable

(J8) #1 to 4: 110 #5 to 8: 95
(J9) #1 to 4: 100 #5 to 8: 90
80 or more   Core: 6
Vinyl tape (width: 10)   60 mm: Pass drain wire through shrink tubing (local supply), then attach crimp-on lug (pre-attached in unit).

2-43
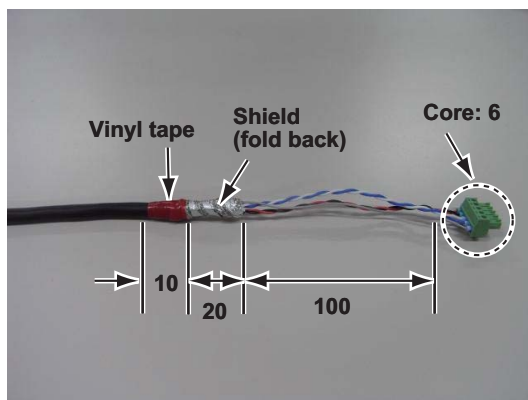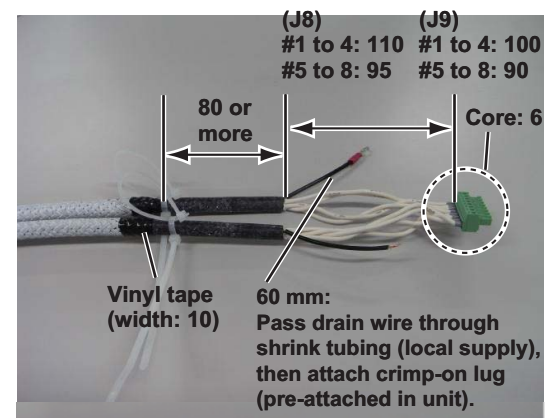
TTYCS-1 cable

TTYCSLA-1 cable

TTYCS-4 cable

TTYCSLA-4 cable

DPYC-1.5 cable
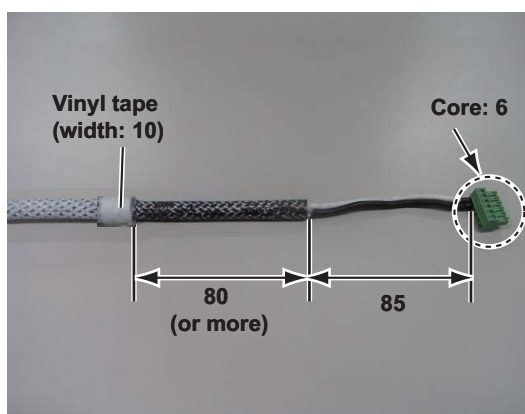
Note: See "How to fabricate the LAN cable" on page 2-27 for how to fabricate the LAN cable.

Connections

Unfasten four screws to remove the cover. Pass the cables through the clamps and attach the cables to respective connectors. The shield (or drain wire) must lie in (connected to) the clamp.

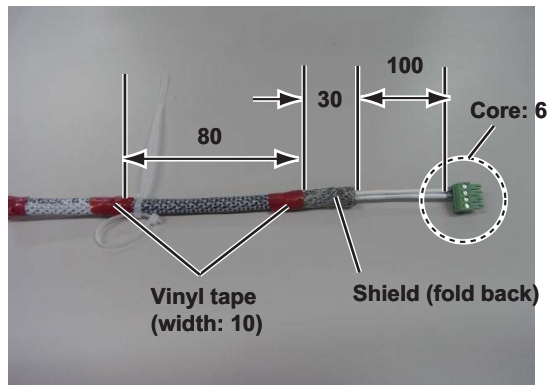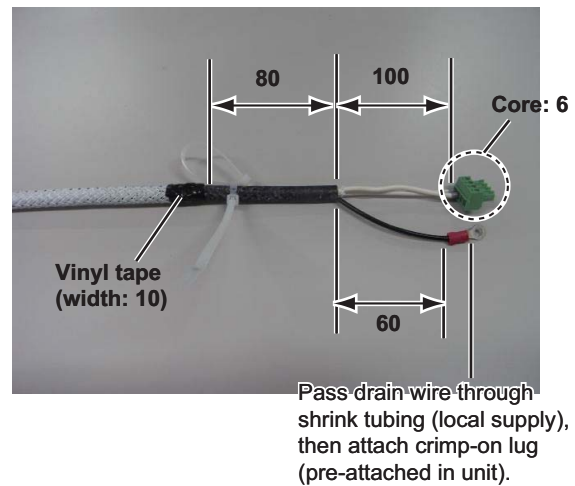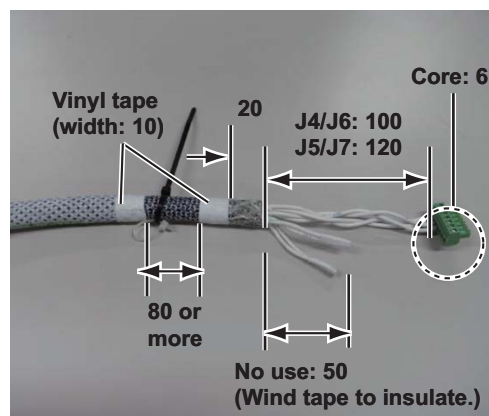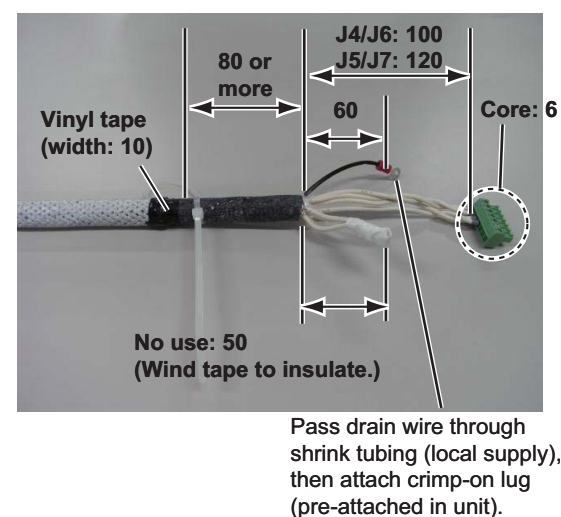For TTYCSLA cables, attach a shrinking tube (local supply), to drain wire, then use these crimp-on lugs and screws to connect the drain wire here.

FR-FTPC-CY cable
IV-1.25sq. (Local supply)
TTYCS-1Q/
TTYCS-4/ TTYCSLA-1Q
TTYCSLA-4
DPYC1.5 MC1.5-W-L cable
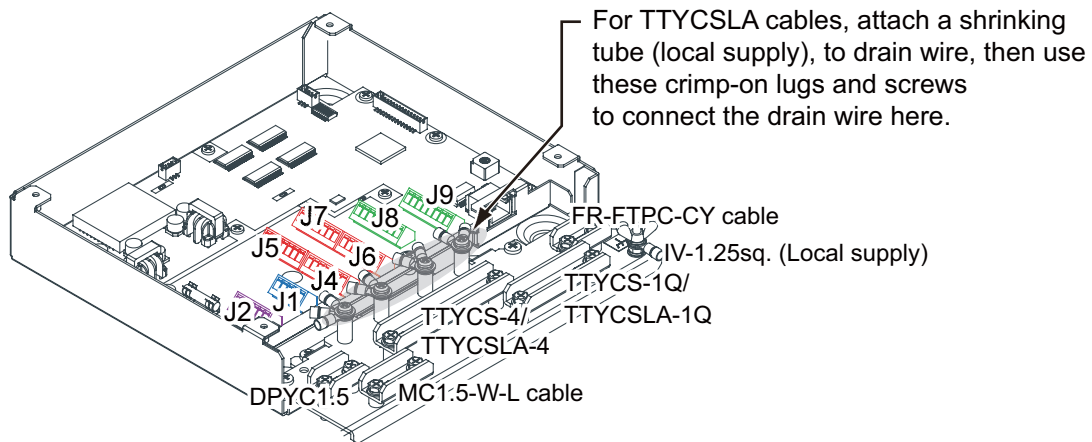
Note: Be sure the cable shield lies in the cable clamp.

How to set NC/NO output (J2)

The POWER FAIL signal on the connector J2 can be set to NC (normal close) output or NO (normal open) output as shown in the table below.

Connector J2

Pin #	Signal name	In/Out	Remarks	NO	NC
1	24V_IN	-	24 VDC	DPYC-1.5	
2	24V_GND	-	GND (24 VDC)		
3	PWR_FAIL_A	Out	Power fail output	TTYCS(LA)-1	No connection
4	PWR_FAIL_COM	Out	Power fail output		TTYCS(LA)-1
5	PWR_FAIL_B	Out	Power fail output	No connection	

How to set input specification (J4 to J9)

For connectors J4 to J7, the connections are different depending on the input specifications as shown below.

Connector J4

Pin #	Signal name	In/Out	Remarks	IEC61162-2	IEC61162-1	Modbus*
1	TD1-A	Out	Serial CH1, output IEC61162-1/2/modbus	TTYCS(LA)-4	TTYCS(LA)-4	TTYCS(LA)-4
2	TD1-B	Out	Serial CH1, output IEC61162-1/2/modbus			
3	RD1-A	In	Serial CH1, input IEC61162-2/modbus		No connection	No connection
4	RD1-B	In	Serial CH1, input IEC61162-2/modbus			
5	ISOGND1	-	Isolation, GND (CH1)			
6	RD1-H	In	Serial CH1, input IEC61162-1	No connection	TTYCS(LA)-4	
7	RD1-C	In	Serial CH1, input IEC61162-1			

*: Set the jumpers J20/J21 to Modbus.

Connector J5

Pin #	Signal name	In/Out	Remarks	IEC61162-2	IEC61162-1	Modbus*
1	TD2-A	Out	Serial CH2, output IEC61162-1/2/modbus	TTYCS(LA)-4	TTYCS(LA)-4	TTYCS(LA)-4
2	TD2-B	Out	Serial CH2, output IEC61162-1/2/modbus			
3	RD2-A	In	Serial CH2, input IEC61162-2/modbus		No connection	No connection
4	RD2-B	In	Serial CH2, input IEC61162-2/modbus			
5	ISOGND2	-	Isolation, GND (CH2)			
6	RD2-H	In	Serial CH2, input IEC61162-1	No connection	TTYCS(LA)-4	
7	RD2-C	In	Serial CH2, input IEC61162-1			

*: Set the jumpers J20/J21 to Modbus.

Connector J6

Pin #	Signal name	In/Out	Remarks	IEC61162-2	IEC61162-1
1	TD3-A	Out	Serial CH3, output IEC61162-1/2	TTYCS(LA)-4	TTYCS(LA)-4
2	TD3-B	Out	Serial CH3, output IEC61162-1/2		
3	RD3-A	In	Serial CH3, input IEC61162-2		No connection
4	RD3-B	In	Serial CH3, input IEC61162-2		
5	ISOGND3	-	Isolation, GND (CH3)		
6	RD3-H	In	Serial CH3, input IEC61162-1	No connection	TTYCS(LA)-4
7	RD3-C	In	Serial CH3, input IEC61162-1		

Connector J7

Pin #	Signal name	In/Out	Remarks	IEC61162-2	IEC61162-1
1	TD4-A	Out	Serial CH4, output IEC61162-1/2	TTYCS(LA)-4	TTYCS(LA)-4
2	TD4-B	Out	Serial CH4, output IEC61162-1/2		
3	RD4-A	In	Serial CH4, input IEC61162-2		No connection
4	RD4-B	In	Serial CH4, input IEC61162-2		
5	ISOGND4	-	Isolation, GND (CH4)		
6	RD4-H	In	Serial CH4, input IEC61162-1	No connection	TTYCS(LA)-4
7	RD4-C	In	Serial CH4, input IEC61162-1		

Connector J8

Pin#	Signal name	In/Out	Description	Used cable
1	TD5-A	Out	Serial CH5, output IEC61162-1	TTYCS-1Q or TTYCSLA-1Q
2	TD5-B	Out	Serial CH5, output IEC61162-1	
3	RD5-H	In	Serial CH5, input IEC61162-1	
4	RD5-C	In	Serial CH5, input IEC61162-1	
5	TD6-A	Out	Serial CH6, output IEC61162-1	
6	TD6-B	Out	Serial CH6, output IEC61162-1	
7	RD6-H	In	Serial CH6, input IEC61162-1	
8	RD6-C	In	Serial CH6, input IEC61162-1	

Connector J9

| Pin#	Signal name	In/Out	Description	Used cable
1	TD7-A	Out	Serial CH7, output IEC61162-1	TTYCS-1Q or TTYCSLA-1Q
2	TD7-B	Out	Serial CH7, output IEC61162-1	
3	RD7-H	In	Serial CH7, input IEC61162-1	
4	RD7-C	In	Serial CH7, input IEC61162-1	
5	TD8-A	Out	Serial CH8, output IEC61162-1	
6	TD8-B	Out	Serial CH8, output IEC61162-1	
7	RD8-H	In	Serial CH8, input IEC61162-1	
8	RD8-C	In	Serial CH8, input IEC61162-1	

Case gasket OP24-28

The optional kit OP24-28 protects the connectors on the MC-3000C to waterproofing standard IPX2.

Case gasket (type: OP24-28, code no.: 001-169-970)

Name	Type	Code No.	Qty	Remarks
Case gasket (serial)	24-014-2051	100-367-880-10	2	For MC-3000S

1. Unfasten four binding screws to remove the cover from the adapter.

Binding screw
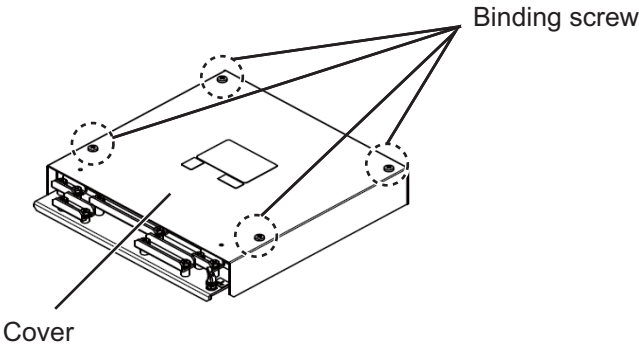
Cover

2. Peel the paper from the case gasket, then attach the case gasket to the reverse side of the cover and the body unit as shown below.

Case gasket

Cover (reverse side)   Case gasket

Case gasket

Body unit   Case gasket
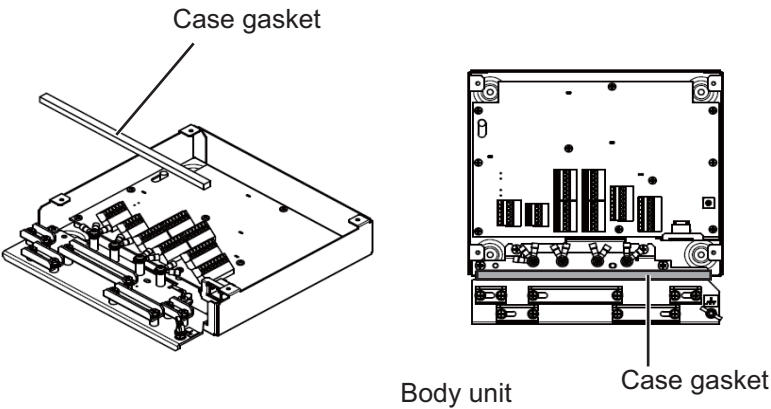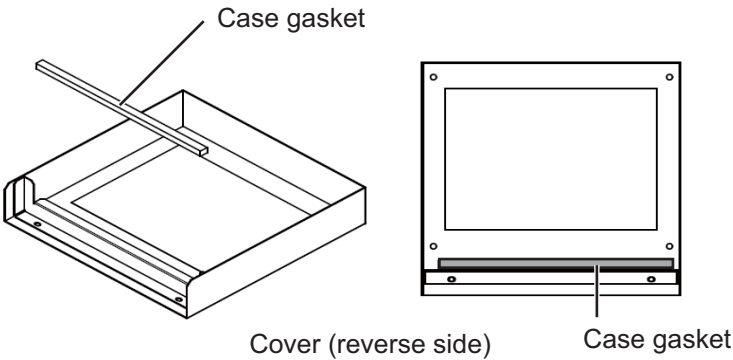
3. Attach the cover to the MC-3000S body unit.
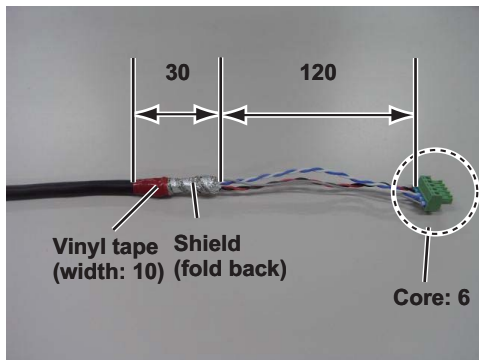
2.7.2   MC-3010A/3020D/3030D

? MC-3010A: Inputs analog signal. To use MC-3010A as current input, connect short pins to each terminals.

? MC-3020D: Inputs digital signal (8ch contact input). Contact or voltage input is selectable (contact input requires short pins).
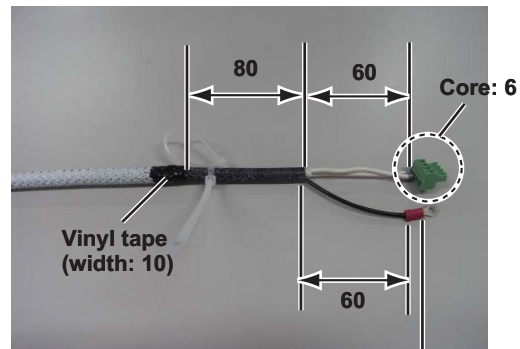
? MC-3030D: Outputs digital signal (8ch, normal open/close).

Fabrications
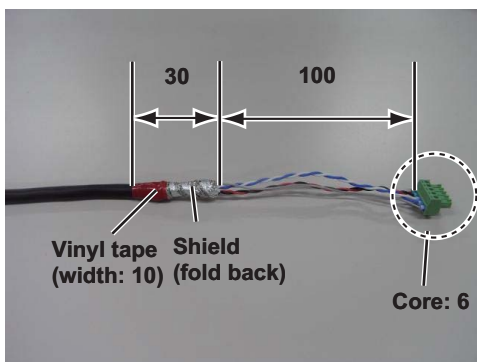
MC1.5-W-L600/1000/2000/3000 cable (Input)
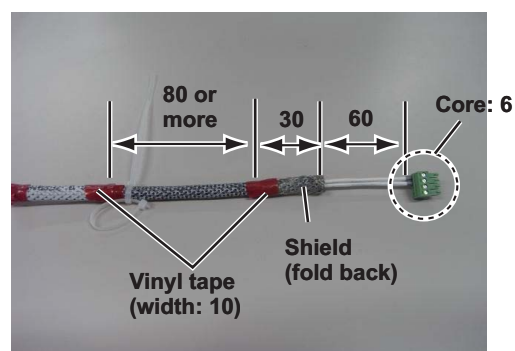

TTYCSLA-1 (MC-3010A)

Pass drain wire through shrink tubing (local supply), then attach crimp-on lug (pre-attached in unit).
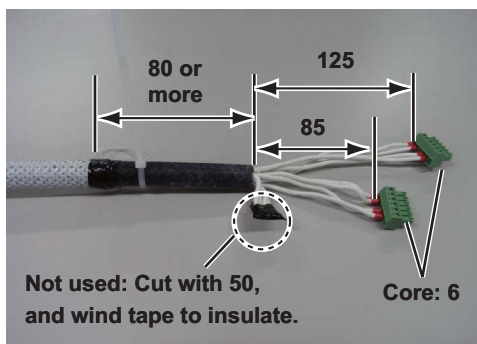
MC1.5-W-L600/1000/2000/3000 cable (Output)

TTYCS-1 (MC-3010A)

MPYC-12 cable (MC-3030D)

MPYC-12 cable (MC-3020D)
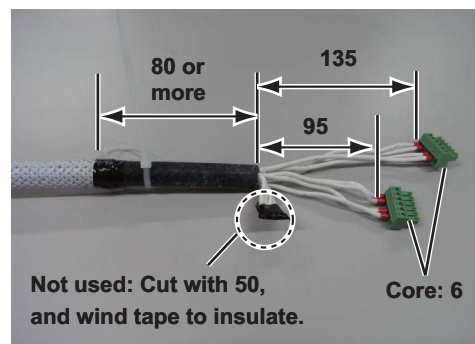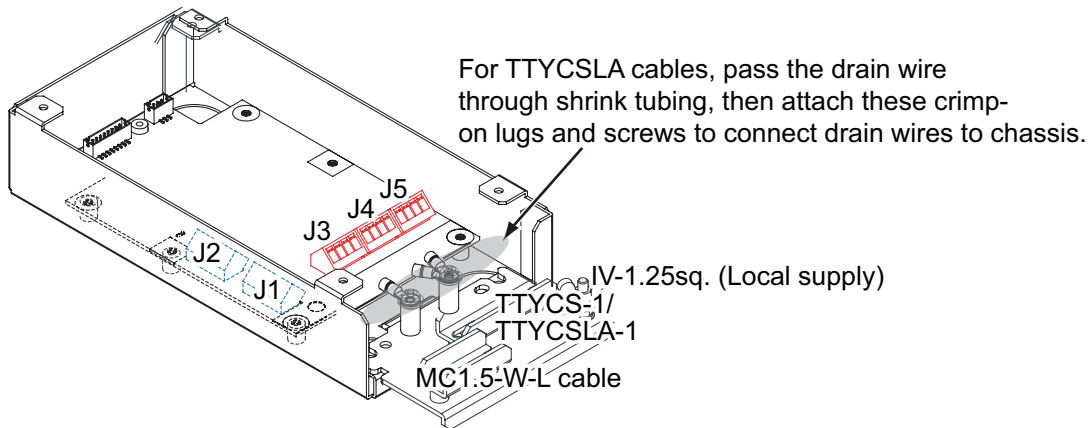
2-49

Connection

For TTYCSLA cables, pass the drain wire through shrink tubing, then attach these crimp-on lugs and screws to connect drain wires to chassis.

IV-1.25sq. (Local supply)

TTYCS-1/ TTYCSLA-1

MC1.5-W-L cable

Note: The cable shield must lie in the cable clamp.

IV-1.25sq. (Local supply)

MPYC-12

MC1.5-W-L cable
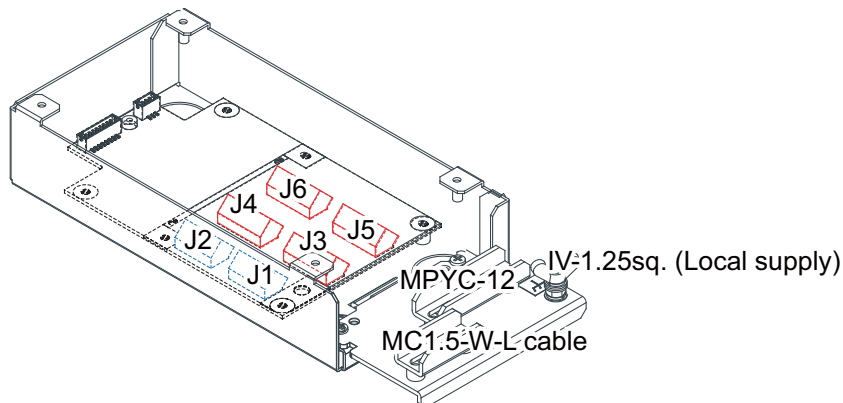
Note: The cable shield must lie in the cable clamp.p.

MC-3020D/3030D

Input method (MC-3010A only)

Select the method of the analog data input, power voltage or power current.

Note 1: The input must not exceed the range of the input voltage, to prevent malfunction.
-Setting for voltage input: -10V to +10V or 0 to 10V (depending on the setting)
-Setting for contact input: Voltage 4mA to 20mA

Note 2: When changing the input method, turn off the MC-3010A and on again to put change in effect.

? Power voltage: Input the amount of power voltage change to the operational amplifier.

? Power current: Pass the power current to the shunt resistor, 1kΩ/parallel (combined resistance: 500Ω) to input the amount of voltage change at the both ends of the resistor to the operational amplifier.
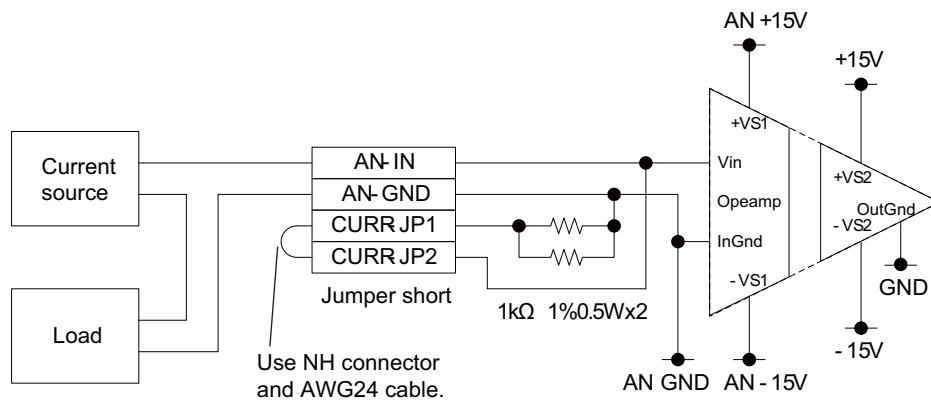
Connector J3

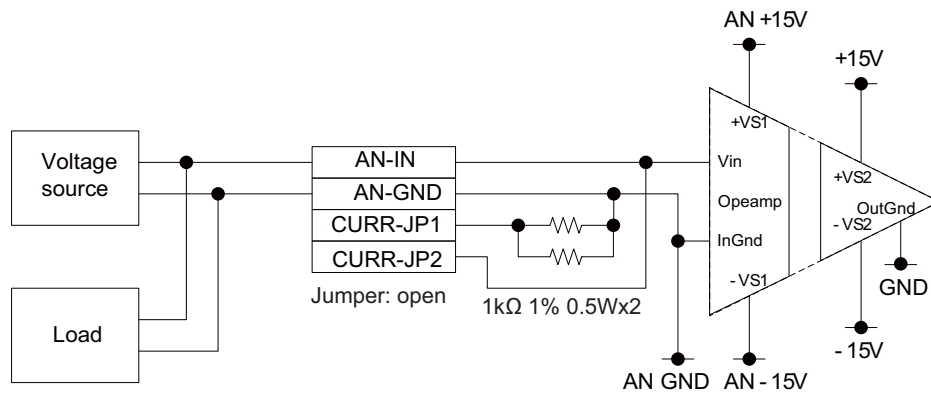| Pin #	Signal name	In/Out	Description	Power voltage	Power current
1	AN1_IN	In	Analog 1 input	TTYCS(LA)-1	
2	AN1_GND	-	Analog 1 GND		
3	CURR1_JP1	-	Analog 1 input, power current/ voltage setting jumper 1	Pin #3-#4: open	Pin #3-#4: short
4	CURR1_JP2	-	Analog 2 input, power current/ voltage setting jumper 1		

Connector J4

Pin #	Signal name	In/Out	Description	Power voltage	Power current
1	AN2_IN	In	Analog 2 input	TTYCS(LA)-1	
2	AN2_GND	-	Analog 2 GND		
3	CURR2_JP1	-	Analog 2 input, power current/ voltage setting jumper 1	Pin #3-#4: open	Pin #3-#4: short
4	CURR2_JP2	-	Analog 2 input, power current/ voltage setting jumper 1		

Connector J5

Pin #	Signal name	In/Out	Description	Power voltage	Power current
1	AN3_IN	In	Analog 3 input	TTYCS(LA)-1	
2	AN3_GND	-	Analog 3 GND		
3	CURR3_JP1	-	Analog 3 input, power current/ voltage setting jumper 1	Pin #3-#4: open	Pin #3-#4: short
4	CURR3_JP2	-	Analog 3 input, power current/ voltage setting jumper 1		

How to set ACK input (MC-3020D)

Use the connectors J3 to J6 on the to set the ACK input for ACK1 to ACK8 as shown below.

? Input circuit for voltage input
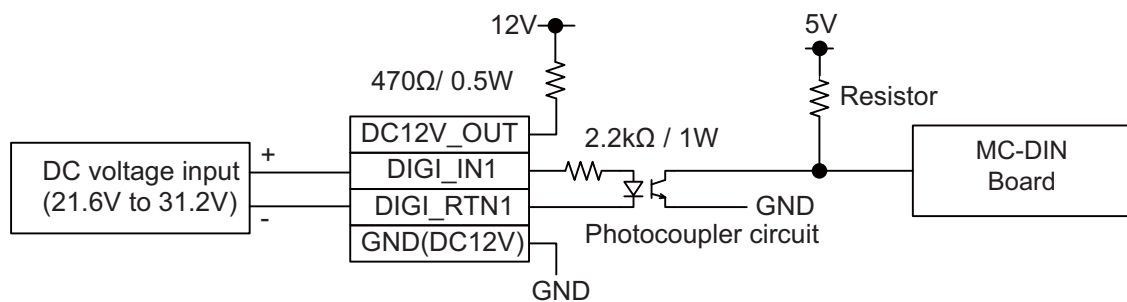
? Input circuit for contact input
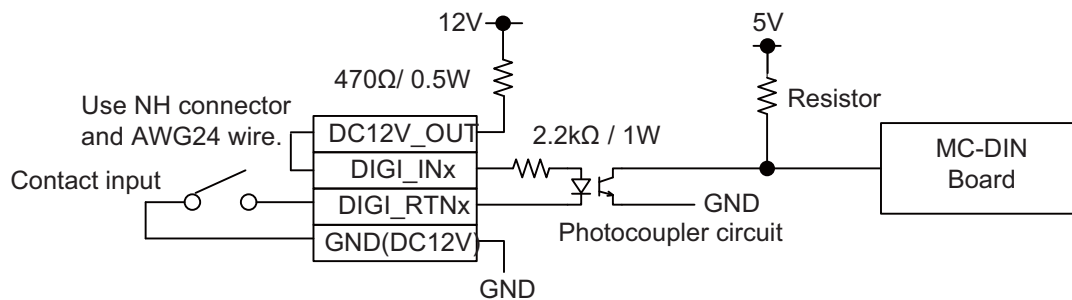
Note: The input must not exceed the range of the input voltage, to prevent malfunction.
-Setting for voltage input: 21.6V to 31.2V
-Setting for contact input: Voltage cannot be input (contact signal only).

Connector J3

Pin #	Signal name	In/Out	Remarks	ACK1 contact	ACK1 voltage	ACK2 contact	ACK2 voltage
1	DC12V_OUT	Out	ACK1 In	Pin #1-#2: short	No connection		
2	DIGI_IN1	In			MPYC-12	According to ACK1 input	
3	DIGI_RTN1	Out		MPYC-12			
4	GND (DC12V)	In			No connection		

Pin #	Signal name	In/Out	Remarks	ACK1 contact	ACK1 voltage	ACK2 contact	ACK2 voltage
5	DC12V_OUT	Out	ACK2 In			Pin #1-#2: short	No connection
6	DIGI_IN2	In		According to ACK2 input			MPYC-12
7	DIGI_RTN2	Out				MPYC-12	
8	GND (DC12V)	In					No connection

Connector J4

Pin #	Signal name	In/Out	Remarks	ACK3 contact	ACK3 voltage	ACK4 contact	ACK4 voltage
1	DC12V_OUT	Out	ACK3 In	Pin #1-#2: short	No connection		
2	DIGI_IN3	In			MPYC-12	According to ACK3 input	
3	DIGI_RTN3	Out		MPYC-12			
4	GND (DC12V)	In			No connection		
5	DC12V_OUT	Out	ACK4 In			Pin #1-#2: short	No connection
6	DIGI_IN4	In		According to ACK4 input			MPYC-12
7	DIGI_RTN4	Out				MPYC-12	
8	GND (DC12V)	In					No connection

Connector J5

Pin #	Signal name	In/Out	Remarks	ACK5 contact	ACK5 voltage	ACK6 contact	ACK6 voltage
1	DC12V_OUT	Out	ACK5 In	Pin #1-#2: short	No connection		
2	DIGI_IN5	In			MPYC-12	According to ACK5 input	
3	DIGI_RTN5	Out		MPYC-12			
4	GND (DC12V)	In			No connection		
5	DC12V_OUT	Out	ACK6 In			Pin #1-#2: short	No connection
6	DIGI_IN6	In		According to ACK6 input			MPYC-12
7	DIGI_RTN6	Out				MPYC-12	
8	GND (DC12V)	In					No connection

Connector J6

Pin #	Signal name	In/Out	Remarks	ACK1 contact	ACK voltage	ACK2 contact	ACK2 voltage
1	DC12V_OUT	Out	ACK1 In	Pin #1-#2: short	No connection		
2	DIGI_IN7	In			MPYC-12	-	-
3	DIGI_RTN7	Out		MPYC-12			
4	GND (DC12V)	In			No connection		
5	DC12V_OUT	Out	ACK2 In			Pin #1-#2: short	No connection
6	DIGI_IN8	In		-	-		MPYC-12
7	DIGI_RTN8	Out				MPYC-12	
8	GND (DC12V)	In					No connection

How to set alarm output (MC-3030D)

Use the connector J3 to J6 on the MC_OUT Board (24P0117) to select NC (normal close) or NO (normal open) for alarm output 1 to 8.

Connector J3

Pin #	Signal name	In/Out	Remarks	Alarm1 NO Out	Alarm1 NC Out	Alarm2 NO Out	Alarm2 NC Out
1	A1	Out	Alarm1 Out	MPYC-12	No connection		
2	COM1				MPYC-12	-	-
3	B1			No connection			
4	A2		Alarm2 Out			MPYC-12	No connection
5	COM2			-	-		MPYC-12
6	B2					No connection	

Connector J4

Pin #	Signal name	In/Out	Remarks	Alarm3 NO Out	Alarm3 NC Out	Alarm4 NO Out	Alarm4 NC Out
1	A3	Out	Alarm3 Out	MPYC-12	No connection		
2	COM3				MPYC-12	-	-
3	B3			No connection			
4	A4		Alarm4 Out			MPYC-12	No connection
5	COM4			-	-		MPYC-12
6	B4					No connection	

Connector J5

Pin #	Signal name	In/ Out	Remarks	Alarm5 NO Out	Alarm5 NC Out	Alarm6 NO Out	Alarm6 NC Out
1	A5	Out	Alarm5 Out	MPYC-12	No connection		
2	COM5				MPYC-12	-	
3	B5			No connection			
4	A6		Alarm5 Out			MPYC-12	No connection
5	COM6			-			MPYC-12
6	B6					No connection	

Connector J6

Pin #	Signal name	In/ Out	Remarks	Alarm7 NO Out	Alarm7 NC Out	Alarm8 NO Out	Alarm8 NC Out
1	A7	Out	Alarm7 Out	MPYC-12	No connection		
2	COM7				MPYC-12	-	
3	B7			No connection			
4	A8		Alarm8 Out			MPYC-12	No connection
5	COM8			-			MPYC-12
6	B8					No connection	