

Installation Manual

INMARSAT MINI-C MES

Model FELCOM19

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SAFETY INSTRUCTIONS

WARNING



Do not open the equipment unless totally familiar with electrical circuits and service manual.

ELECTRICAL SHOCK HAZARD

Only qualified personnel should work inside the equipment.



Do not approach the radome closer than 0.5 m when it is transmitting.

Microwave radiation can cause severe injury or illness. Radiation level: 10 W/m² at 0.5 m



Turn off the power at the mains switchboard before beginning the installation. Post a sign near the switch to indicate it should not be turned on while the equipment is being installed.

Fire, electrical shock or serious injury can result if the power is left on or is applied while the equipment is being installed.

CAUTION



Confirm that the power supply voltage is compatible with the voltage rating of the equipment.

Connection to the wrong power supply can cause fire or equipment damage. The voltage rating appears on the label at the rear of the terminal unit.



Use the correct fuse.

Use of wrong fuse can result in damage to the equipment.



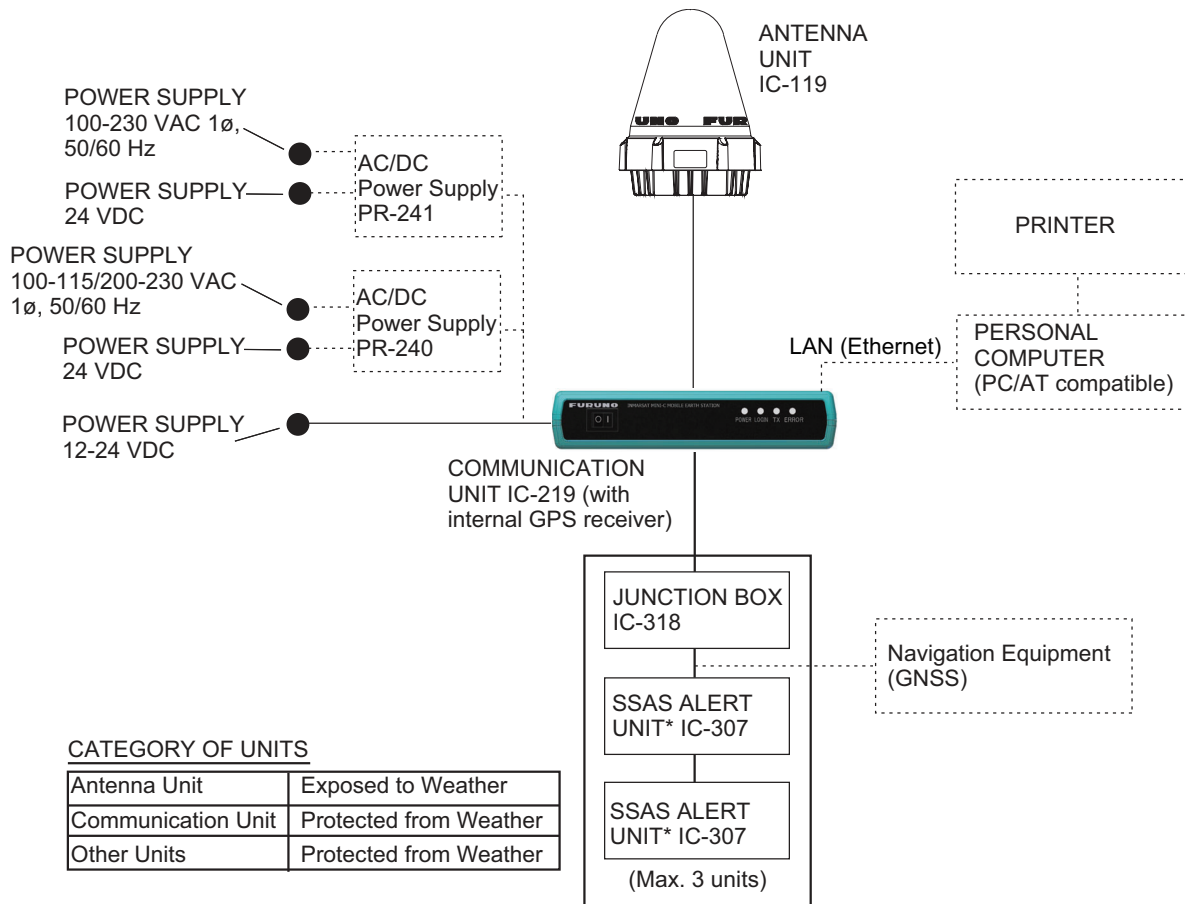
Keep the following compass safe distances.

	Standard	Steering
Antenna Unit IC-119	0.30 m	0.30 m
Communication Unit IC-219	0.30 m	0.30 m
AC/DC Power Supply Unit PR-240	0.90 m	0.60 m
Junction Box IC-318	0.90 m	0.60 m
SSAS Alert Unit IC-307	0.70 m	0.45 m



Ground the equipment to prevent electrical shock and mutual interface.

SYSTEM CONFIGURATION



CATEGORY OF UNITS

Antenna Unit	Exposed to Weather
Communication Unit	Protected from Weather
Other Units	Protected from Weather

*: At least two SSAS Alert Units are required.

EQUIPMENT LISTS

Standard supply

Name	Type	Code No.	Qty	Remarks
Antenna Unit	IC-119	-	1	w/FP16-02501, CP16-05500
Communication Unit	IC-219	-	1	w/CP16-05301, SP16-01401, FP16-02700
Junction Box	IC-318	-	1	For SSAS only. w/CP16-05101
SSAS Alert Unit	IC-307	-	2	For SSAS only.

Optional supply

Name	Type	Code No.	Qty	Remarks
AC/DC Power Supply Unit	PR-240	-	1	
	PR-241	-	1	
Ferrite Core	OP86-11	001-594-450	1	For PR-241
SSAS Alert Unit	IC-307	-	1	
Cable Assy.	COSPEVVSBC 5PX0.2LF	000-560-452-11	1	5P, 10 m
		000-103-868-11	1	5P, 20 m
		000-103-869-11	1	5P, 30m
		000-132-829-11	1	5P, 40 m
		000-132-828-11	1	5P, 50 m
Junction Box	IC-318	-	1	
Antenna Unit	IC-119	-	1	
Antenna Bracket	CP16-05602	001-189-610	1	For IC-119
Antenna Base w/ Hose Clamp	OP16-72	001-323-420	1	
Antenna Base w/ Mount Pipe	OP16-73	001-323-430	1	
Antenna Base w/ U Bolt	OP16-74	001-313-440	1	
Antenna Base	OP16-75	001-313-450	1	
IP22 Kit	OP16-58	001-180-070	1	
Water Proof Kit	OP16-60	001-180-090	1	For IC-318
	OP16-61	001-180-110	1	For IC-219
	OP16-68	001-189-400	1	For IC-307
Installation Materials	CP16-05710	000-021-701	1	w/pipe, 30 m
	CP16-05720	000-021-708		w/pipe, 50 m
	CP16-05730	000-021-711		w/pipe, 100 m
	CP16-05780	000-021-712		w/pipe, 30 m, for armored cable
	CP16-05750	000-021-704		w/pipe, 30 m
	CP16-05760	000-021-713		w/pipe, 50 m
	CP16-05770	000-021-714		w/pipe, 100 m
	CP16-05790	000-021-715		w/pipe, 30 m, for armored cable

EQUIPMENT LISTS

Name	Type	Code No.	Qty	Remarks
Hose clamp	OP16-76-1	001-443-450	1	Nominal Diameter, Mast Diameter For 40A (ϕ 48.6)
	OP16-76-2	001-443-460	1	Nominal Diameter, Mast Diameter For 65A to 80A (ϕ 76.3 to 89.1)
	OP16-76-3	001-443-470	1	Nominal Diameter, Mast Diameter For 90A to 100A (ϕ 101.6 to 114.3)

1. MOUNTING

NOTICE

Do not apply paint, anti-corrosive sealant or contact spray to coating or plastic parts of the equipment.

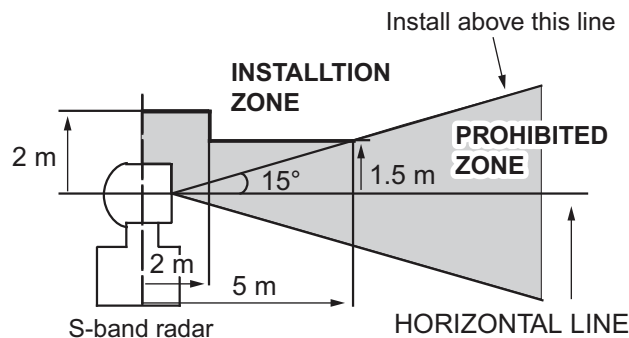
Those items contain organic solvents that can damage coating and plastic parts, especially plastic connectors.

1.1 Antenna Unit

1.1.1 Mounting location

Refer to IMO resolutions A663(16) and A.807(19), as amended.

- There should be no interfering object within the line-of sight to the satellite. Objects within line-of sight to a satellite, for example, a mast may block transmission/reception. Mount the antenna unit as high as possible. This keeps it free of interfering objects and water spray. The location should be well away from a GPS antenna. A GPS receiver may be interfered by the Inmarsat C wave.
- If Inmarsat ship earth stations other than C are installed, separate the Inmarsat antenna at least 8 m.
- Separate the antenna unit from an S-band radar as follows:



- The allowable vibration level as specified by Inmarsat is as shown in the table below.

Allowable vibration level

Frequency	Level
2 to 10 Hz	2.54 mm Peak Amplitude
10 to 100 Hz	9.8 m/s ² Peak Acceleration

- Avoid the location near tunnels and stacks; smoke and soot on the radome can lower signal level (leave 10 m or more in horizontal distance).
- Separate the antenna unit 5 m from HF, VHF or 27 MHz antenna.

1. MOUNTING

1.1.2 Mounting

The antenna cable is available in lengths of 30 m, 50 m and 100 m (see table below).

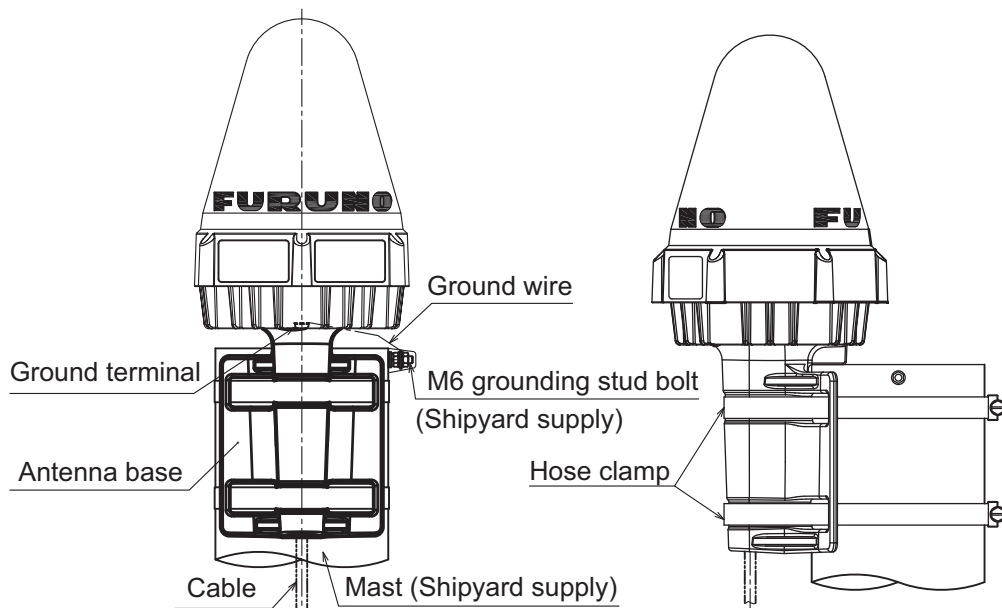
Cable length	Type	Remarks
30 m (no armor)	TP5FBAW-5DFB	TNC connector at both ends
30 m (w/armor)	5D-FB-CV-NP	N connector on one end (antenna side)
50 m (w/armor)	8D-FB-CV	
100 m (w/armor)	12D-SFA-LITE-CV	

Note: When using the optional installation kit to install the antenna, refer to the outline drawings at the back of this manual.

Antenna installation

Select a location to weld the grounding stud bolt (M6), keeping in mind the length of the grounding cable RW-4747 (Included as installation materials) is 340 mm. The location for welding the grounding stud bolt should allow the antenna ground and mast ground to be connected with the grounding cable (to ground lightning strikes). For detailed measurements, refer to the outline drawings at the back of this manual.

For information on wiring the antenna cable, refer to the manual included with the antenna unit.



1.2 Communication Unit

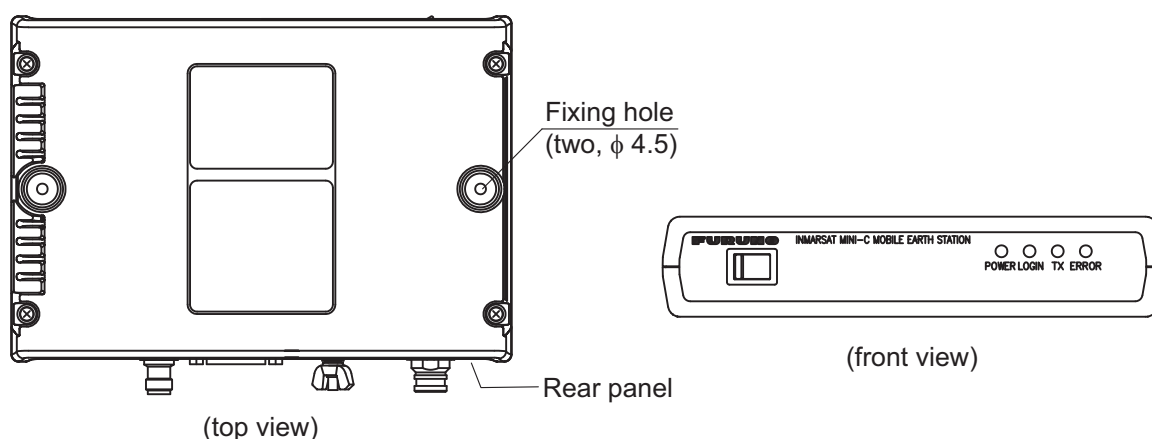
Select the following place to install the communication unit.

- The temperature and humidity should be moderate and stable.
- For maintenance and checking purposes, leave sufficient space at the sides and rear of the unit and leave slack in cables.

Mounting

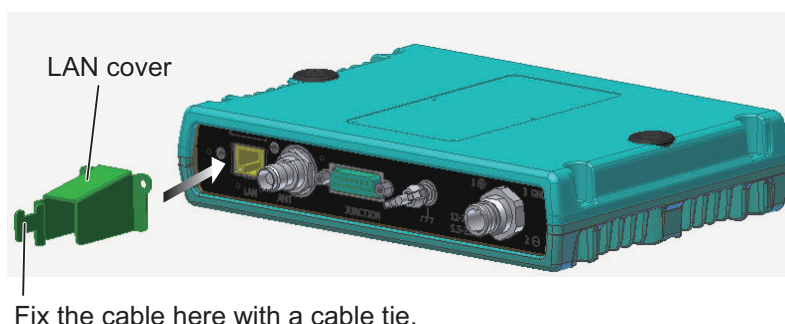
Use two self-tapping screws (4x40, supplied) to fix the communication unit. The unit can be mounted on a bulkhead, a tabletop or on the underside of table. Use the fixing holes at the top for bulkhead mounting, or the fixing holes at the bottom for tabletop mounting or underside of a table.

After mounting the unit, cover the screw heads with the cosmetic caps (2 pcs, supplied) to fixing hole to cover the screw head. Note that the rear panel should be downward when the communication unit is mounted on the bulkhead.



How to connect the LAN cable

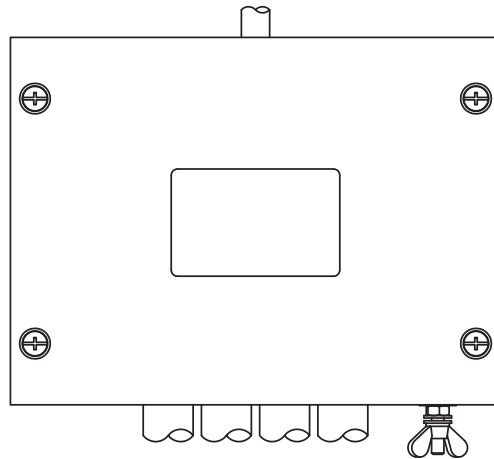
Use two binding screws (pre-attached) and the LAN cover to connect the LAN cable to the communication unit. Use the cable tie (supplied) to fix the cable.



1.3 Junction Box IC-318

The junction box IC-318 is connected to the communication unit by using the cable assy 16S0344 (2 m, attached to the junction box). Install the junction box within 2 m from the communication unit.

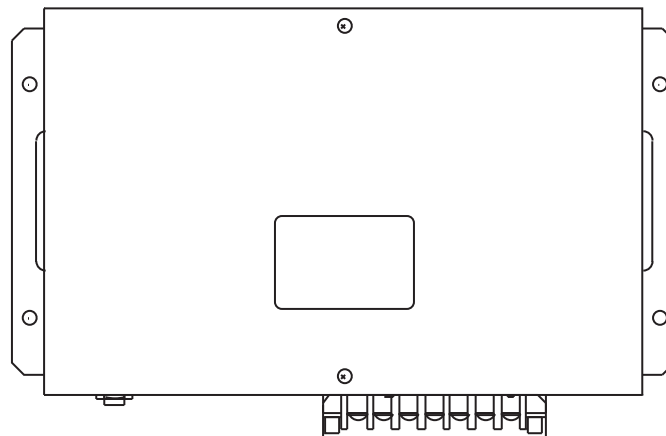
1. Remove four screws from the unit to separate the bottom chassis from the top chassis.
2. Fix the bottom chassis to the mounting location with four self-tapping screws (4x16, supplied).
3. Connect the cables referring to Chapter 2.



Junction box IC-318

1.4 AC/DC Power Supply Unit PR-240 (option)

Fix the unit on a table with four self-tapping screws.

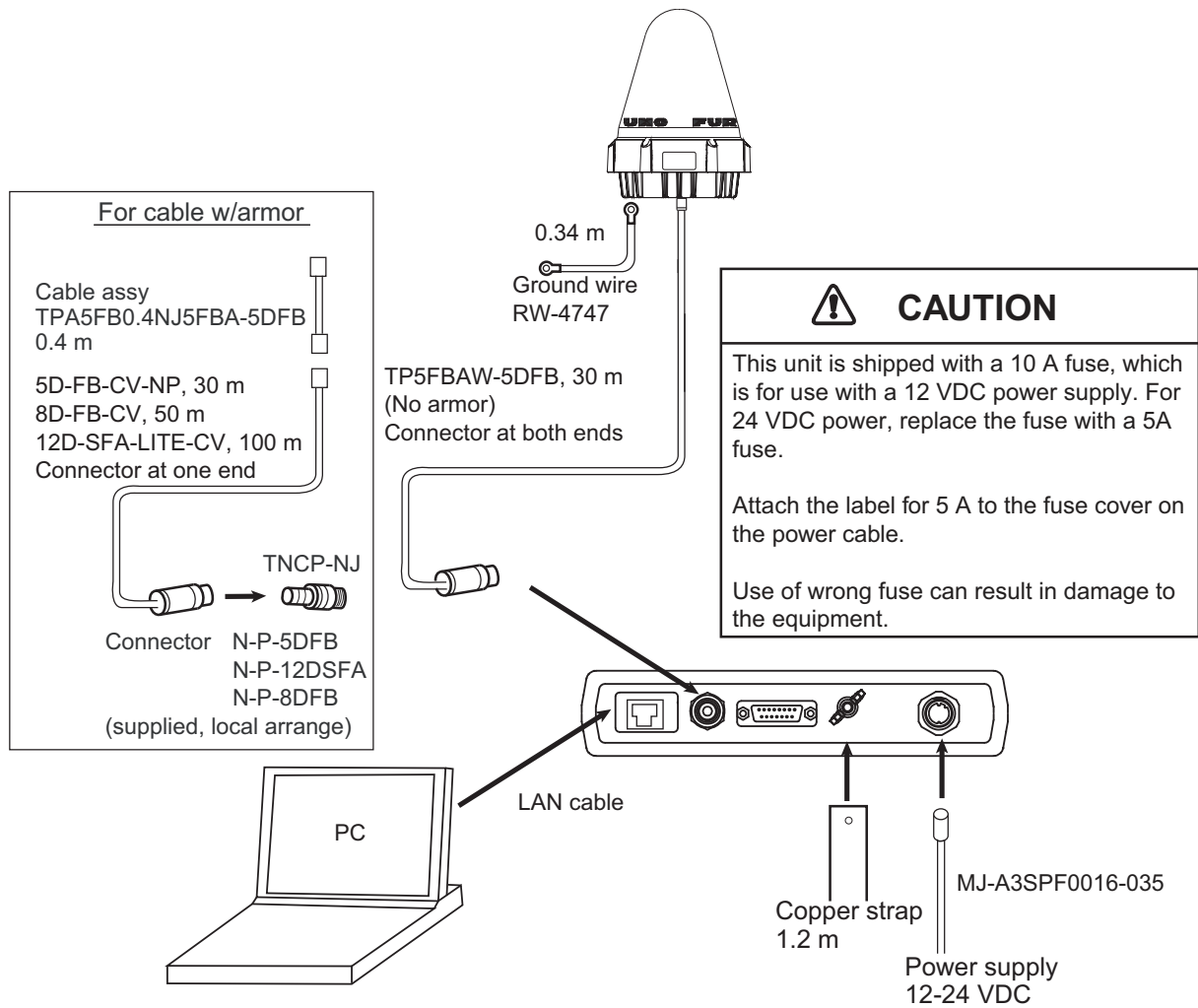


AC/DC power supply unit

1.5 AC/DC Power Supply Unit PR-241 (option)

See the PR-241 installation guide (C82-02001-*) for details.

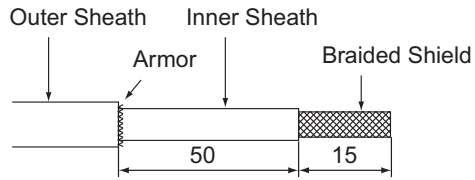
2. WIRING



Wiring of FELCOM19

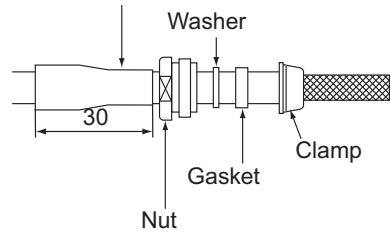
2.1 Antenna Cable Connector at the Communication Unit

2.1.1 Antenna cable TP5FBAW-5DFB (30 m)



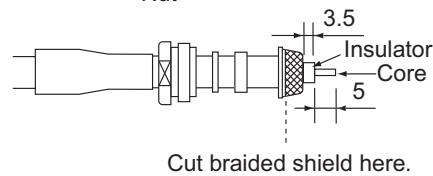
Remove the outer sheath, armor and inner-sheath by the dimensions shown.

Cover with heat-shrink tubing and heat.



Set the nut, washer, gasket, clamp onto cable as shown.

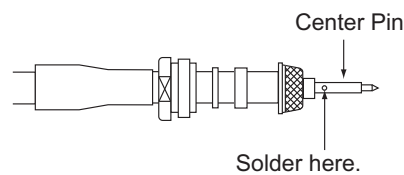
- Be careful not to damage the braided shield.



Fold back the braided shield onto the clamp and trim the shield as shown.

Make the length of insulator 3.5 mm and the length of the core 5 mm.

- Be careful not to damage the core.



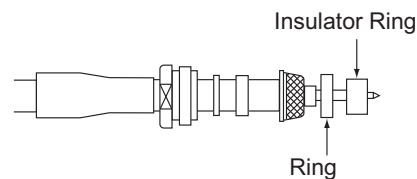
Set the center pin to the core and solder the pin from the hole in the pin.

(Pull the pin with approx. 1 kg of force to check strength of solder joint.)

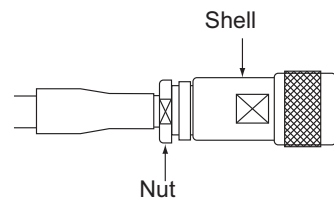
- Be sure the solder is flush with surface of pin.

- Be sure there is no gap between center pin and insulator. Do not push the center pin into the insulator.

- Do the soldering as quickly as possible so as not to deform the insulator.



Set the ring and insulator ring onto the cable.

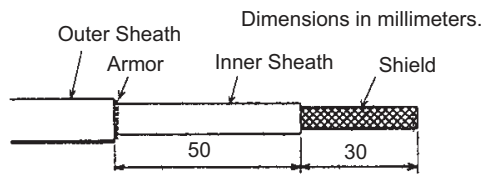


Set the shell to the cable then turn the nut to tighten. (Do not tighten by turning shell.) - Use a wrench or the like to tighten the nut securely.

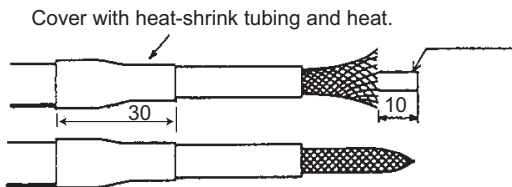
How to fabricate antenna cable 5D-FB-CV-NP

2.1.2 Antenna cable 5D/8D-FB-CV (50 m)

Connector type N-P-5D-FB

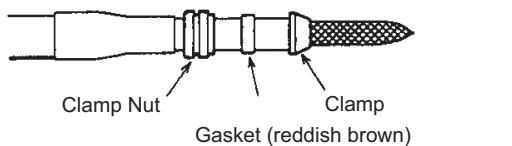


Remove outer sheath and armor by the dimensions shown left.
Expose inner sheath and shield by the dimensions shown left.

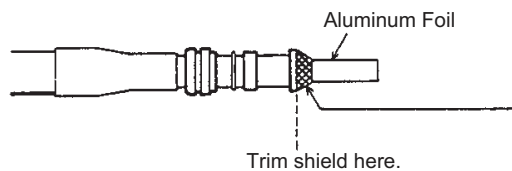


Remove insulator and core by 10 mm.

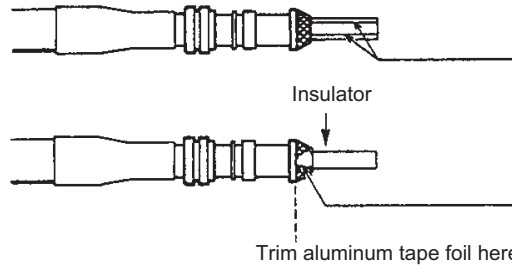
Twist shield end.



Slip on clamp nut, gasket and clamp as shown left.

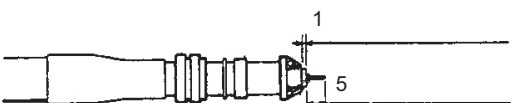


Fold back shield over clamp and trim.



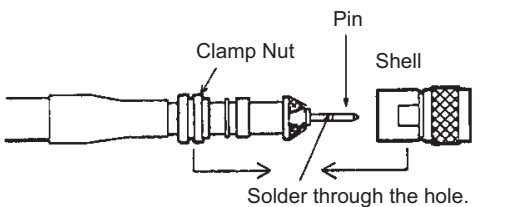
Cut aluminum foil at four places, 90° from one another.

Fold back aluminum tape foil onto shield and trim.



Expose the insulator by 1 mm.

Expose the insulator by 5 mm.



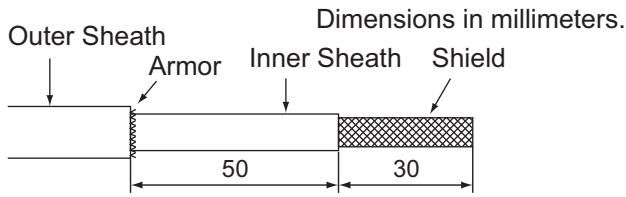
Slip the pin onto the conductor. Solder them together through the hole on the pin.

Insert the pin into the shell. Screw the clamp nut into the shell.
(Tighten by turning the clamp nut. Do not tighten by turning the shell.)

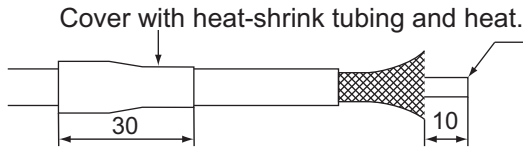
How to fabricate antenna cable 8D-FB-CV

2. WIRING

Connector type N-P-8D-FB



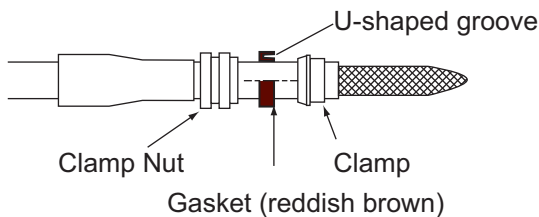
Remove outer sheath and armor by the dimensions shown left.
Expose inner sheath and shield by the dimensions shown left.



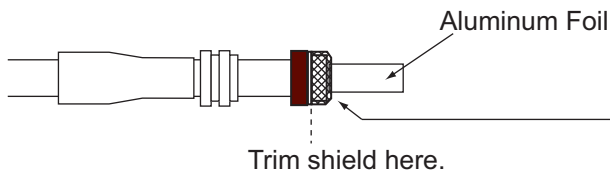
Remove insulator and core by 10 mm.



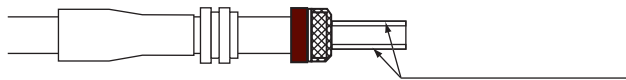
Twist shield end.



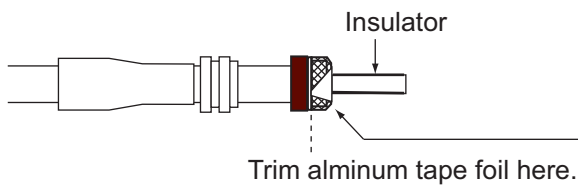
Slip on clamp nut, gasket and clamp as shown left.



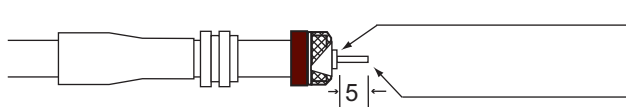
Fold back shield over clamp and trim.



Cut aluminum foil at four places, 90° from one another.

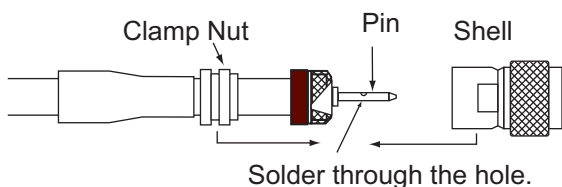


Fold back aluminum tape foil onto shield and trim.



Expose the insulator by 1 mm.

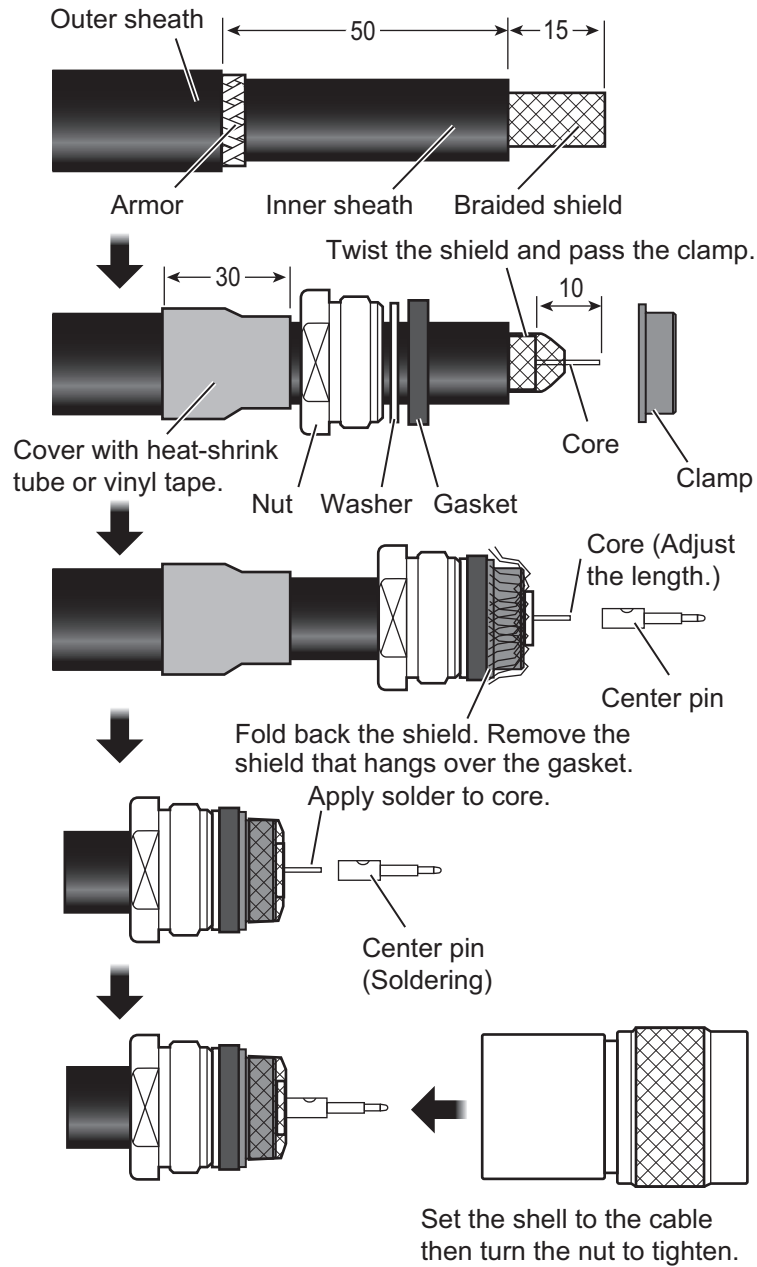
Expose the core by 1 mm.



Slip the pin onto the conductor. Solder them together through the hole on the pin.

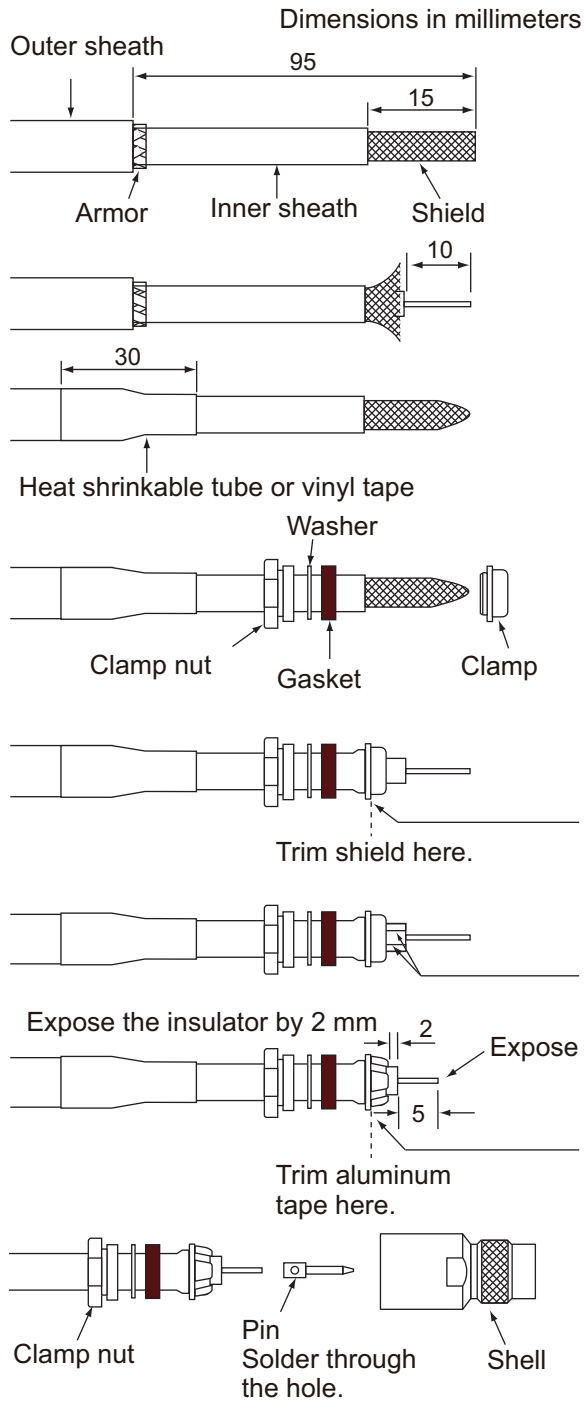
Insert the pin into the shell. Screw the clamp nut into the shell.
(Tighten by turning the clamp nut. Do not tighten by turning the shell.)

Connector type N-P-8DSFA



2. WIRING

2.1.3 12D-SFA-LITE-CV (100 m)



Remove outer sheath and armor by the dimensions shown left.
Remove inner sheath and expose shield by the dimensions shown left.

Remove the insulator beneath shield by 10 mm and expose the core.

Twist shield end.

Slip on clamp nut, washer, gasket and clamp as shown left.

Fold back shield over clamp and trim.

Cut aluminum tape at four places, 90° from one another.

Fold back aluminum tape over clamp and trim.

Slip the pin onto the conductor. Solder them together through the hole on the pin. Insert the pin into the shell. Screw the clamp nut into the shell. Tighten them by turning the clamp nut. (Do not tighten by turning the shell.)

2.2 Junction Box IC-318

Use the junction box IC-318 to connect to the communication unit. Unfasten four screws to remove the units cover to connect cables.

For connection, use the optional 5 pair cable CO-SPEVV-SB-C 0.2x5P, JIS cable (Japan Industrial Standard) TTYCS-4(LA) or equivalent.

1	Vcc
2	GND
3	TD/RD-A
4	TD/RD-B
5	NC
6	ALM-H
7	ALM-C
8	RD-A(NAV)
9	RD-B(NAV)
10	GND
11	SSAS OUT-H
12	SSAS OUT-C
13	SSAS IN-H
14	SSAS IN-C
15	SSAS CTR

Sticker for connection of other equipment

For TTYCSLA cable, use the screws and crimp-on lugs shown below to connect the drain wire of that cable.

Screws and crimp-on lugs (supplied in the IC-318)

IC-318, inside view

Fold back

15 mm 90 mm 7 mm

Procedure
 1. Insert from direction ① .
 2. Tilt slightly toward ② .
 3. Insert cable core to ③ .
 4. Pull out the screwdriver.

Note 1: Do not insert the wire deeply, to prevent pinching its sheath.

Note 2: Pull the wire slightly to confirm that it is in the slot correctly.

Core 7 mm

Input/output sentences

The following sentences can be input/output with the navigator connected.

Input sentences
BWC, BWR, DBT, DTM, GGA, GLL, GNS, GSA, MTW, RMA, RMB, RMC, VDO, VDR, VTG, WPL, ZDA

2. WIRING

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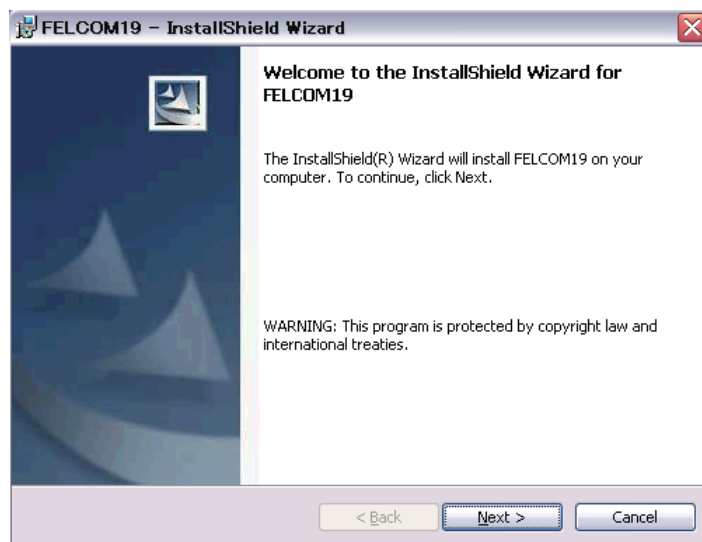
3. INITIAL SETTINGS

This chapter shows you how to setup the equipment. Some procedures require entry of job no. and password. Ask your dealer.

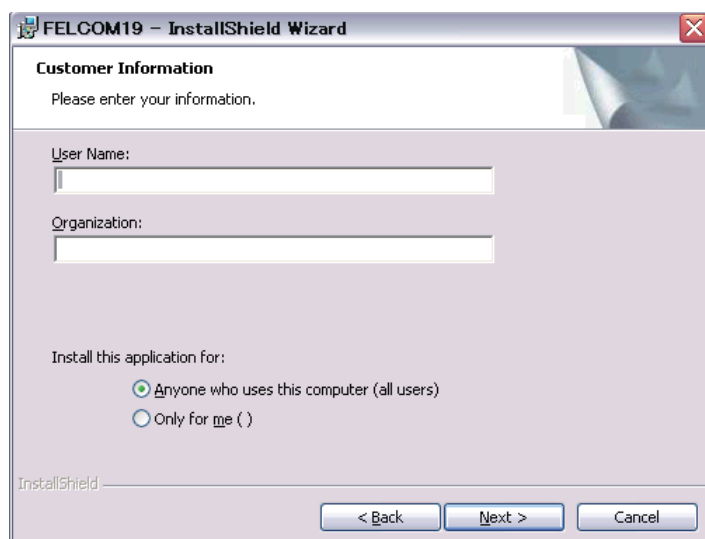
3.1 How to Install Software

After installing the equipment, install the FELCOM19 software (F19PC) in the PC as follows:

1. Turn on the PC.
2. Set the CD-ROM in CD drive.
3. Click the SETUP.EXE icon in the CD-ROM. The setup procedure begins, showing the welcome dialog box.

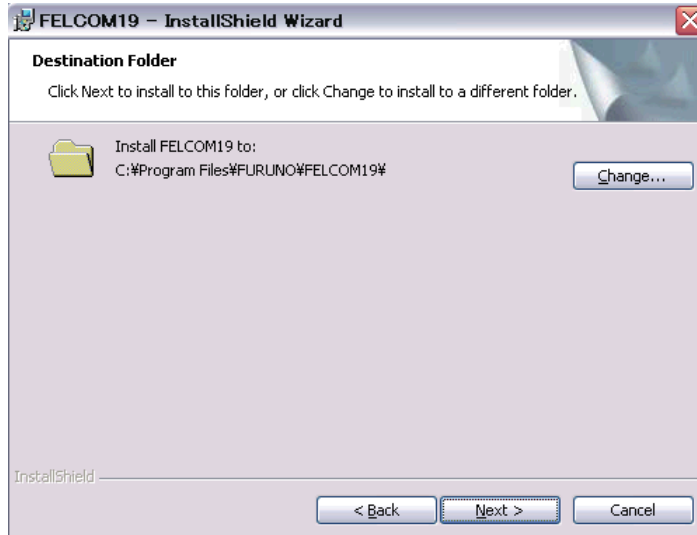


4. Click the **Next** button.

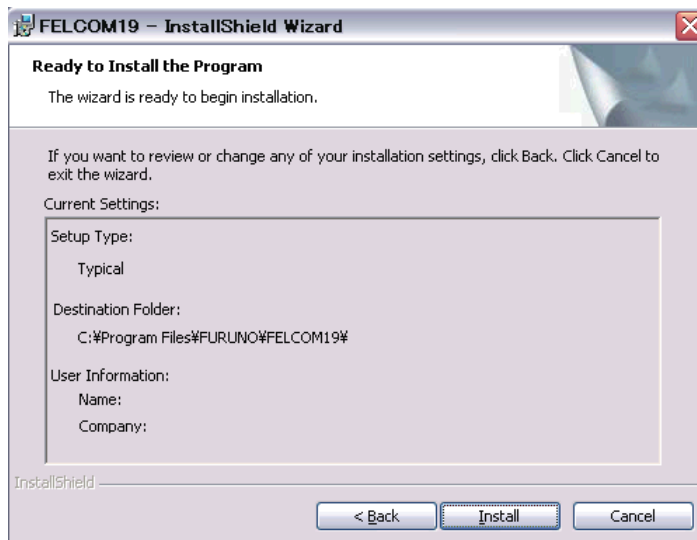


3. INITIAL SETTINGS

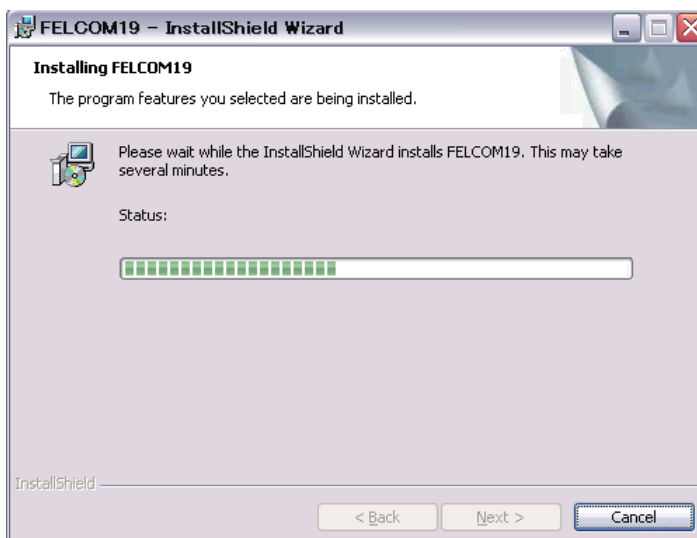
5. Enter your name and organization.



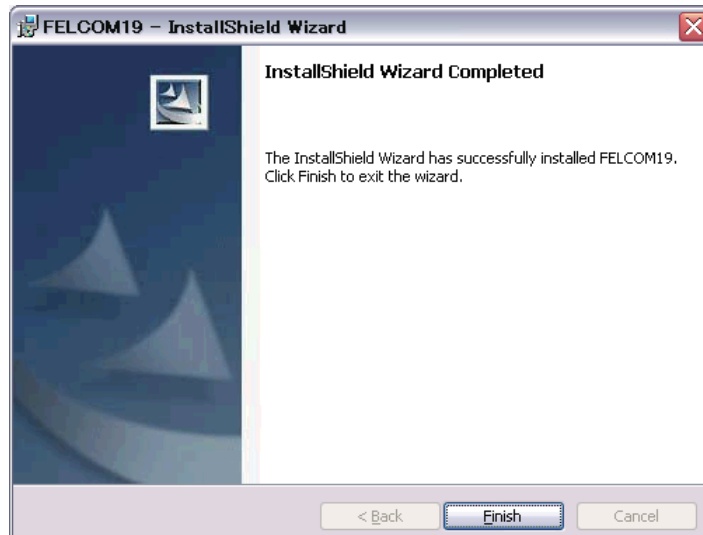
6. Click the **Next** button.



7. Click the **Install** button and the installation begins. When the installation is completed, the FELCOM19 dialog box appears.



- Click the **Next** button.

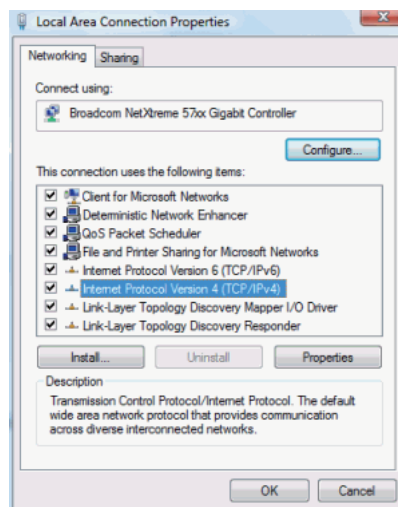


- Click the **Finish** button. The FELCOM 19 PC application shortcut is created on the desktop.

Note: To uninstall the F19 application from the PC, see the operator's manual.

3.2 How to Start Up the Software

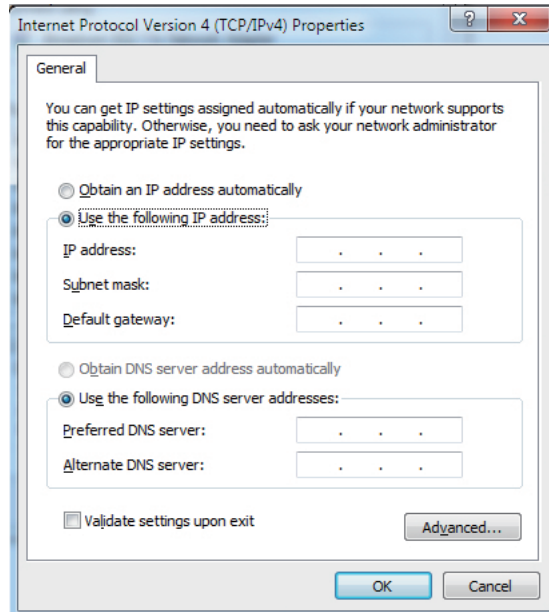
- After the software is installed, open the [Local Area Connection Properties].



Note: Refer to you PC's manual for how to open [Local Area Connection Properties].

3. INITIAL SETTINGS

2. Select [Internet Protocol Version 4(TCP/IPv4)] and click the **Properties** button. If the box to the left of [Internet Protocol Version 4(TCP/IPv4)] is not checked, place a check-mark in the box.



3. Set the IP addresses within the following range. Setting range: 172.31.16.1,172.31.16.3 to 172.31.16.254
Note: Take care that do not use the same IP address as the default IP address. (172.31.16.2)
4. Establish the connection between the Communication unit and the PC with a LAN cable. (locally supplied)
5. Turn the Communication unit on.
6. Click the icon for F19 PC. The [Connect List] appears.



7. Click the [No.] column of the item you wish to set up. A popup menu appears.

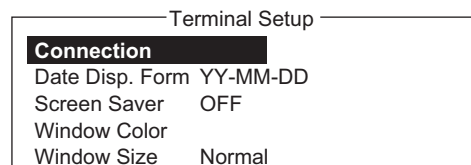


If the Connect list screen disappears during setup, do following procedure to show the list.

- 1) Press the **F8** key to show the [Setup] menu.

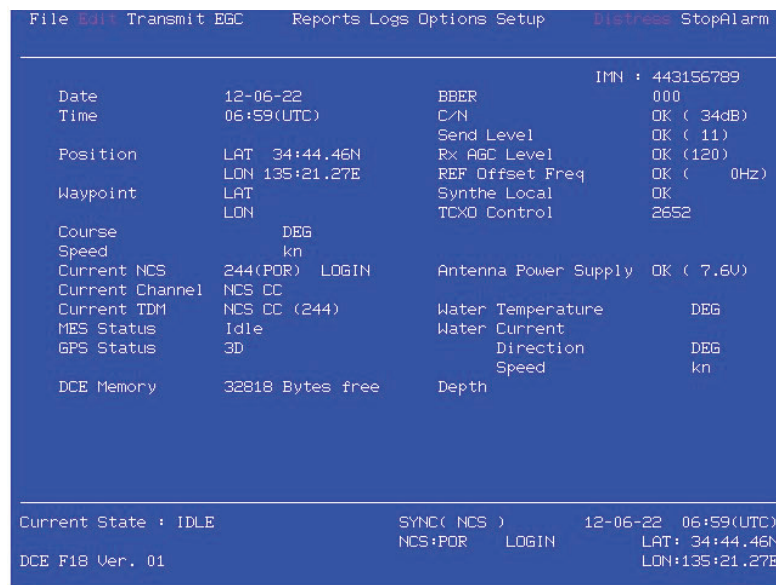


- 2) Press the 3 key to show the [Terminal Setup] menu.



- 3) Click [Connection], The [Connect List] appears.

8. Select [Yes], then press Enter. The status screen appears.



3.3 How to Set the IMN (INMARSAT MOBILE NO.)

Set your IMN (Inmarsat Mobile No.) using the PC as below.

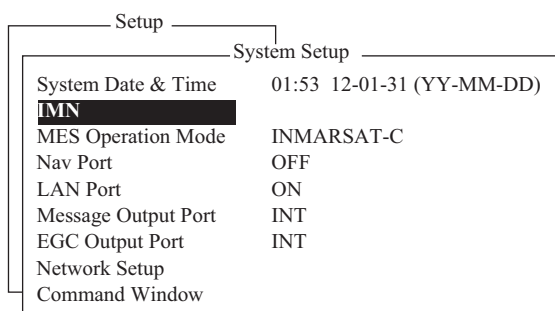
1. Power on the communication unit and PC in order.
2. Double click [F19PC] on the screen to start the program.
3. Select the terminal (FELCOM19) to use then press the **Enter** key.
The [Connect] window is shown on the screen. Select [Yes] then press the **Enter** key to connect the terminal selected.

3. INITIAL SETTINGS

4. Press the function key **F8** to show the [Setup] menu.



5. Press the **1** key to display the [System Setup] menu.



6. Confirm that the [IMN] is selected, and then press the **Enter** key.
An input box appears.
7. Key in your IMN.
8. Press the **Enter** key.
9. Press the **Esc** key to erase the input box.
10. Press the **Enter** key.
11. Press the **Esc** key.

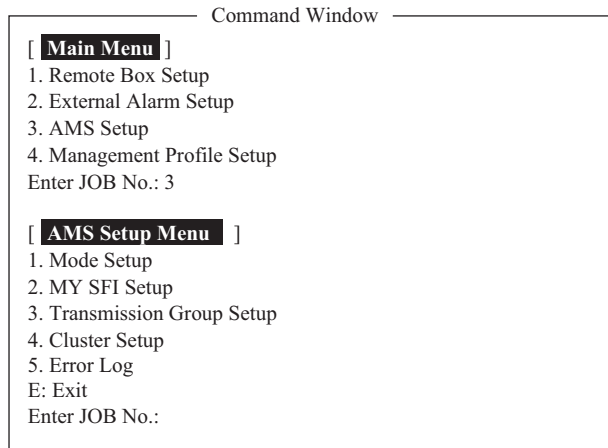
To clear the IMN, select IMN, then press **I**, **M**, **N** while pressing the **Alt** key. Repeat step 6 to step 8 to input the correct IMN. When using the FELCOM19 for VMS (Vessel Monitoring System), DNID (Data Network ID) has to be downloaded via the LES (Land Earth Station). This arrangement is normally done by authority of VMS.

3.4 How to Set up the AMS/BAM

Do the following to connect the AMS (Alert Management System).

1. Press the **F8** and **1** keys to show the [System Setup] menu.
2. Press **↓** to select [Command Window], and then press the **Enter** key.
3. Enter the [Enter JOB No.:], then press the **Enter** key.
4. Enter the [PASSWORD:], then press the **Enter** key.

- Press the **3** key, and the **Enter** key.
The [AMS Setup Menu] appears on the [Command Window].



- Press appropriate numeric key (1 to 4), then press the **Enter** key.
To return to the [AMS Setup Menu], press the **E** key at the setting window.

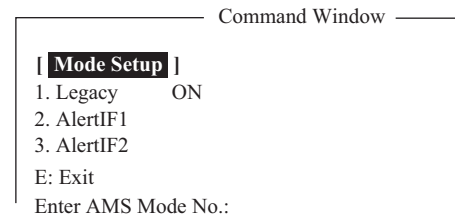
1 key: [Mode Setup]

Set the alert mode.

[Legacy]: Select when no AMS/BAM is connected.

[AlertIF1]: Select when AMS is connected.

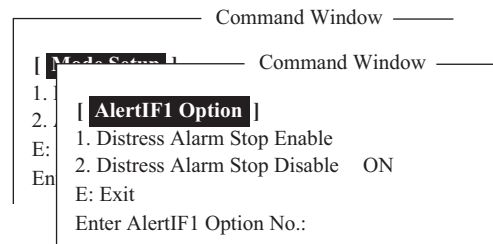
[AlertIF2]: Select when BAM is connected.



For [AlertIF1], the option window shown to the right is displayed. To return to the [AMS Setup Menu] from this window, press the **E** key twice.

[Distress Alarm Stop Enable]: The AMS can stop the alarm sound when the Distress Priority message is received.

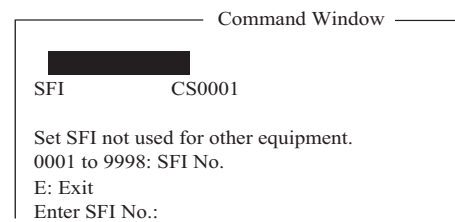
[Distress Alarm Stop Disable]: The AMS can not stop the alarm sound when a Distress Priority message is received.



2 key: [MY SFI Setup]

Set this FELCOM's SFI number, which is the four-digit number that follows "CS". (The setting range is 0001 to 9998.).

Note: Be sure to use an SFI not used by other devices in the shipboard network.



3. INITIAL SETTINGS

3 key: [Transmission Group Setup]

Set the transmission group of this equipment according to the transmission group of connected AMS/BAM equipment.

```
Command Window
[ Transmission Group Setup ]
1. MISC      ON
2. TGTD
3. SATD
4. NAVD
5. VDRD
6. RCOM
7. TIME
8. PROP
9. USR
A. Other
B. NONUSE
E: Exit
Enter Group No:
```

Transmission Group	Multicast Address	Destination Port
MISC	239.192.0.1	60001
TGTD	239.192.0.2	60002
SATD	239.192.0.3	60003
NAVD	239.192.0.4	60004
VDRD	239.192.0.5	60005
RCOM	239.192.0.6	60006
TIME	239.192.0.7	60007
PROP	239.192.0.8	60008
USR1 to USR8	239.192.0.9 to 239.192.0.16	60009 to 60016
BAM1, BAM2	239.192.0.17, 239.192.0.18	60017, 60018
CAM1, CAM2	239.192.0.19, 239.192.0.20	60019, 60020

```
Command Window
[ AMS Setup Menu ]
1. Mode Setup
2. MY SFI Setup
3. Transmiddion Group Setup
4. Ciuster Setup
5. Error Log
E: Exit
Enter JOB No.: 3
Enter Cluster Setup No.:
[ TransmissionGroup Setup ]
1. Group for TX      RCOM
2. Group 1 for RX    MISC
3. Group 2 for RX    - - - -
E: Exit
Enter No.:
```

[Group for TX]: Transmission group for sending sentences.

[Group for RX], [Group2 for RX]: Transmission group for receiving sentence.

4 key: Cluster Setup

Set the cluster for this equipment. These settings are applied only when AlertIF2 settings are applied (connected to BAM).

```
Command Window
1. Mode Setup
2. MY SFI Setup
3. Transmission Group Setup
4. Clister Setup
4. Error Log
E: Exit
Enter JOB No.: 4
[ Cluster Setup ]
1. My Cluster      None
2. Destination Cluster  None
E: Exit
These settings are used only for alertF2 mode.
Enter Cluster Setup No.:
```

[My Cluster Setup] window appears after selecting [1. My Cluster] on the menu. Set the destination cluster. Default setting is [None] which does not use the cluster. Change this item to use the cluster. Set the cluster according to the cluster setting of the BAM system.

```

Command Window
[ Cluster Setup ]
1. My Cluster          None
2. Destination Cluster None
E: Exit
These settings are used only for alertF2 mode.
Enter Cluster Setup No.:

[ My Cluster Setup ]
1. Nav
2. Com
3. None              ON
E: Exit
Enter Cluster No.:

```

[Destination Cluster Setup] window appears after selecting [2. Destination Cluster] on the menu. Set the destination cluster according to the cluster setting of the BAM system.

```

Command Window
Enter Cluster Setup No.: 2
[ Destination Cluster Setup ]
1. Nav
2. Com
3. Aut
4. Cgo
5. Hil
6. ICT
7. SSe
8. Pos
9. User Setting      ON
E: Exit
Enter Cluster No.:

```

5 key: [Error Log]

The [Error Log] compiles AMS related errors. To delete an error log entry, select the log then press the **1**, **Enter** key.

```

Command Window
[ Error Log ]
Datagram header error   xxxxxxxxxx*
TAG block formatting error xxxxxxxxxx
TAG checksum error      xxxxxxxxxx
TAG syntax error        xxxxxxxxxx
TAG framing error       xxxxxxxxxx
Sentence syntax error   xxxxxxxxxx
UDP checksum error      xxxxxxxxxx
Total                   4294967295  LIMIT MAX

1. Log Clear
E: Exit
Enter JOB No.:

*: xxxxxxxxxx: Error log count

```

The error log holds 4,294,967,295 entries. When the log becomes full, the message "LIMIT MAX" appears.

7. Press the **Esc** key several times to close the menu.

3.5 PC Window Setup

The [Terminal Setup] menu provides for set up of the PC window. The set up includes selection of date display format, screen saver and window colors.

1. Press the **F8** and **3** keys to show the [Terminal Setup] menu.

```

Terminal Setup
-----
Connection
Date Disp. Form YY-MM-DD
Screen Saver OFF
Window Color
Window Size Normal
  
```

2. Select [Connection] then press the **Enter** key to show the [Connect List]. This list shows the names of the terminals that can be connected to the LAN interface.

```

Connect List
-----
No. Name IMN IP Address Software Version
*01 F19_123456 123432588 172.31.16.100/24 1650248-01
02 F19_133234 456789210 192.168.16.11/24 1650248-01
03
04
05
06
07
08
09
10
  
```

Note: The No., Name, IMN, IP address/subnet mask and software version of each terminal are shown. The asterisk marks the terminal currently selected for communication.

3. Select the terminal to use then press the **Enter** key.
4. Select [Date Disp. Form] then press the **Enter** key to open its options window.
5. Select [YY-MM-DD], [MMM-DD-YY] or [DD-MMM-YY] as appropriate then press the **Enter** key.
6. Select [Screen Saver] then press the **Enter** key.
7. Turn the screensaver ON or OFF as appropriate then press the **Enter** key. When enabled, the screensaver automatically starts 10 minutes after there is no key operation. To release the screensaver, press any key.
8. Select [Window Color] then press the **Enter** key.

```

Window Color Setup
-----
Select Preset 1 2 3
Load Default
-----
Edit Color
Window [ Base Window ]
Fore Color [ L-WHITE ]
Back Color [ BLUE ]
-----
To Change: ENTER To Change Value:L<=>R
  
```

9. Set the window colors as follows:
 - 1) [Select Preset] provides three pre-configured window color sets. Use one of these sets, or continue this procedure to customize window colors.

- 2) Select [Window]. Use ← or → key to select the window for which to select color.

Base Window: Standby display

RCV Message Display: Receive message display

EGC Message Display: EGC message display

EDIT1 - EDIT2: Editor screens 1 and 2

Function: Menu

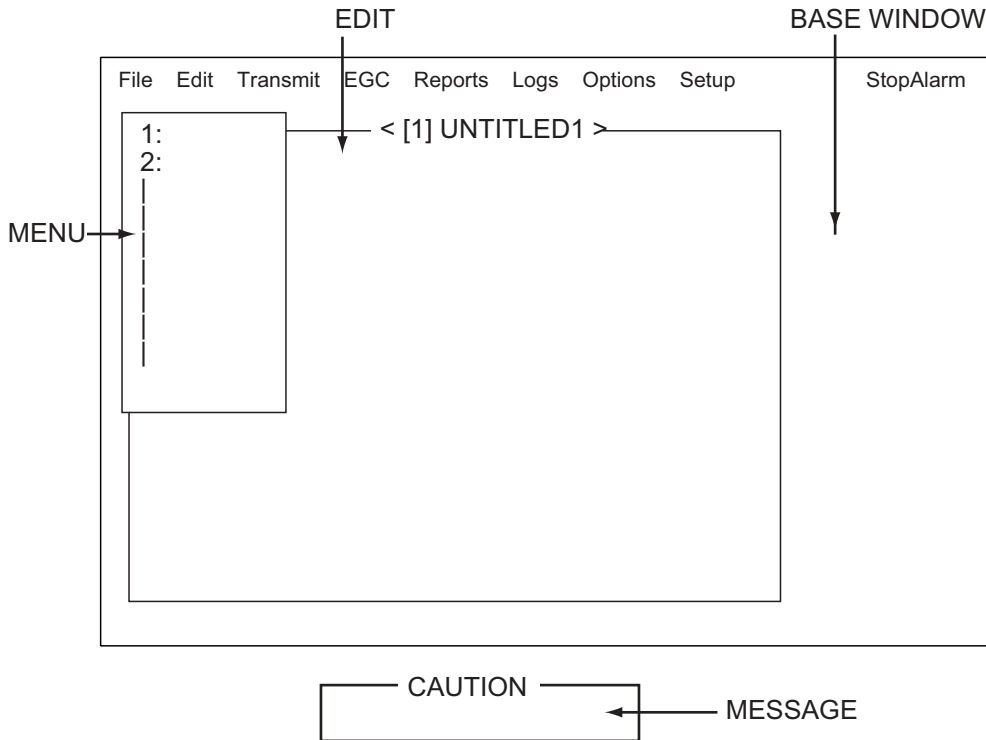
Sub Menu 1 - Sub Menu 4: Sub menus 1-4

Message: Status message

Preset No.	Window	Fore Color	Back Color
1	Base Window	L-WHITE	BLUE
	RCV Message Display	WHITE	BLACK
	EGC Message Display	WHITE	BLACK
	EDIT 1	BLACK	GREEN
	EDIT 2	MAGENTA	WHITE
	Function	BLACK	CYAN
	Sub Menu 1	BLACK	WHITE
	Sub Menu 2	BLUE	WHITE
	Sub Menu 3	L-WHITE	BLACK
	Sub Menu 4	WHITE	BLACK
Message	WHITE	MAGENTA	
2	Base Window	BLACK	L-WHITE
	RCV Message Display	BLACK	WHITE
	EGC Message Display	BLACK	WHITE
	EDIT 1	BLACK	WHITE
	EDIT 2	BLACK	L-CYAN
	Function	BLACK	WHITE
	Sub Menu 1	BLUE	L-WHITE
	Sub Menu 2	BLUE	WHITE
	Sub Menu 3	L-WHITE	BLUE
	Sub Menu 4	WHITE	BLACK
Message	L-WHITE	BLUE	

3. INITIAL SETTINGS

Preset No.	Window	Fore Color	Back Color
3	Base Window	L-WHITE	BLACK
	RCV Message Display	BLACK	GRAY
	EGC Message Display	BLACK	GRAY
	EDIT 1	BLACK	GRAY
	EDIT 2	WHITE	BLUE
	Function	L-WHITE	BLACK
	Sub Menu 1	L-CYAN	BLACK
	Sub Menu 2	L-GREEN	BLACK
	Sub Menu 3	L-MAGENTA	BLACK
	Sub Menu 4	WHITE	BLACK
	Message	WHITE	BLUE



- 3) Select [Fore Color].
- 4) Use ← or → key to select a color.
- 5) Select [Back Color].
- 6) Use ← or → key to select a color.
- 7) To select colors for other windows repeat steps 2)-6).
10. Press the **Enter** key to show the [Update] window.
11. [Yes] is selected; press the **Enter** key.

12. Select [Window Size] then press the **Enter** key to select window size. Otherwise, skip to step 13.
 - 1) Select [Normal] or [Large] as appropriate.
 [Normal]: 800(H)×600(V) (mm)
 [Large]: 1200(H)×900(V) (mm)
 - 2) If you changed the size, the message "Please Restart." appears. Exit the PC terminal and restart the terminal to reflect the change.
13. Press the **Esc** key several times to return to the standby display.

To restore all default color settings, select [Window Color] from the [Terminal Setup] menu, select [Load Default], press the **Enter** key then press the **Enter** key again.

3.6 How to Set the Russian Language

Do the following to create a message in Russian.

1. Press the **F8** and **1** keys to show the [System Setup] menu.
2. Press ↓ to select [Command Window], and then press the **Enter** key.
3. Type "RUSSIAN ON" in the [Enter JOB No.:], then press the **Enter** key.
 The language is switched to Russian and the message "Russian supported." appears at the bottom of the standby display.
 To restore the previously used language, type "RUSSIAN OFF" in the [Enter JOB No.:], then press the **Enter** key. "Russian supported." disappears from the screen.



4. Switch the language to Russian on your PC.
 See your PC's owner's manual for how to switch languages.

3.7 How to Use the Paper Save Function

The Paper Save function allows you to choose whether to print the “Successful Data Report Sending” confirmation after a data report is sent.

1. Press the **F8** and **1** keys to show the [System Setup] menu.
2. Press ↓ to select [Command Window], and then press the **Enter** key.
3. At the [Enter JOB No.:] prompt, type "Paper Save", then press the **Enter** key. A message is displayed showing the status of the Paper Save function (ON or OFF).
4. To change the setting, type "Paper Save ON" (No report is printed) or "Paper Save OFF" (Report is printed), as appropriate, then press the **Enter** key.

3.8 How to Output EGC Messages

The FELCOM can output EGC messages, via its LAN port. The output messages are SM1, SM2, SM3, SM4, and SMB.

4. HOW TO INSTALL OPTIONAL EQUIPMENT

The optional waterproofing kits OP16-58 and OP16-61 are used to protect the connectors on the communication unit from water splash. Note that these optional kits should be used as a couple.

4.1 Waterproofing Kit OP16-61 (for IC-219)

Note: To maintain the waterproofing, the unit must be installed on a bulkhead or wall, with the cable entry facing downwards. Further, the optional kit does not provide waterproofing if the unit is installed with the cable entry facing upwards.

Connect the waterproofed D-sub cables to the rear of the communication unit, instead of the standard supply cable.

OP16-58 (Code No.: 001-180-070)

Name	Type	Code No.	Qty	Remarks
Cable Assy.	H230817-1	001-176-552-10	1	Not used.
	H230817-2	000-176-553-10	1	Not used.
	XM-FD-361	000-176-551-10	1	For connection with IC-318

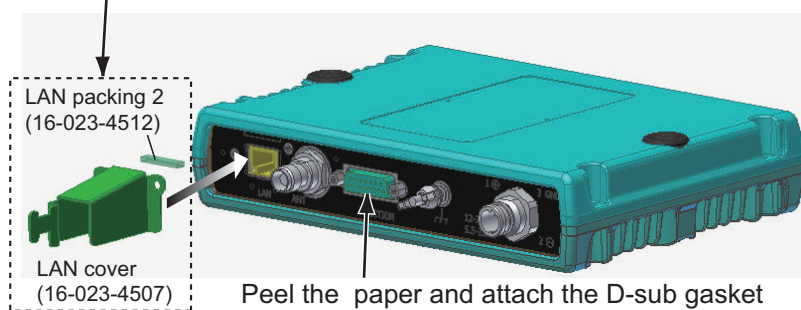
OP16-61 (Code No.: 001-180-110)

Name	Type	Code No.	Qty
Binding Screw	#4-4OUNCX3/16	000-176-619-10	2
Dsub Cover	16-023-4532	100-373-520-10	1
D-sub Gasket	16-023-4513	100-368-120-10	1
LAN Packing 2	16-023-4512	100-368-110-10	1
LAN Waterproof Plate	16-023-4531	100-368-180-10	1
IP22 label	16-023-4547	100-136-850-10	1

4. HOW TO INSTALL OPTIONAL EQUIPMENT

Cables connected

1. Unfasten two binding screws to detach the LAN cover from the communication unit.
2. Peel the paper and attach the LAN packing 2 (supplied with OP16-61) to the communication unit.
3. Re-attach the LAN cover.

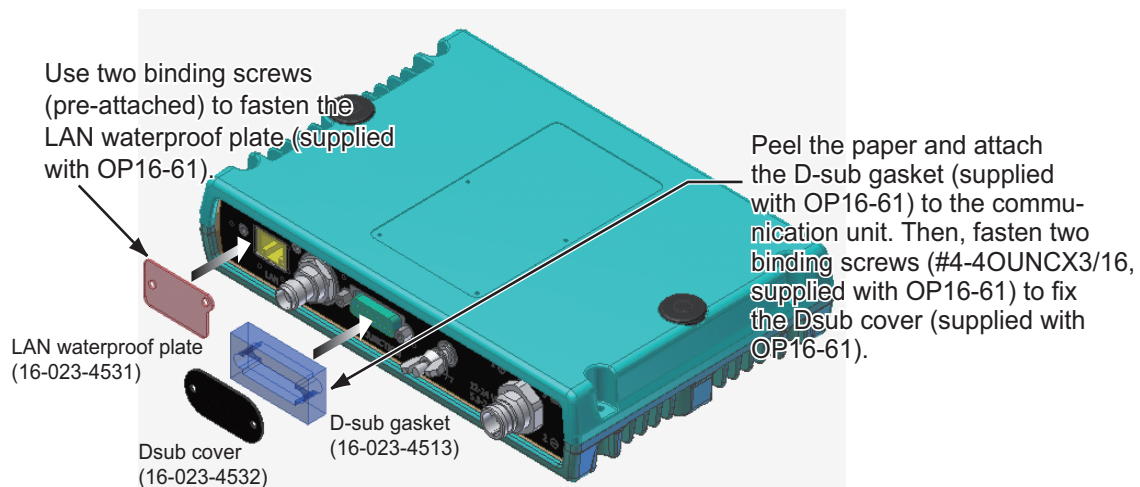


Peel the paper and attach the D-sub gasket (supplied with OP16-61) to the communication unit. Then, connect the waterproofing cable XM-FD-361 (supplied with OP16-58) to connect with the IC-318.

Attach the IP22 label near the nameplate of the IC-219.

Note: The IP22 rating is achieved only when using the OP16-58 cable assembly. Do not attach the IP22 label when OP16-58 is not used.

No cables connected



Use two binding screws (pre-attached) to fasten the LAN waterproof plate (supplied with OP16-61).

Peel the paper and attach the D-sub gasket (supplied with OP16-61) to the communication unit. Then, fasten two binding screws (#4-4OUNCX3/16, supplied with OP16-61) to fix the Dsub cover (supplied with OP16-61).

Attach the IP22 label near the nameplate of the IC-219.

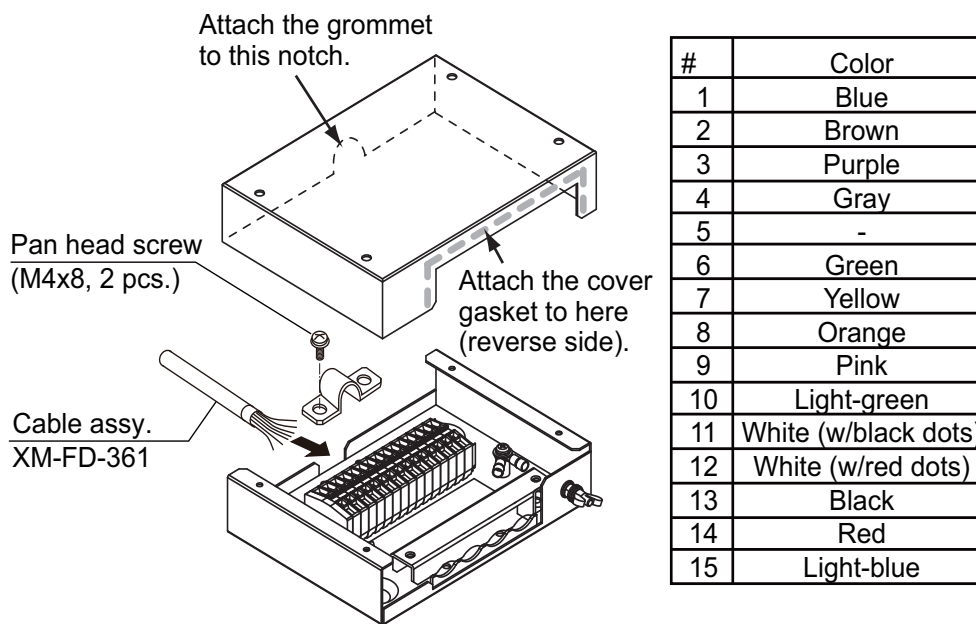
4.2 Waterproofing Kit OP16-60 (for IC-318)

The IC-318 should be installed on a desktop. To ensure the waterproof rating is maintained, use the optional waterproofing kit OP16-60. If a floor installation is required, make sure the area is not subject to water splash, rain or other water ingress.

OP16-60 (Code No.: 001-180-090)

Name	Type	Code No.	Qty
Cover gasket	16-023-5502	100-373-530-10	1
Grommet	16-023-5503	100-373-541-10	1
IP22 label	16-023-4547	100-436-850-10	1

1. Unfasten four screws to remove the cover of IC-318.
2. Attach the grommet to the notch.
3. Attach the cover gasket to the cable entry.
4. Replace the cable assembly with the waterproof XM-FD-361.
5. Attach the cover with four screws.



6. Attach the IP22 label near the nameplate of the IC-318.

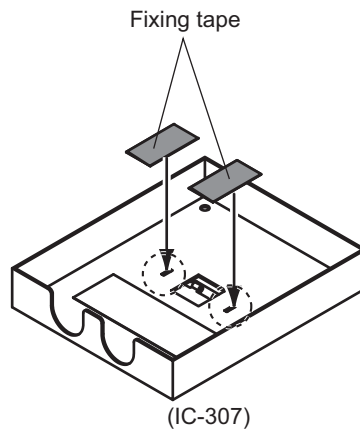
4.3 Waterproofing Kit OP16-68 (for IC-307)

Note: To maintain the waterproofing, the unit must be installed on a bulkhead or wall, with the cable entry facing downwards. Further, the optional kit does not provide waterproofing if the unit is installed with the cable entry facing upwards.

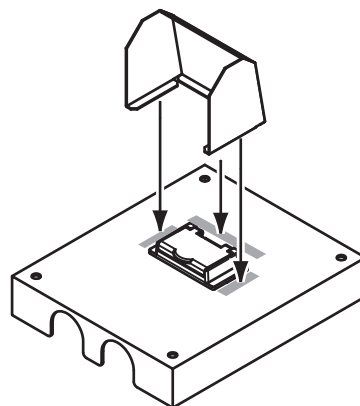
OP16-68 (Code No.: 001-189-400)

Name	Type	Code No.	Qty
Water proofing Cover	16-023-5501	100-374-950-10	1
Fixing Tape	24-009-1225	100-368-200-10	2
IP22 label	16-023-4547	100-436-850-10	1

1. Unfasten four screws to remove the cover of IC-307.
2. Attach supplied fixing tape to the underside of the cover as shown in the illustration below.



3. Attach the cover.
4. Remove the paper from the waterproofing cover and attach the cover as shown in the illustration below.

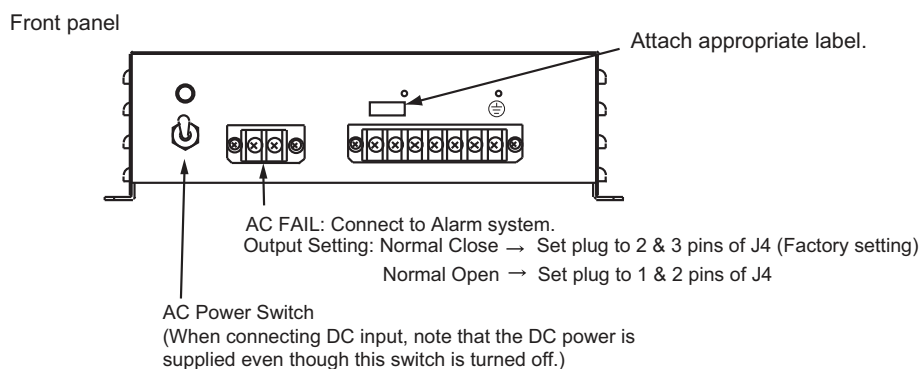
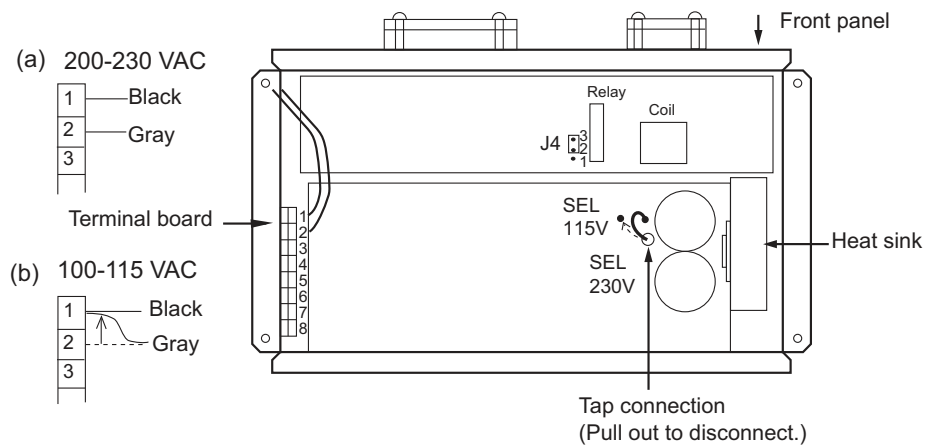
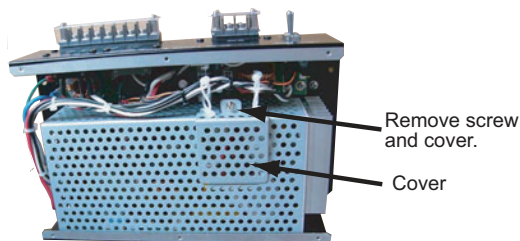


5. Attach the IP22 label near the nameplate of the IC-307.

5. HOW TO CHANGE POWER SUPPLY SPECIFICATIONS

The AC-DC power supply PR-240 is shipped ready for connection to a 200-230 VAC ship's mains. If the ship's mains is 100 VAC, change the tap connection and terminal board connection as below. Attach a label supplied as accessories to the front panel according to the ship's mains.

Ship's mains	Tap connection	Terminal board	Label
200 to 230 VAC	SEL 230 V	Below (a)	200-230 VAC, 2.2-1.7 A, 1 ϕ 50/60 Hz
100 to 115 VAC	SEL 115 V	Below (b)	100-115 VAC, 3.2-2.6 A, 1 ϕ 50/60 Hz



Note: The DC output load must be less than 8 A.

5. HOW TO CHANGE POWER SUPPLY SPECIFICATIONS

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APPENDIX 1 JIS CABLE GUIDE

Cables listed in the manual are usually shown as Japanese Industrial Standard (JIS). Use the following guide to locate an equivalent cable locally.

JIS cable names may have up to 6 alphabetical characters, followed by a dash and a numerical value (example: DPYC-2.5).

For core types D and T, the numerical designation indicates the *cross-sectional Area (mm²)* of the core wire(s) in the cable.

For core types M and TT, the numerical designation indicates the *number of core wires* in the cable.

1. Core Type

D: Double core power line
 T: Triple core power line
 M: Multi core
 TT: Twisted pair communications
 (1Q=quad cable)

2. Insulation Type

P: Ethylene Propylene Rubber

3. Sheath Type

Y: PVC (Vinyl)

4. Armor Type

C: Steel

5. Sheath Type

Y: Anticorrosive vinyl sheath

6. Shielding Type

S: All cores in one sheath
 -S: Individually sheathed cores
 SLA: All cores in one shield, plastic tape w/aluminum tape
 -SLA: Individually shielded cores, plastic tape w/aluminum tape



EX: ^{1 2 3 4 5 6} **TTYCYSLA - 4**
 Designation type | Core Area (mm²)

EX: ^{1 2 3 4} **MPYC - 4**
 Designation type | # of cores

The following reference table lists gives the measurements of JIS cables commonly used with Furuno products:

Type	Core Area	Core Diameter	Cable Diameter	Type	Core Area	Core Diameter	Cable Diameter
DPYC-1.5	1.5mm ²	1.56mm	11.7mm	TTYCS-1	0.75mm ²	1.11mm	10.1mm
DPYC-2.5	2.5mm ²	2.01mm	12.8mm	TTYCS-1T	0.75mm ²	1.11mm	10.6mm
DPYC-4	4.0mm ²	2.55mm	13.9mm	TTYCS-1Q	0.75mm ²	1.11mm	11.3mm
DPYC-6	6.0mm ²	3.12mm	15.2mm	TTYCS-4	0.75mm ²	1.11mm	16.3mm
DPYC-10	10.0mm ²	4.05mm	17.1mm	TTYCSLA-1	0.75mm ²	1.11mm	9.4mm
DPYCY-1.5	1.5mm ²	1.56mm	13.7mm	TTYCSLA-1T	0.75mm ²	1.11mm	10.1mm
DPYCY-2.5	2.5mm ²	2.01mm	14.8mm	TTYCSLA-1Q	0.75mm ²	1.11mm	10.8mm
DPYCY-4	4.0mm ²	2.55mm	15.9mm	TTYCSLA-4	0.75mm ²	1.11mm	15.7mm
MPYC-2	1.0mm ²	1.29mm	10.0mm	TTYCY-1	0.75mm ²	1.11mm	11.0mm
MPYC-4	1.0mm ²	1.29mm	11.2mm	TTYCY-1T	0.75mm ²	1.11mm	11.7mm
MPYC-7	1.0mm ²	1.29mm	13.2mm	TTYCY-1Q	0.75mm ²	1.11mm	12.6mm
MPYC-12	1.0mm ²	1.29mm	16.8mm	TTYCY-4	0.75mm ²	1.11mm	17.7mm
TPYC-1.5	1.5mm ²	1.56mm	12.5mm	TTYCY-4S	0.75mm ²	1.11mm	21.1mm
TPYC-2.5	2.5mm ²	2.01mm	13.5mm	TTYCY-4SLA	0.75mm ²	1.11mm	19.5mm
TPYC-4	4.0mm ²	2.55mm	14.7mm	TTYCYS-1	0.75mm ²	1.11mm	12.1mm
TPYCY-1.5	1.5mm ²	1.56mm	14.5mm	TTYCYS-4	0.75mm ²	1.11mm	18.5mm
TPYCY-2.5	2.5mm ²	2.01mm	15.5mm	TTYCYSLA-1	0.75mm ²	1.11mm	11.2mm
TPYCY-4	4.0mm ²	2.55mm	16.9mm	TTYCYSLA-4	0.75mm ²	1.11mm	17.9mm

PACKING LIST IC-219-J , IC-219-E

16AW-X-9851-5

1/1

NAME	OUTLINE	DESCRIPTION/CODE	Q'TY
ユニット			
通信制御ユニット COMMUNICATION UNIT		IC-219- * 000-020-969-00 **	1
予備品			
予備品		SP16-01401	1
SPARE PARTS		004-439-530-00	
付属品			
CD-R		16-5-0241	1
CD-R		001-180-000-00	
工事材料			
工事材料		CP16-05301	1
INSTALLATION MATERIALS		001-179-990-00	
図書			
ア® リケーションフォーム REGISTRATION FOR SERVICE ACTIVATION		J59-50010- * 7/I1 000-807-330-1*	1
テスト® 操作手順 SSAS TEST MODE HANDBOOK		C52-01502- * 000-191-063-1*	1
ヒューズ 変更のお願い NOTIFICATION DOCUMENT		C52-00206- * 7/I1 000-147-004-1*	1

1.コード番号末尾の[*]は、選択品の代表コードを表します。

CODE NUMBER ENDING WITH "*" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL.

2.(*1)の書類は、英文仕様専用です。

(*1) MARKED DOCUMENTS ARE FOR ENGLISH SET ONLY.

(略図の寸法は、参考値です。DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

NAME	OUTLINE	DESCRIPTION/CODE	Q'TY
取扱説明書(英) OPERATOR'S MANUAL (EN)		OME-56351- * 000-150-359-1*	1 (*1)
取扱説明書(英) OPERATOR'S MANUAL (EN)		OME-56750- * 000-176-514-1*	1 (*1)
取扱説明書(和) OPERATOR'S MANUAL (JP)		OMJ-56351- * 000-150-358-1*	1 (*2)
取扱説明書(和) OPERATOR'S MANUAL (JP)		OMJ-56750- * 000-176-513-1*	1 (*2)
操作要領書(英) OPERATOR'S GUIDE (EN)		OSE-56750- * 000-176-515-1*	1 (*1)
装備要領書(英) INSTALLATION MANUAL (EN)		IME-56750- * 000-176-517-1*	1 (*1)
装備要領書(和) INSTALLATION MANUAL (JP)		IMJ-56750- * 000-176-516-1*	1 (*2)

3.(*2)の書類は、和文仕様専用です。

(*2) MARKED DOCUMENTS ARE FOR JAPANESE SET ONLY.

A-1

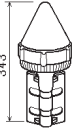

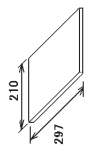
C5675-Z02-F

PACKING LIST

16AV-X-9870 -1 1/1

IC-119

A-2

NAME	UNIT	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット アンテナユニット	UNIT		IC-119 000-020-945-00	1
付属品 ACCESSORIES	ACCESSORIES		FP16-02501 001-175-970-00	1
図書 アンテナ交換方法	DOCUMENT		TIC-56351-* 000-173-370-1*	1

型式/コート番号が2段の場合、下段より上段に代わる過渡期品であり、どちらが入っています。なお、品質は変わりません。
TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.
(略図の寸法は、参考値です。DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

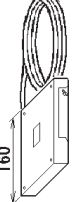

C5675-Z01-B

PACKING LIST

16AV-X-9854 -0 1/1

IC-318

A-3

NAME	UNIT	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット 接続箱	UNIT		IC-318 000-020-971-00	1
工事材料 INSTALLATION MATERIALS	INSTALLATION MATERIALS		CP16-05101 001-180-020-00	1

型式/コート番号が2段の場合、下段より上段に代わる過渡期品であり、どちらが入っています。なお、品質は変わりません。
TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.
(略図の寸法は、参考値です。DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

C5674-Z05-A

CODE NO.	001-189-580-00	16AW-X-9404-3	1/1
TYPE	CP16-05511		

工事材料表

番号 NO.	名称 NAME	略図 OUTLINE	型名/規格 DESCRIPTIONS	数量 QTY	用途/備考 REMARKS
1	ケーブル CABLE TIE		CP-450B CODE NO. 000-173-169-10	5	アンテナケーブルの固定用 For securing the antenna cable
2	ケーブル結束テープ SELF-BONDING TAPE		NO.15 CODE NO. 000-174-646-10	1	
3	ケーブル組品 CABLE ASSY.		RM-4747 CODE NO. 000-566-000-12	1	

(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

FURUNO ELECTRIC CO., LTD.

CODE NO.	001-179-990-00	16AW-X-9401-2	1/1
TYPE	CP16-05301		

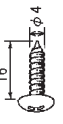
工事材料表

番号 NO.	名称 NAME	略図 OUTLINE	型名/規格 DESCRIPTIONS	数量 QTY	用途/備考 REMARKS
1	フェースラベル FUSE LABEL		03-153-1312-0 R0MS CODE NO. 100-292-140-10	1	
2	銅板 COPPER STRAP		05-003-0031-0 R0MS CODE NO. 590-300-310-10	1	
3	LANカバー LAN COVER		16-023-4507-0 CODE NO. 100-368-000-10	1	
4	セルフタッピングネジ SELF-TAPPING SCREW		4X40 SUS304 CODE NO. 000-162-606-10	2	
5	ケーブル結束 CABLE TIE		CY-100N CODE NO. 000-162-167-10	3	
6	ガラス管ヒューズ GLASS TUBE FUSE		F680-A 125V 5A PBF CODE NO. 000-155-853-10	1	
7	ケーブル組品 CABLE ASSY.		MU-A38PF0016-035C CODE NO. 000-154-024-11	1	
8	ケーブル用ゴムネット GROMMET		TM-MG-15 CODE NO. 000-166-458-10	2	

(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

FURUNO ELECTRIC CO., LTD.

FURUNO

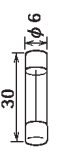
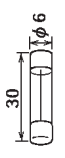
CODE NO.			16AV-X-9401-0			1/1
TYPE			CP16-05101			
工事材料表						
INSTALLATION MATERIALS						
番号 NO.	名称 NAME	略図 OUTLINE	型名/規格 DESCRIPTIONS	数量 QTY	用途/備考 REMARKS	
1	付ネジ SELF TAPPING SCREW		4X16 SUB304 CODE NO. 000-102-005-10	4		

型式/コード番号が2段の場合、下段より上段に代わる過渡部品であり、どちらかが入っています。なお、品質は変わりません。
 TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT.
 QUALITY IS THE SAME. DIMENSIONS IN DRAWING FOR REFERENCE ONLY.
 (略図の寸法は、参考値です。)

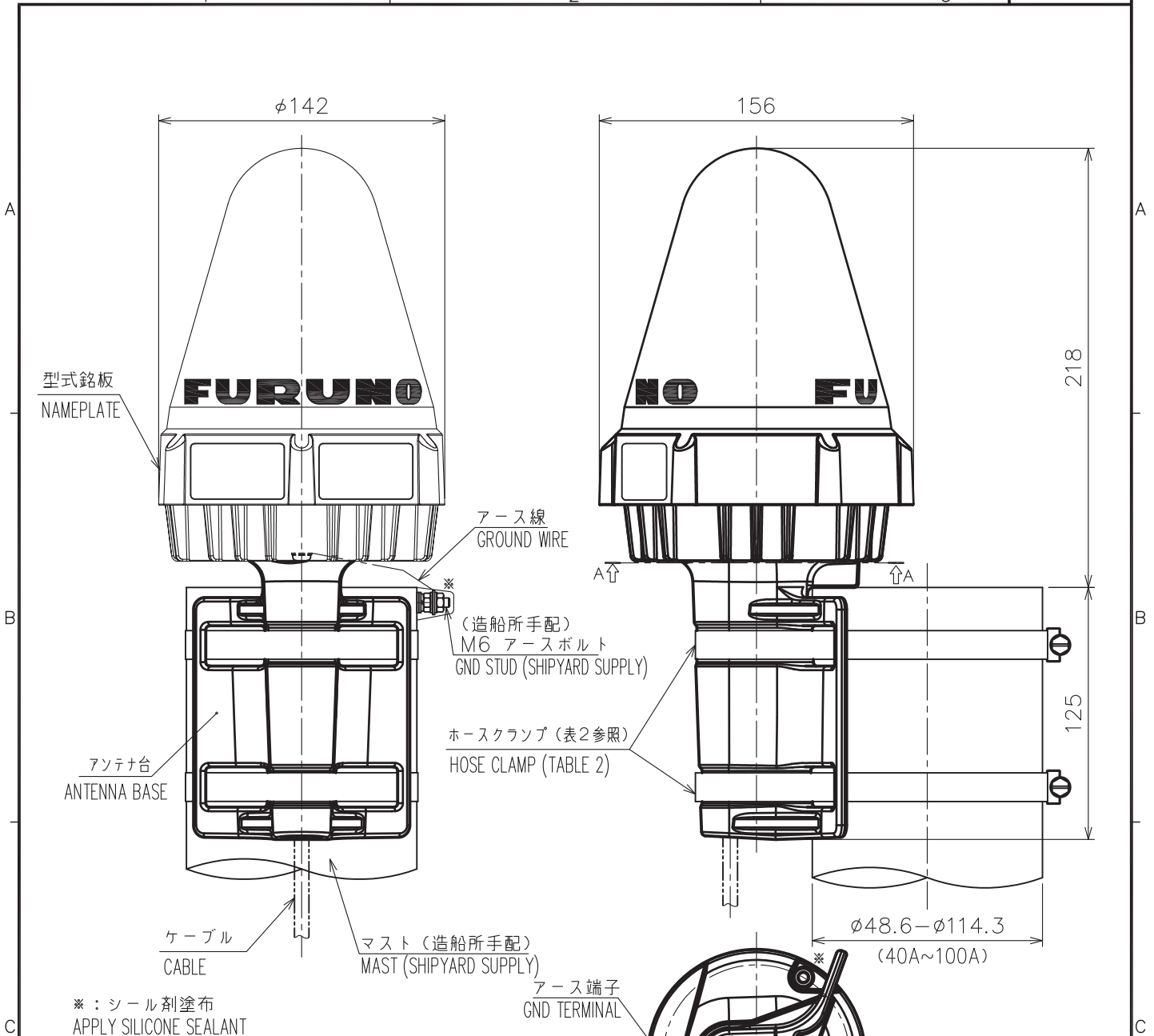
FURUNO ELECTRIC CO., LTD.

C5674-M03-A

FURUNO

CODE NO.			004-439-530-00			16AK-X-9302-5			1/1		
TYPE			SP16-01401			BOX NO. P					
SHIP NO.				SPARE PARTS LIST FOR				U S E			SETS PER VESSEL
ITEM NO.	NAME OF PART	OUTLINE	DWG. NO. OR TYPE NO.	QUANTITY		REMARKS/CODE NO.					
				WORKING PER SET	SPARE PER VES						
1	ガラス管 GLASS TUBE FUSE		FB90-A 125V 5A PBF	1	1	000-155-853-10					
2	ガラス管 GLASS TUBE FUSE		FB90-A 125V 10A PBF	1	1	000-155-826-10					
MFR'S NAME	FURUNO ELECTRIC CO., LTD.			DWG NO.	C5635-P02-F		1/1				

(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)



※：シール剤塗布
APPLY SILICONE SEALANT

表2 ホースクランプ (オプション)
TABLE 2 HOSE CLAMP (OPTION)

TYPE	MODEL	CODE No.	DIA. OF MAST
77-95	OP16-76-1	001443450	$\phi 48.6$ (40A)
104-138	OP16-76-2	001443460	$\phi 76.3 - 89.1$ (65A-80A)
130-165	OP16-76-3	001443470	$\phi 101.6 - 114.3$ (90A-100A)

表1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
$L \leq 50$	± 1.5
$50 < L \leq 100$	± 2.5
$100 < L \leq 500$	± 3

注記 1) 指定外の寸法公差は表1による。
2) 対応マスト径は40A ($\phi 48.6$) ~100A ($\phi 114.3$)

NOTE 1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
2. MAST DIAMETER: 40A ($\phi 48.6$) TO 100A ($\phi 114.3$)

DRAWN	15/Feb/2016 T.YAMASAKI	TITLE	IC-115/116/118/119	
CHECKED	16/Feb/2016 H.MAKI	名称	アンテナユニット	
APPROVED	22/Feb/2016 H.MAKI		外寸図	
SCALE	1/3	MASS	1.9 $\pm 10\%$ kg	
DWG.No.	C5674-G05-E	質量は工材を含む MASS INCLUDES INSTALLATION MATERIALS	NAME	ANTENNA UNIT
		REF.No.	16-023-254G-1	OUTLINE DRAWING

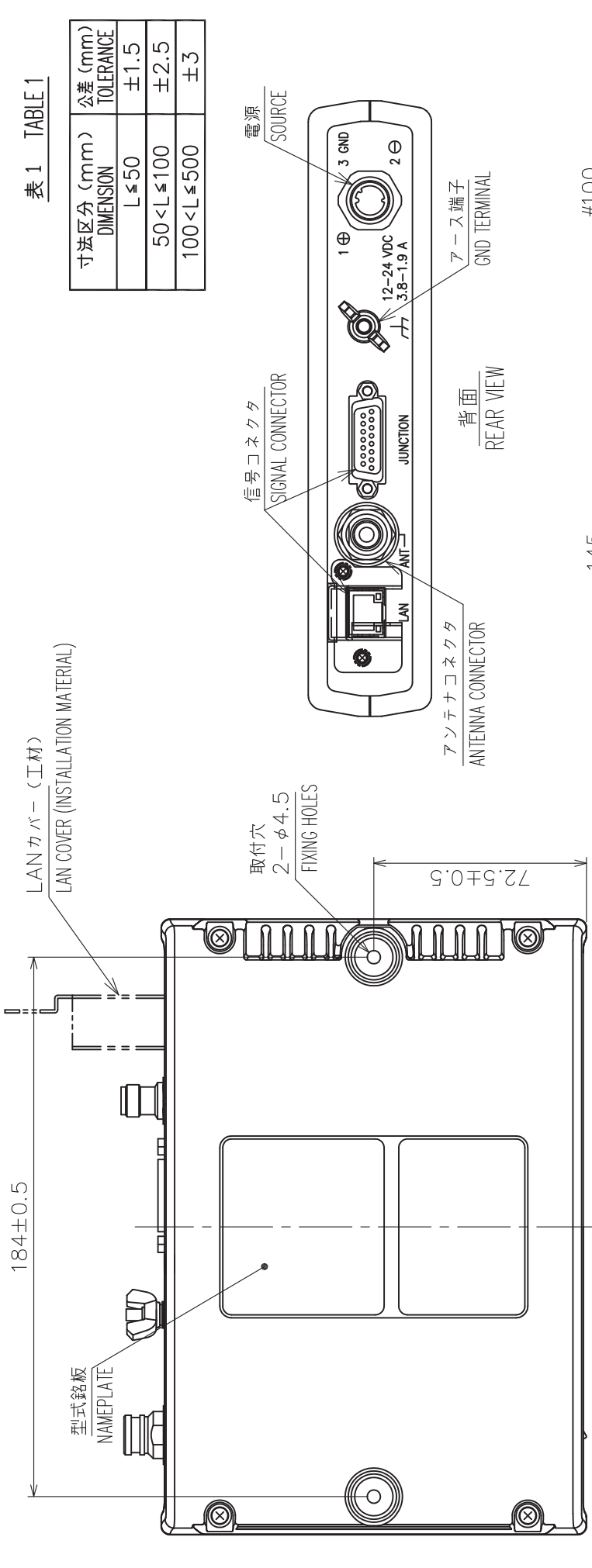
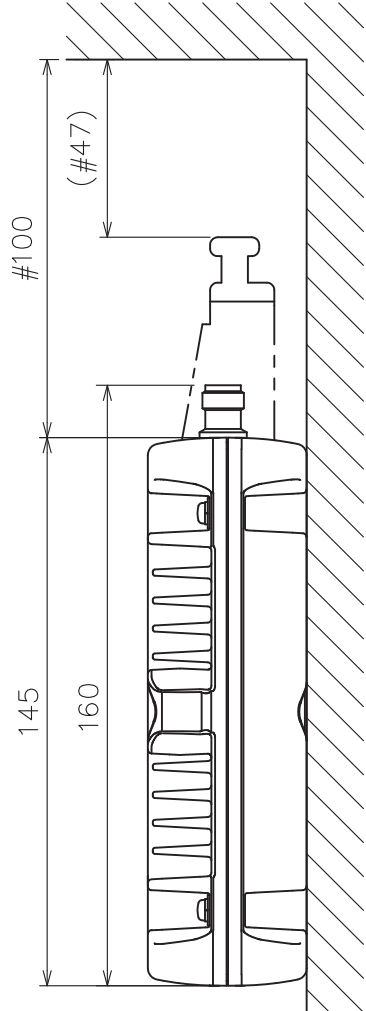


表 1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
L ≤ 50	±1.5
50 < L ≤ 100	±2.5
100 < L ≤ 500	±3



注 記

- 1) 指定外の寸法公差は表 1 による。
- 2) # 印寸法は最小サービスクリアランスとする。
- 3) 取付用ネジは M4 ボルト、または + トラスタップピンネジ呼び径 4 × 4.0 を使用のこと。

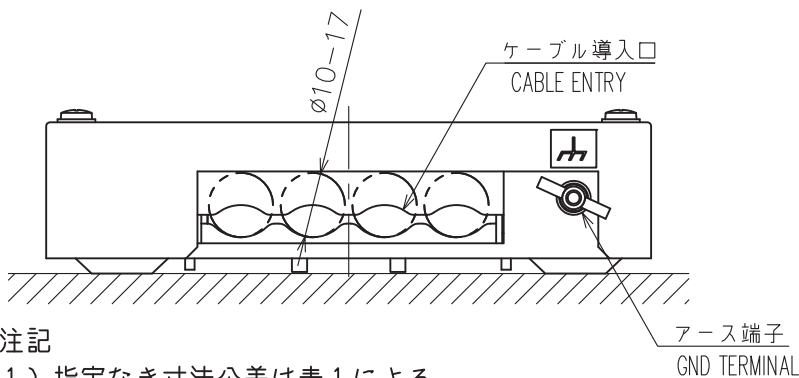
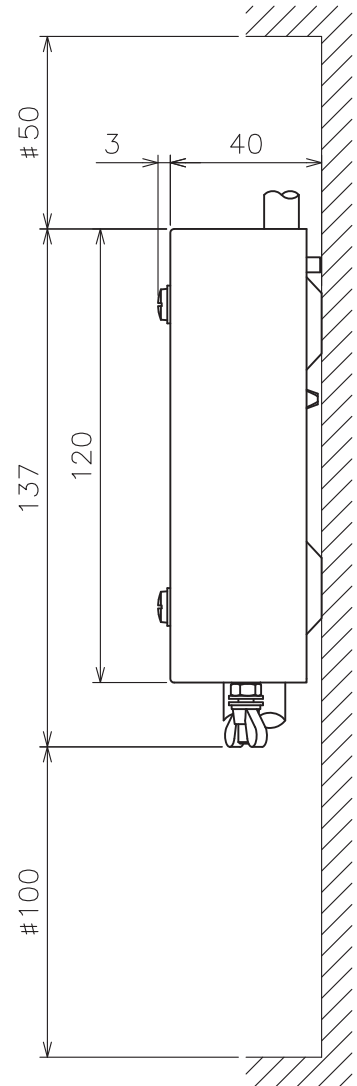
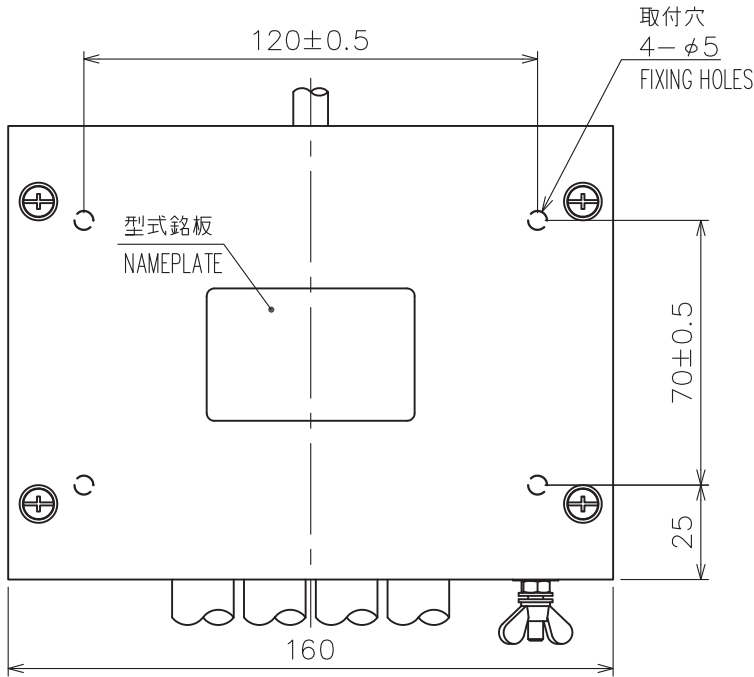
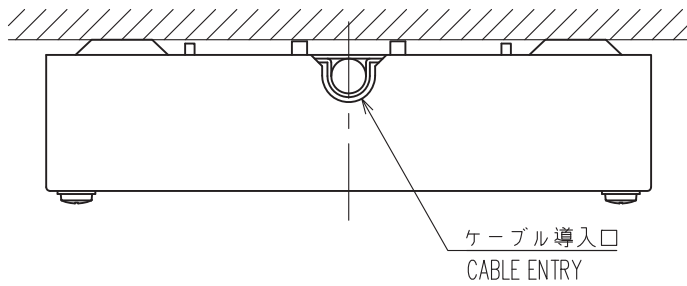
NOTE

1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
2. # : MINIMUM SERVICE CLEARANCE.
3. USE M4 BOLTS OR TAPPING SCREWS φ4x4.0 FOR FIXING THE UNIT.

DRAWN	18/Jan/2012	T. YAMASAKI	TITLE	IC-219
CHECKED	18/Jan/2012	H. MAKI	名称	通信制御ユニット
APPROVED	19/Jan/2012	Y. NISHIYAMA	外寸図	
SCALE	1/2	1/MS 1.2	NAME	COMMUNICATION UNIT
DWG.No.	C5675-G01-A	REF.No.	16-023-450G-2	OUTLINE DRAWING

表1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
$L \leq 50$	± 1.5
$50 < L \leq 100$	± 2.5
$100 < L \leq 500$	± 3



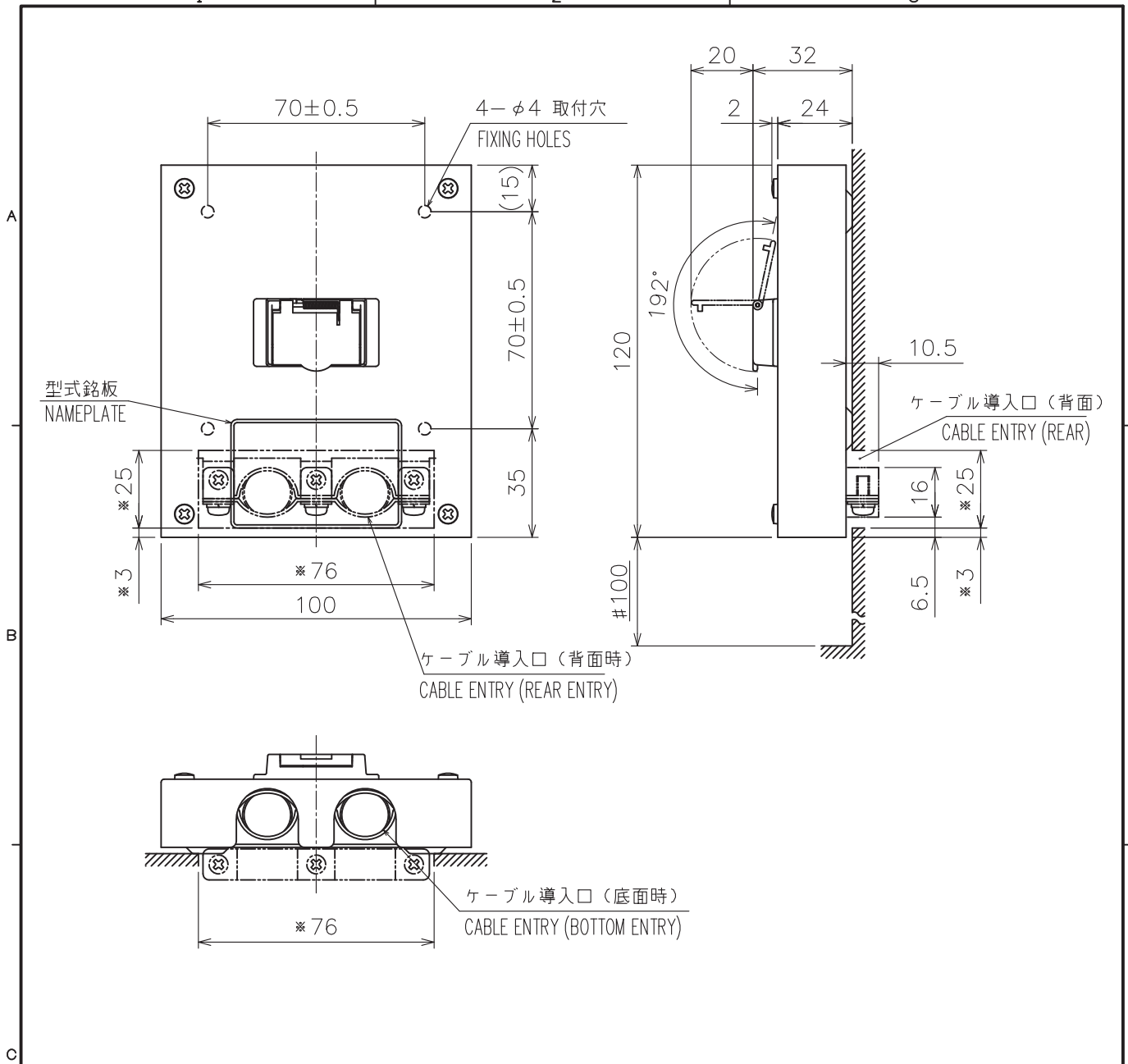
注記

- 1) 指定なき寸法公差は表1による。
- 2) #印寸法は、最小サービス空間寸法とする。
- 3) 取付にはトラスタップネジ呼び径4×16を使用のこと。

NOTE

1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
2. #: MINIMUM SERVICE CLEARANCE.
3. USE TAPPING SCREWS $\phi 4 \times 16$ FOR FIXING THE UNIT.

DRAWN	17/May/2012 T.YAMASAKI	TITLE	IC-318
CHECKED	17/May/2012 H.MAKI	名称	接続箱
APPROVED	17/May/2012 Y.NISHIYAMA	FELCOM 18/19	外寸図
SCALE	1/2	MASS 0.7 ±10% kg	質量はケーブルを含まず。 MASS DOES NOT INCLUDE CABLE.
DWG. No.	C5674-G03-B	REF. No.	16-023-550G-1
		NAME	JUNCTION BOX
			OUTLINE DRAWING



注記

- 1) 指定外の寸法公差は表1による。
- 2) #印寸法は最小サービス空間寸法とする。
- 3) 取付用ネジはタッピンネジ呼び径 3×10 を使用のこと。
- 4) *印寸法は、ケーブルを背面から導入時に設ける穴の寸法

NOTE

1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
2. #: MINIMUM SERVICE CLEARANCE.
3. USE TAPPING SCREWS $\phi 3 \times 10$ FOR FIXING THE UNIT.
4. *: CUTOUT DIMENSIONS FOR REAR CABLE ENTRY.

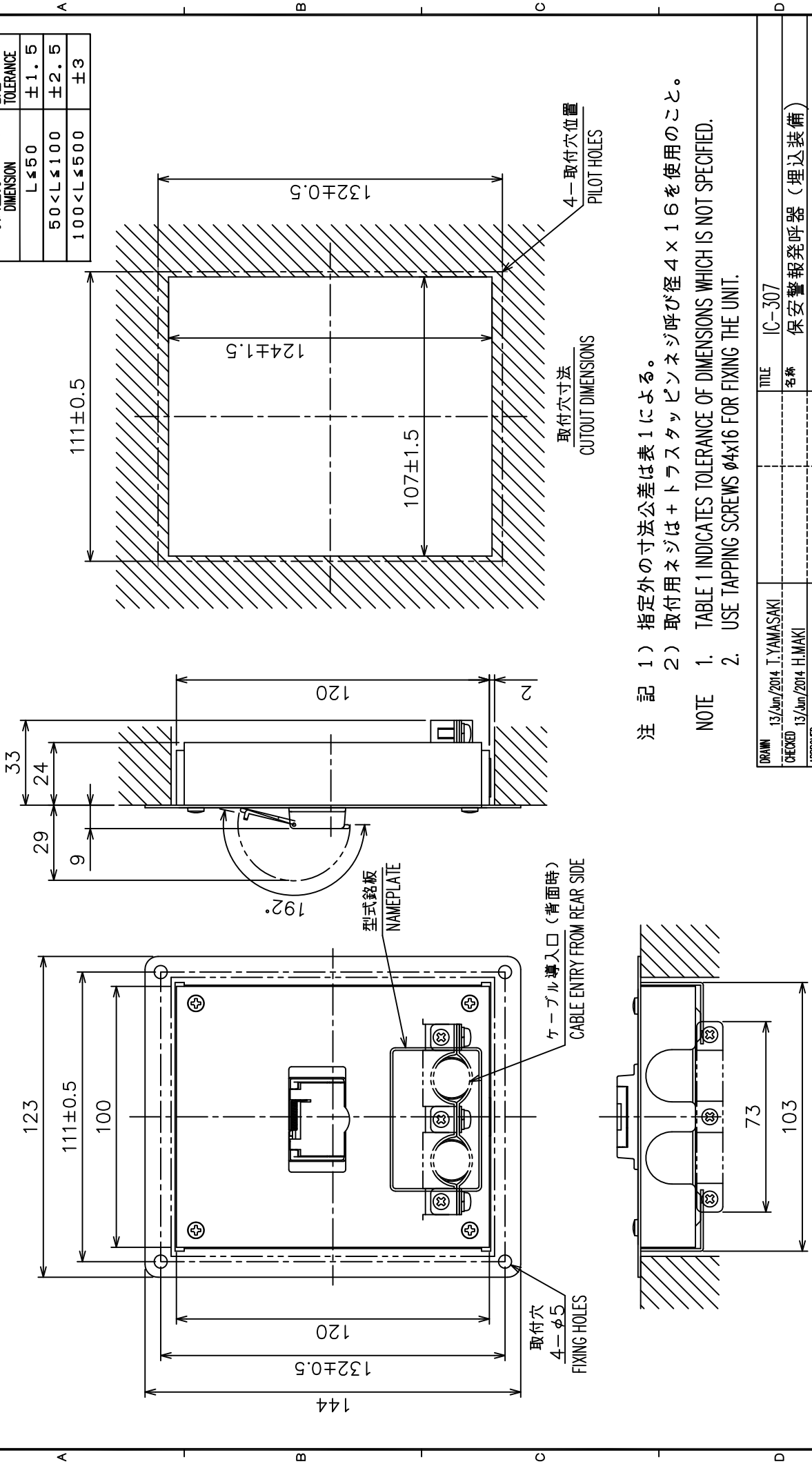
表1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
$L \leq 50$	± 1.5
$50 < L \leq 100$	± 2.5
$100 < L \leq 500$	± 3

DRAWN	5/Oct/2010 T.YAMASAKI	TITLE	IC-307
CHECKED	5/Oct/2010 T.TAKAHASHI	名称	保安警報発呼器 (壁掛装備)
APPROVED	6/Oct/2010 Y.NISHIYAMA	FELCOM	12/15/16
SCALE	1/2	MASS	$0.35 \pm 10\%$ kg
DWG.No.	C5635-G10-C	REF.No.	16-018-700G-3
		NAME	SSAS ALERT UNIT (BULKHEAD MOUNT)
		OUTLINE DRAWING	

表 1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
L ≤ 50	±1.5
50 < L ≤ 100	±2.5
100 < L ≤ 500	±3



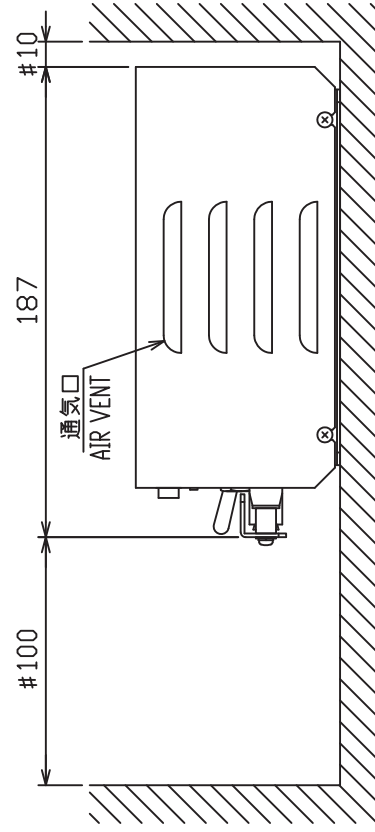
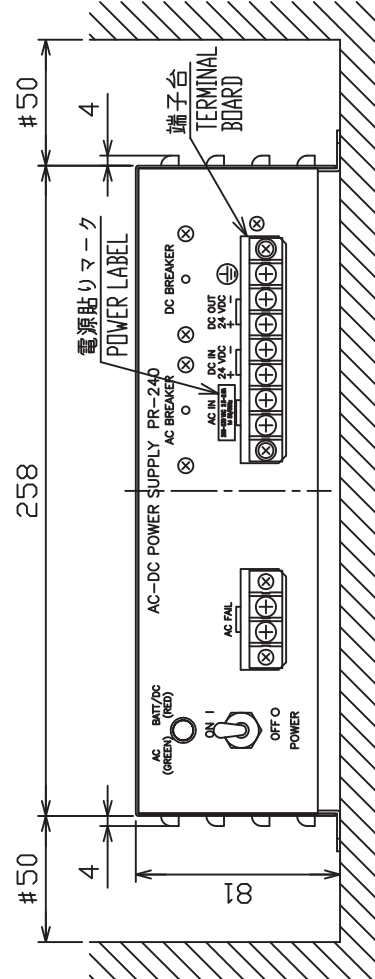
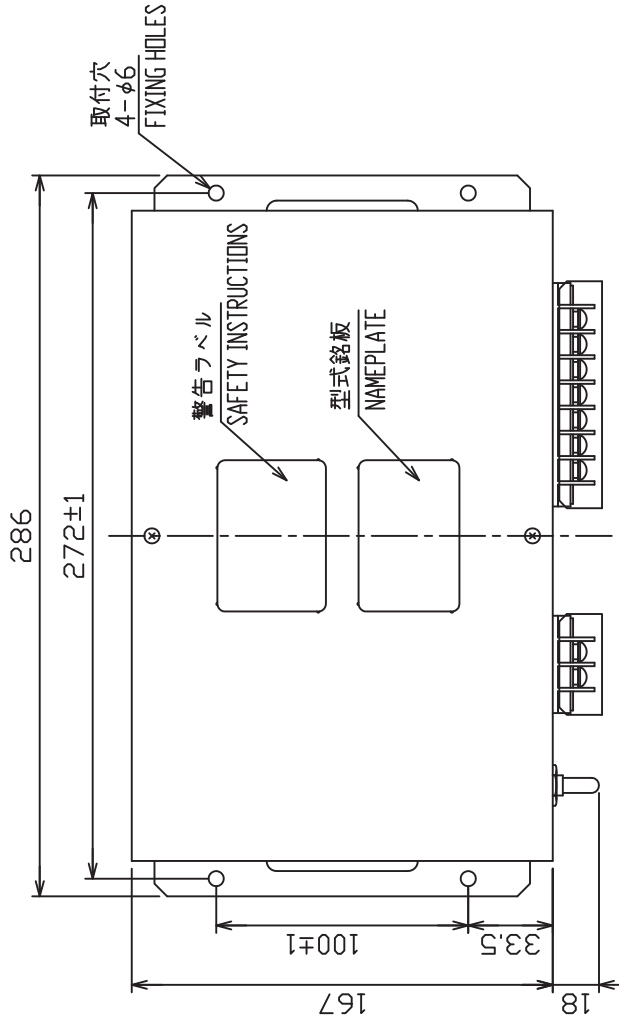
注 記 1) 指定外の寸法公差は表 1 による。
 2) 取付用ネジは +トラスチック呼び径 4 × 16 を使用のこと。

NOTE 1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
 2. USE TAPPING SCREWS φ4x16 FOR FIXING THE UNIT.

DRAWN	13/Jun/2014	I. YAMASAKI	TITLE	IC-307
CHECKED	13/Jun/2014	H. MAKI	名称	保安警報発呼器 (埋込装備)
APPROVED	16/Jun/2014	H. MAKI	外寸図	
SCALE	1/2	MASS 0.5 ±10%	NAME	SSAS ALERT UNIT (FLUSH MOUNT)
DWG. No.	C5635-G11-B	REF. No.	16-018-710G-1	OUTLINE DRAWING

表 1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
L ≤ 50	±1.5
50 < L ≤ 100	±2.5
100 < L ≤ 500	±3



- 注 記 1) 指定なき寸法公差は表 1 による。
 2) #印寸法は最小サービスマージン寸法とする。
 3) 取付用ネジは+トラスタックピンネジ 呼び径 4 × 1.6 を使用のこと。
- NOTE 1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
 2. # MINIMUM SERVICE CLEARANCE.
 3. USE TAPPING SCREWS φ4x1.6 FOR FIXING THE UNIT.

DRAWN	25/Sep/09 T.YAMASAKI	TITLE	PR-240
CHECKED	25/Sep/09 T.TAKENO	名称	AC/DC電源ユニット
APPROVED	26/Oct/09 R.Esumi	外寸図	
SCALE	1/3	NAME	AC/DC POWER SUPPLY UNIT
DWG No.	C5003-603-J	REF. No.	24-003-500G-4
			OUTLINE DRAWING

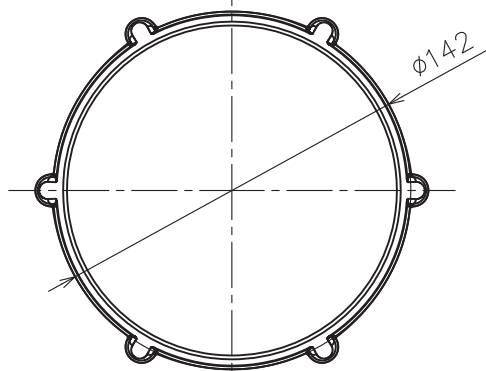


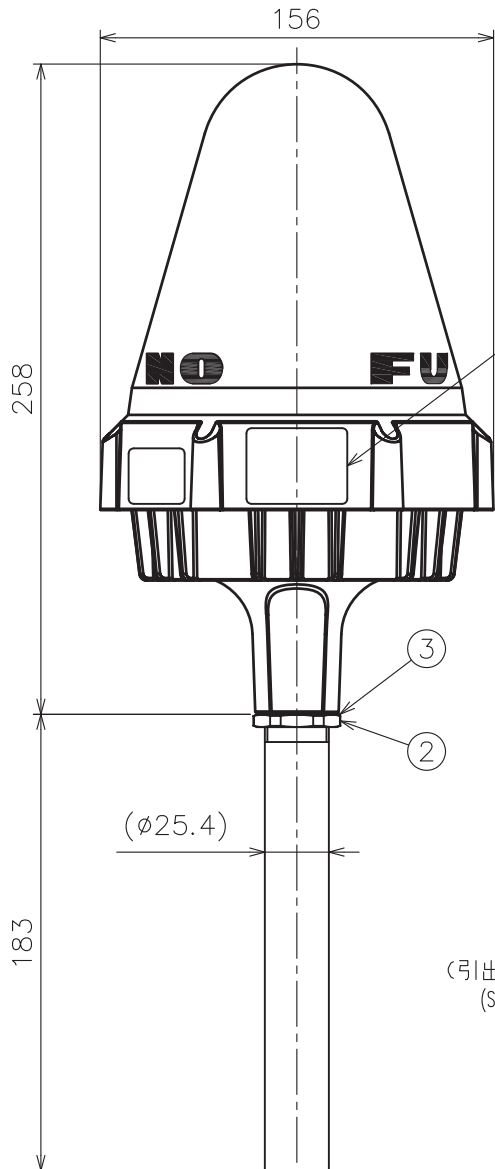
表2 工事材料

TABLE 2 INSTALLATION MATERIAL

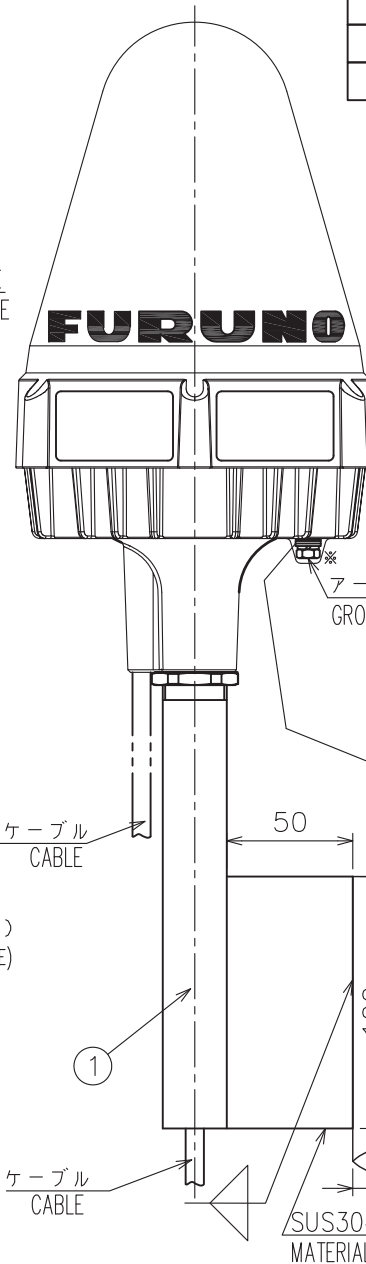
品番 ITEM	品名 NAME	図番 DWG. No.	摘要 REMARK
1	アンテナ取付パイプ ANTENNA MOUNTING PIPE	16-018-1301	0.3 kg APPROX.
2	ロックナット LOCK NUT	16-023-2518	
3	ナットシート NUT SHEET	16-023-2519	

表1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
$L \leq 50$	± 1.5
$50 < L \leq 100$	± 2.5
$100 < L \leq 500$	± 3



型式銘板
NAMEPLATE



アース用ボルト
GROUND BOLT

*: シール剤塗布
APPLY SILICONE SEALANT

アース線
GROUND WIRE

ケーブル
CABLE

(引出場所は選択)
(SELECT EITHER ONE)

ケーブル
CABLE

SUS304, t=6 溶接部材質
MATERIAL FOR WELDING

マスト (造船所手配)
MAST (SHIPYARD SUPPLY)

注記 1) 指定外の寸法公差は表1による。

NOTE 1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.

DRAWN	17/May/2012 T.YAMASAKI	TITLE	IC-115/116/118/119
CHECKED	17/May/2012 H.MAKI	名称	アンテナユニット
APPROVED	17/May/2012 Y.NISHIYAMA	外寸図	
SCALE	1/3	MASS	1.4 ±10% kg
			質量はパイプ工材を含まず。 MASS W/O MOUNTING PIPE.
DWG. No.	C5635-G01-H	REF. No.	16-023-250G-1
			NAME
			ANTENNA UNIT
			OUTLINE DRAWING

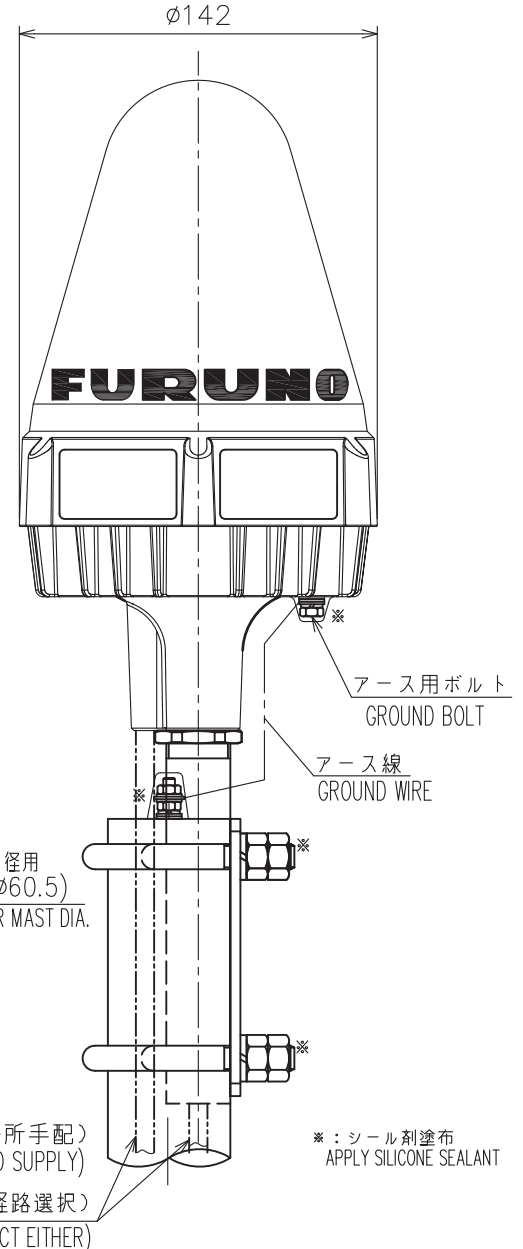
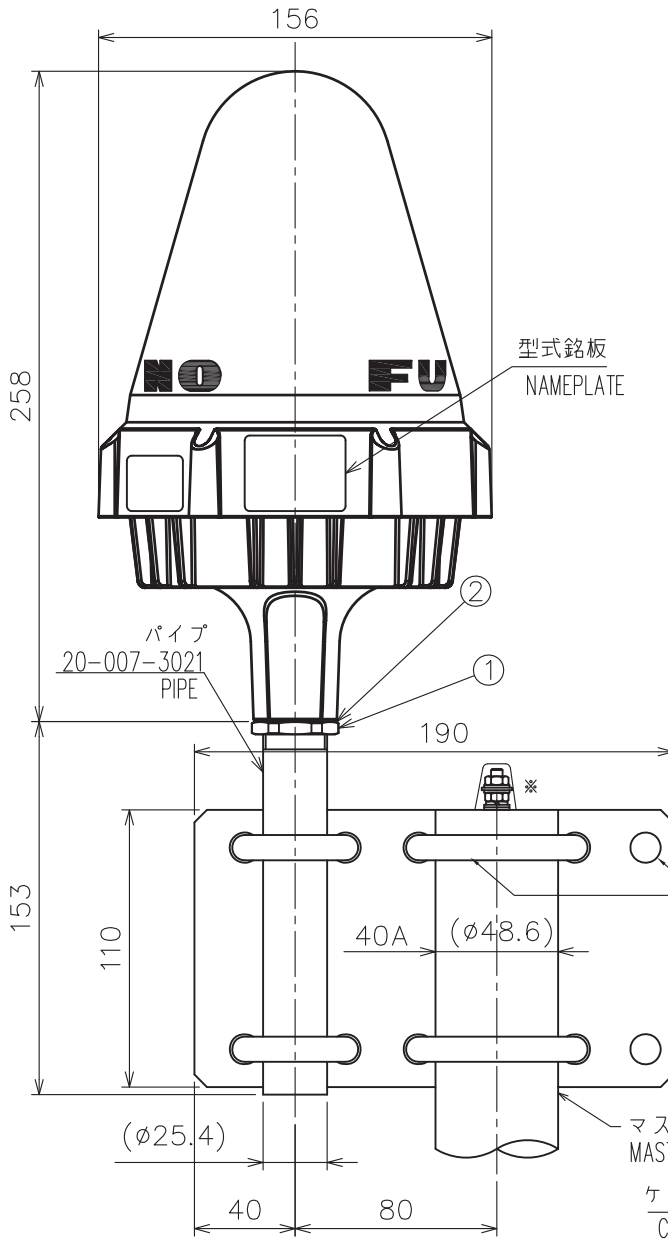
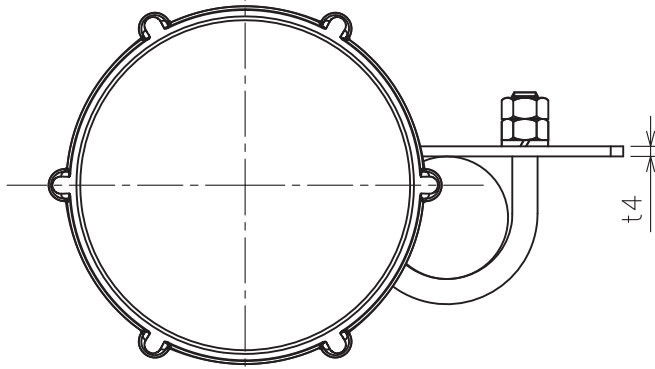
表1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
L ≤ 50	±1.5
50 < L ≤ 100	±2.5
100 < L ≤ 500	±3

表2 工事材料

TABLE 2 INSTALLATION MATERIAL

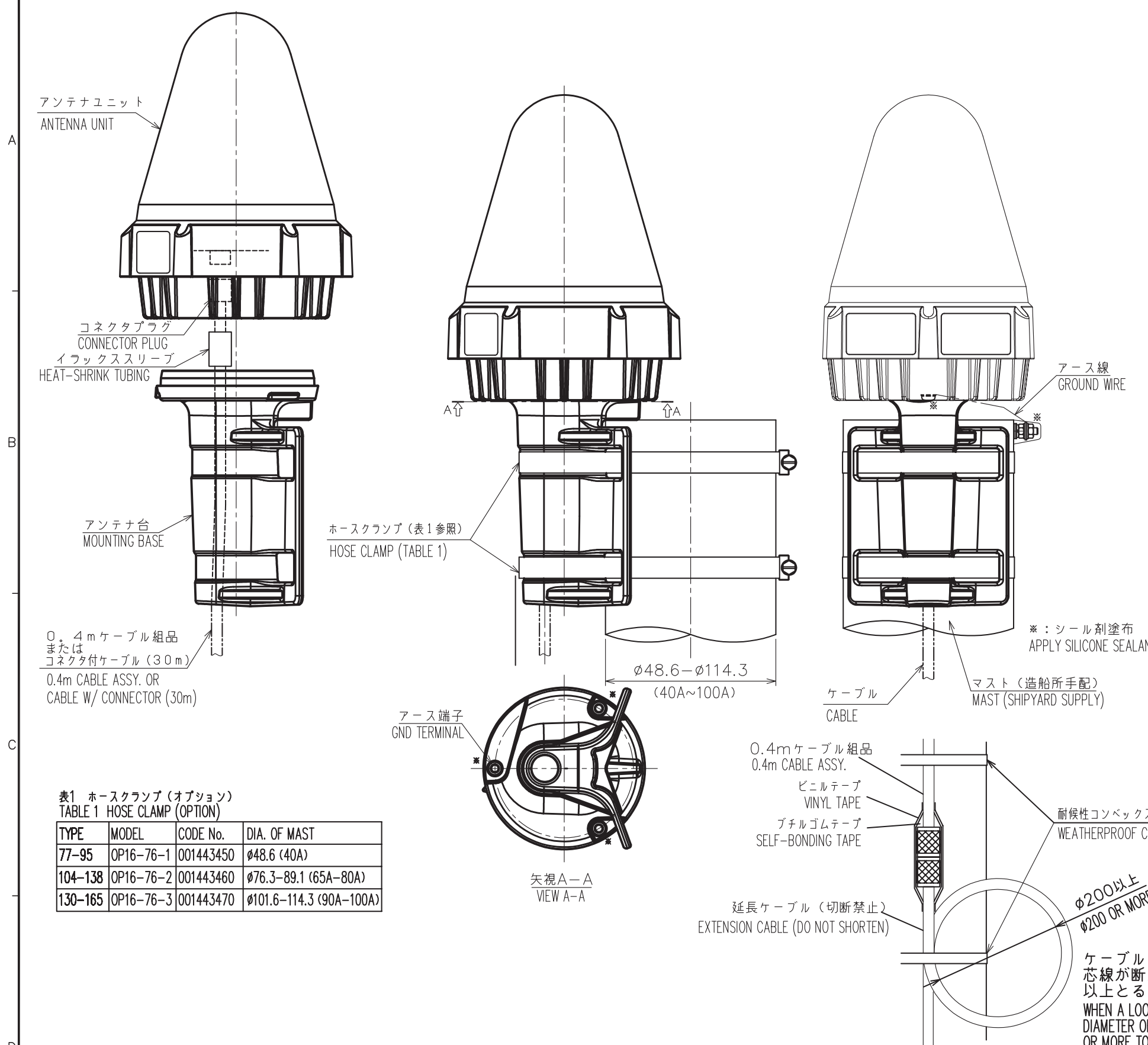
品番 ITEM	品名 NAME	図番 DWG. No.
1	ロックナット LOCK NUT	16-023-2518
2	ナットシート NUT SHEET	16-023-2519



注記 1) 指定外の寸法公差は表1による。

NOTE 1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.

DRAWN	25/Apr/2012 T.YAMASAKI	TITLE	IC-115/116/118/119
CHECKED	25/Apr/2012 H.MAKI	名称	アンテナユニット (取付板)
APPROVED	30/Apr/2012 Y.NISHIYAMA	外寸図	
SCALE	1/3	MASS	2.3 ±10% kg
DWG. No.	C5635-G19-D	質量は工材を含む。 MASS INCLUDES INSTALLATION MATERIALS.	NAME
	REF. No.	16-023-252G-1	ANTENNA UNIT (W/ FIXTURE PLATE)
			OUTLINE DRAWING



手順

- 1) 0.4mケーブル組品を使用するときは、コネクタプラグをアンテナ上部底のコネクタに接続した後、ケーブルの下からイラックススリーブを通しておく。
0.4mケーブル組品を使用しないときは、アンテナ台の下から30mケーブルを通し、イラックススリーブを通してコネクタプラグをアンテナ上部底のコネクタに接続する。
- 2) イラックススリーブを熱で固着し(110℃以下)、自己融着テープおよびビニルテープで固定する。
固定範囲は50mm以内。高温で熱すると部材の一部を変形させる恐れがあるので注意する。
- 3) アンテナ台をアンテナ上部にネジ3本で固定する。
うち一本のネジは、アース線(圧着端子付)を共締めする。
- 4) アンテナ台のネジ部にシール剤を塗布する。
- 5) アンテナ台をホースクランプ2本でマストに固定する。
- 6) 0.4mケーブル組品を使用するときは、がい装付ケーブルのコネクタを接続し、自己融着テープ、ビニルテープで固定する。
- 7) ケーブルをマストに固定し、アース線をマストに接続する。
ケーブルは耐候性コンベックスで固定する。
- 8) *部分をシール剤で完全に覆う。

PROCEDURE

1. FOR CONNECTION OF CABLE ASSY.(0.4m)
CONNECT THE CONNECTOR PLUG OF CABLE ASSY. TO ANTENNA UNIT.
THEN PASS HEAT-SHRINK TUBING FROM THE OTHER SIDE OF CABLE ASSY.
FOR CONNECTION OF CABLE W/ CONNECTOR (30m).
PASS THE ANTENNA CABLE THRU THE HOLE IN THE CENTER OF THE ANTENNA BASE. THEN PASS HEAT-SHRINK TUBING ONTO THE CABLE.
CONNECT THE CABLE PLUG TO ANTENNA UNIT.
2. FIX THE SHRINK TUBE WITH HEAT (+110°C OR LESS) AND BIND WITH SELF-BONDING TAPE AND VINYL TAPE.
WRAPPING LENGTH: WITHIN 50 mm. DO NOT HEAT WITH HIGH TEMPERATURE TO AVOID DISTORTION OF ANTENNA PARTS.
3. FIX THE MOUNTING BASE TO ANTENNA UNIT WITH 3 SCREWS.
FASTEN THE GROUND WIRE TO A SCREW WITH THEM WITH CRIMP-ON LUG.
4. APPLY SILICONE SEALANT TO SCREWS OF MOUNTING BASE.
5. FIX THE MOUNTING BASE TO MAST WITH TWO HOSE CLAMPS SECURELY.
6. CONNECT THE ARMORED CABLE CONNECTOR TO THE CABLE ASSY.
7. WRAP THE CONNECTORS WITH SELF-BONDING TAPE AND VINYL TAPE.
FIX THE ANTENNA CABLE WITH WEATHERPROOF CABLE TIES AND CONNECT GROUND WIRE TO MAST.
8. COVER SCREW HEADS MARKED '*' WITH SILICONE SEALANT.

表1 ホースクランプ (オプション)
TABLE 1 HOSE CLAMP (OPTION)

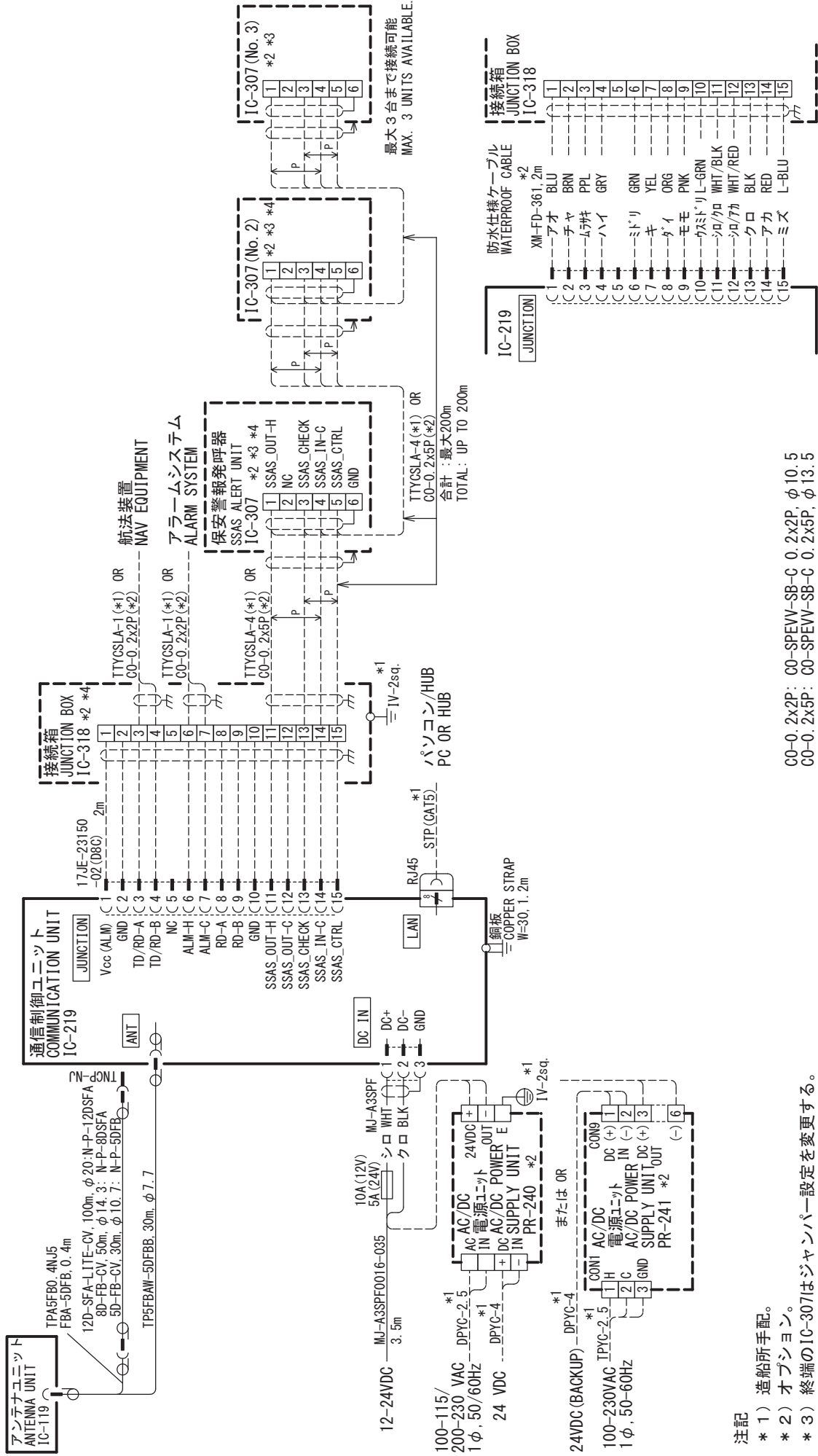
TYPE	MODEL	CODE No.	DIA. OF MAST
77-95	OP16-76-1	001443450	φ48.6 (40A)
104-138	OP16-76-2	001443460	φ76.3-89.1 (65A-80A)
130-165	OP16-76-3	001443470	φ101.6-114.3 (90A-100A)

DRAWN	18/Feb/2016 T.YAMASAKI	TITLE	IC-115/116/118/119
CHECKED	18/Feb/2016 H.MAKI	名称	アンテナユニット (ホースクランプ取付)
APPROVED	22/Feb/2016 H.MAKI	装備要領	FELCOM 15/16/18/19
SCALE	MASS ±10% kg	NAME	ANTENNA UNIT (HOSE CLAMP FIXING)
DWG.No.	C5674-Y01-C	INSTALLATION PROCEDURE	

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3

4



DRAWN	7/Jun/2021	U. Poddar	TITLE	FELCOM 19
CHECKED	7/Jun/2021	T. YAMASAKI	名称	インマルサットMINI-C携帯移動地球局
APPROVED	8/Jun/2021	H. MAKI	相互結線図	
SCALE		MASS kg	NAME	INMARSAT MINI-C MES
DWG. No.	C5675-C01-G	REF. No.	16-023-4001-1	

- 注記**
- * 1) 造船所手配。
 - * 2) オプション。
 - * 3) 終端のIC-307はジャンパー設定を変更する。
 - * 4) SSAS仕様のとき標準構成。
- NOTE**
- *1: SHIPYARD SUPPLY.
 - *2: OPTION.
 - *3: CHANGE SETTING OF JUMPER IN IC-307 TO TERMINATE.
 - *4: STANDARD CONFIGURATION FOR SSAS.