

# *Installation Manual*

## **INMARSAT MINI-C MES**

### *Model FELCOM19*

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**ECF**

(Elemental Chlorine Free)

The paper used in this manual  
is elemental chlorine free.

**FURUNO ELECTRIC CO., LTD.**

9-52 Ashihara-cho,  
Nishinomiya, 662-8580, JAPAN

• FURUNO Authorized Distributor/Dealer

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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/m<sup>2</sup> 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.



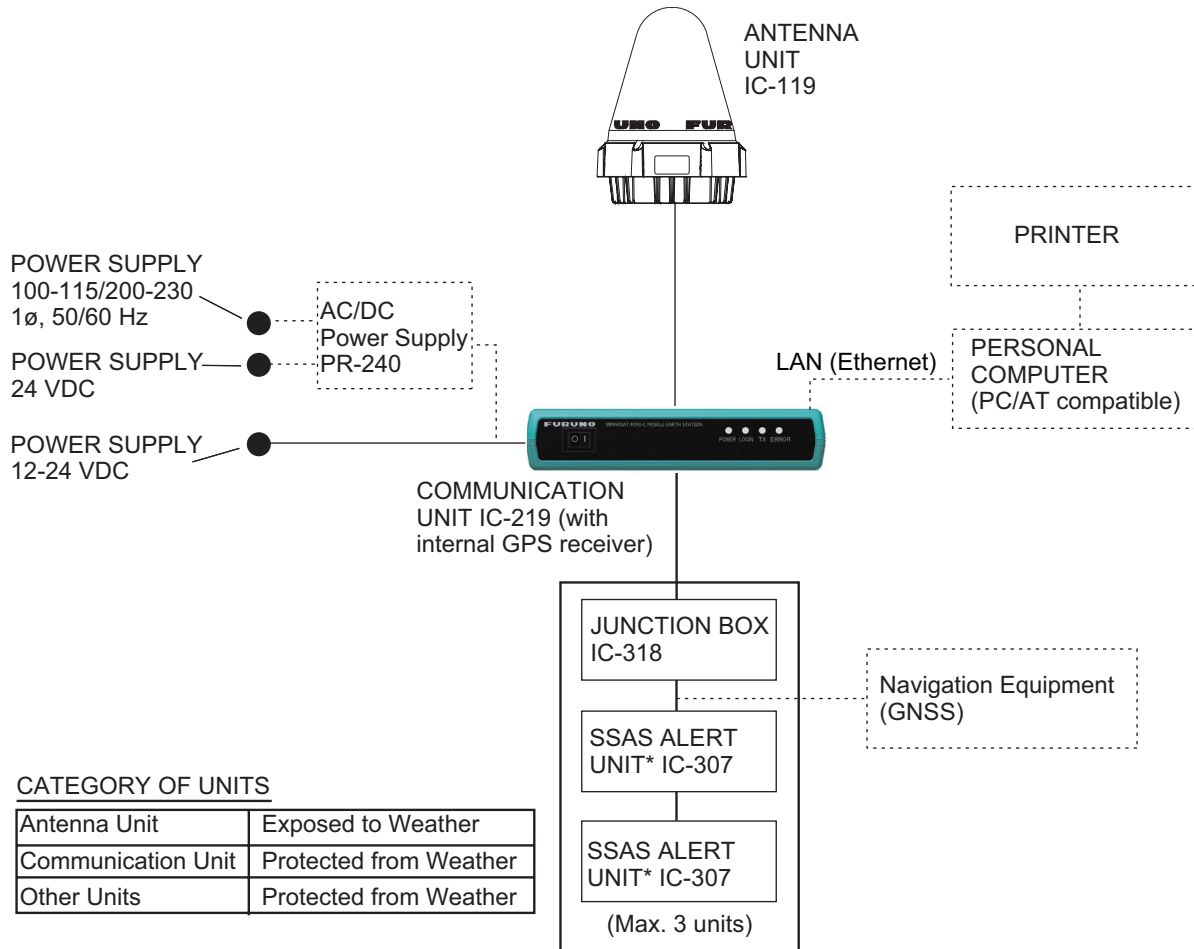
Keep the following compass safe distances.

|                                | 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.<br>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   |                                      |
| 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 2/ 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            | OP16-61             | 001-180-110    | 1   | For IC-219                           |
|                            | OP16-68             | 001-189-400    | 1   | For IC-307                           |
| Installation Materials     | CP16-05750          | 000-021-704    | 1   | w/o pipe, 30 m                       |
|                            | CP16-05790          | 000-021-715    |     | w/o pipe, 30 m, for armored cable    |
|                            | CP16-05760          | 000-021-713    |     | w/o pipe, 40/50 m, for armored cable |
|                            | CP16-05770          | 000-021-714    |     | w/o pipe, 100 m, for armored cable   |

## EQUIPMENT LISTS

| <b>Name</b> | <b>Type</b> | <b>Code No.</b> | <b>Qty</b> | <b>Remarks</b>  |
|-------------|-------------|-----------------|------------|---|
| Hose clamp  | OP16-76-1   | 001-443-450     | 1          | Nominal Diameter,<br>Mast Diameter<br>For 40A ( $\phi$ 48.6)                      |
|             | OP16-76-2   | 001-443-460     | 1          | Nominal Diameter,<br>Mast Diameter<br>For 65A to 80A<br>( $\phi$ 76.3 to 89.1)    |
|             | OP16-76-3   | 001-443-470     | 1          | Nominal Diameter,<br>Mast Diameter<br>For 90A to 100A<br>( $\phi$ 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.**

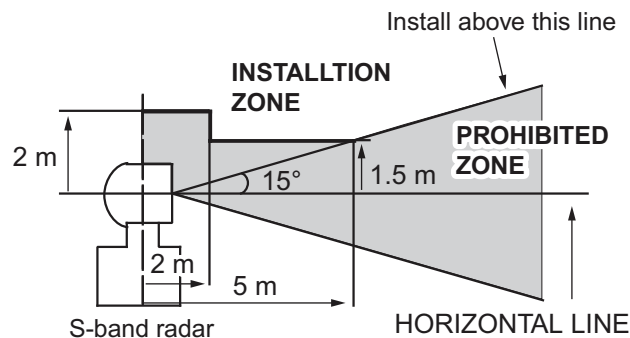
Those items contain organic solvents that can damage coating and plastic parts, especially plastic connectors.

## 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 <sup>2</sup> 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 of 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).

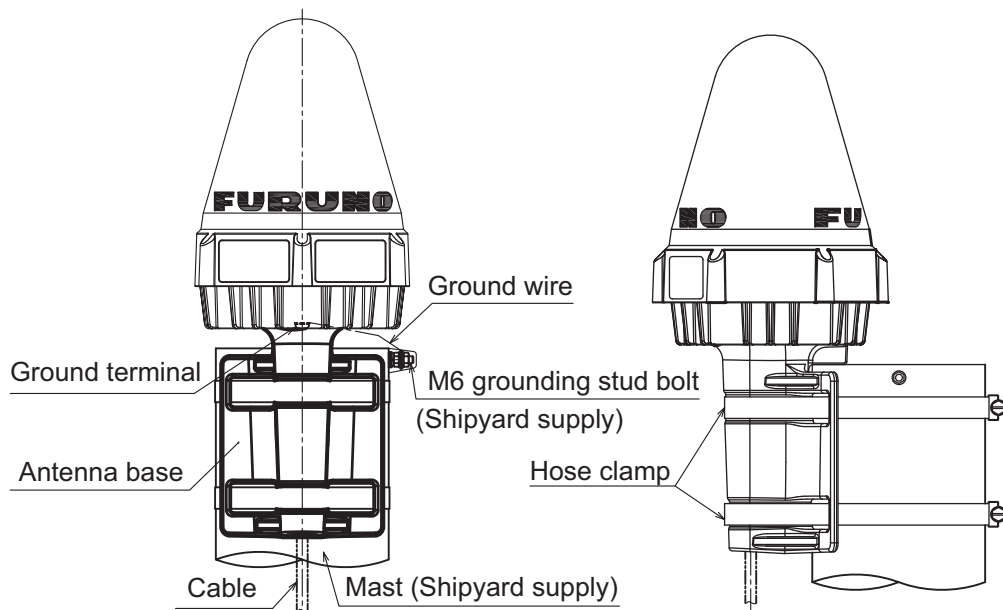
| Cable length    | Type            | Remarks                               |
|-----------------|-----------------|---------------------------------------|
| 30 m (no armor) | TP5FBAW-5DFB    | TNC connector at both ends            |
| 30 m (w/armor)  | 5D-FB-CV-NP     | N connector on one end (antenna 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

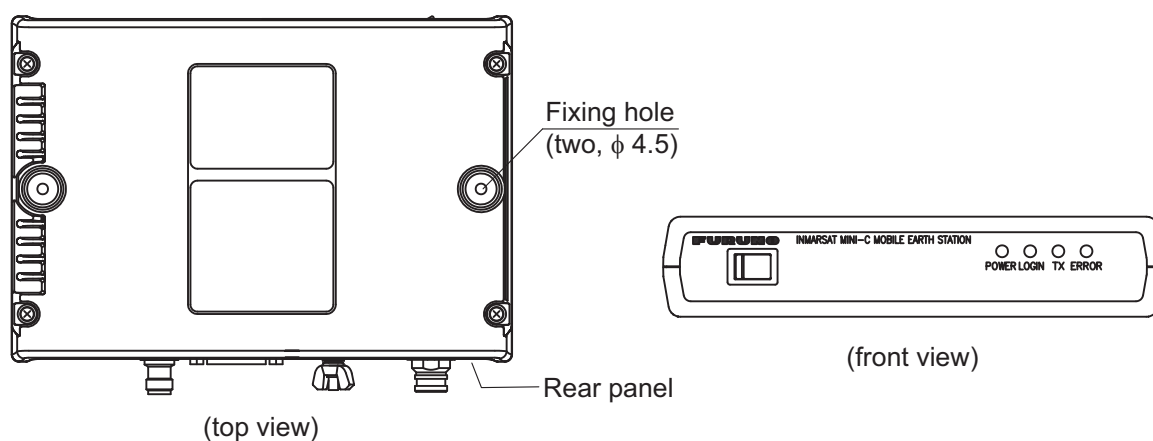
Select the following place to install the communication unit.

- 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

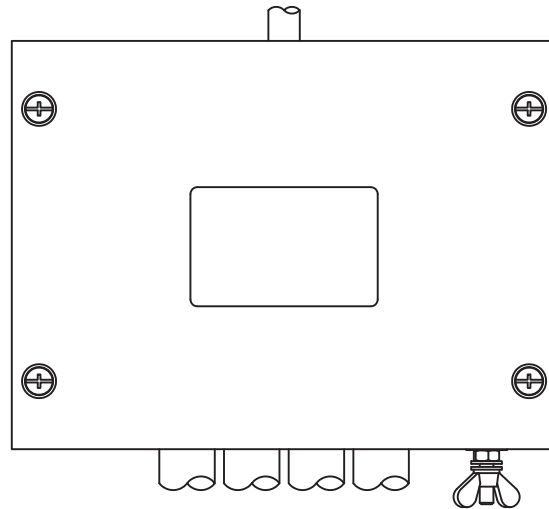
Use two binding screws (pre-attached) and the LAN cover to connect the LAN cable to the communication unit. Use the cable tie (supplied) to fix the cable.



### 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.

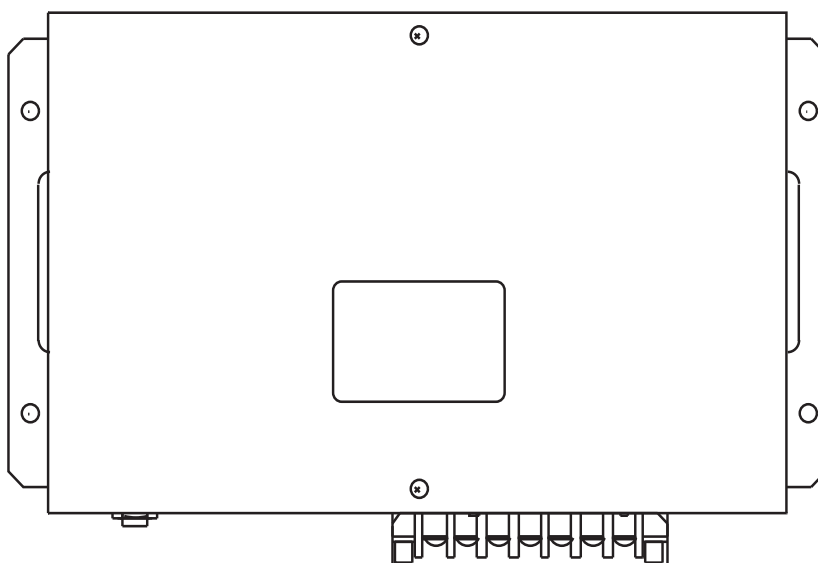
1. Remove four screws from the unit to separate the bottom chassis from the top chassis.
2. Fix the bottom chassis to the mounting location with four self-tapping screws (4x16, supplied).
3. Connect the cables referring to Chapter 2.



*Junction box IC-318*

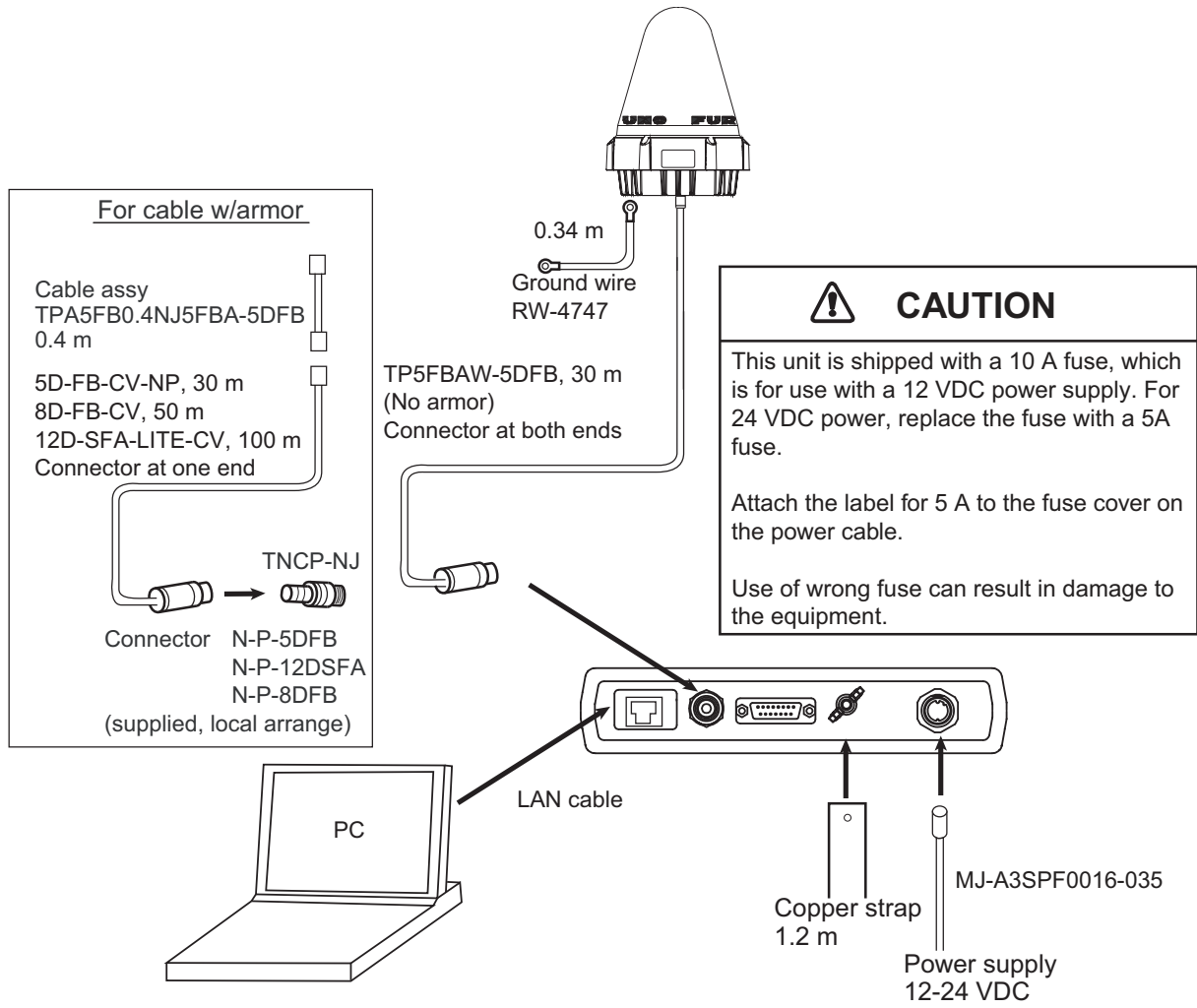
### 1.4 AC/DC Power Supply Unit PR-240 (option)

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



*AC/DC power supply unit*

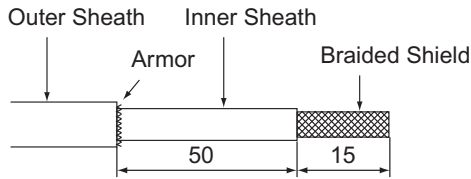
# 2. WIRING



Wiring of FELCOM19

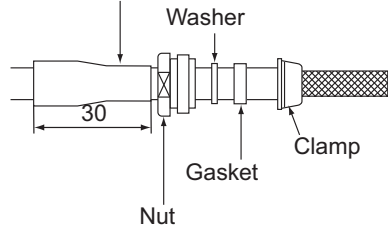
## 2.1 Antenna Cable Connector at the Communication Unit

### 5D-FB-CV-NP (30 m)



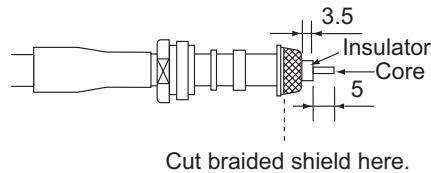
Remove the outer sheath, armor and inner-sheath by the dimensions shown.

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.

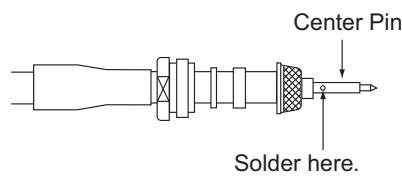


Fold back the braided shield onto the clamp and trim the shield as shown.

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

- Be careful not to damage the core.

Cut braided shield here.



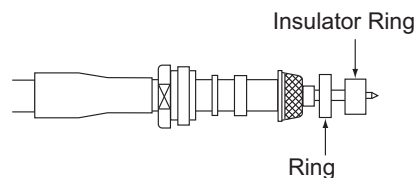
Set the center pin to the core and solder the pin from the hole in the pin.

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

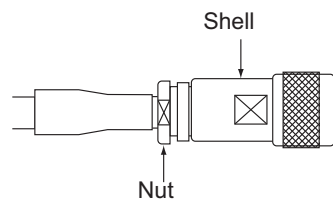
- Be sure the solder is flush with surface of pin.

- 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.

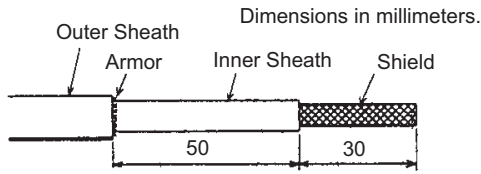


Set the shell to the cable then turn the nut to tighten. (Do not tighten by turning shell.) -

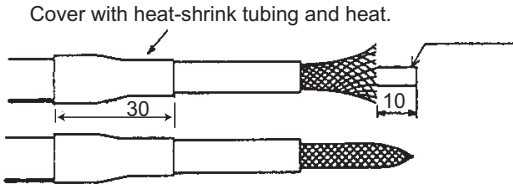
Use a wrench or the like to tighten the nut securely.

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

**8D-FB-CV (50 m)**

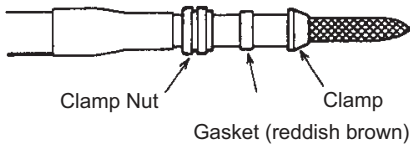


Remove outer sheath and armor by the dimensions shown left.  
Expose inner sheath and shield by the dimensions shown left.

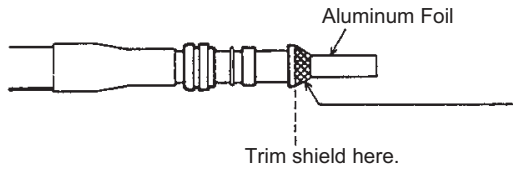


Remove insulator and core by 10 mm.

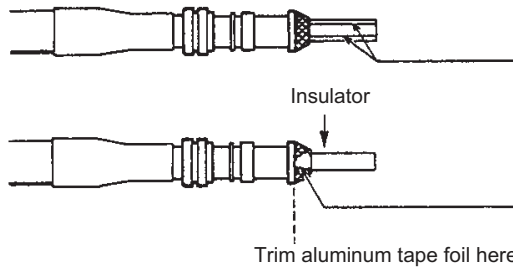
Twist shield end.



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



Fold back shield over clamp and trim.



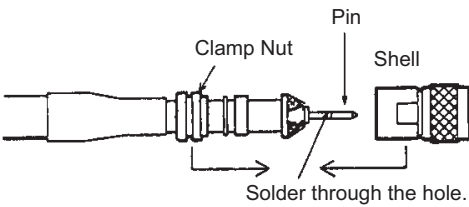
Cut aluminum foil at four places, 90° from one another.

Fold back aluminum tape foil onto shield and trim.



Expose the insulator by 1 mm.

Expose the insulator by 5 mm.



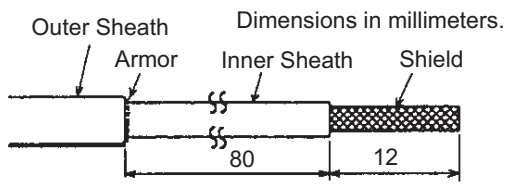
Slip the pin onto the conductor. Solder them together through the hole on the pin.

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.)

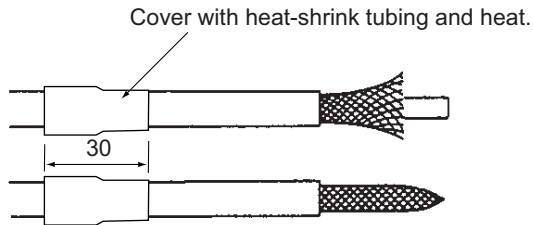
*How to fabricate antenna cable 8D-FB-CV*

## 2. WIRING

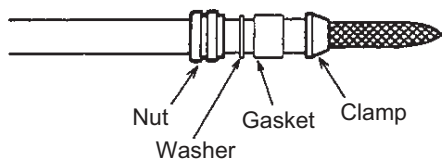
### 12D-SFA-LITE-CV (100 m)



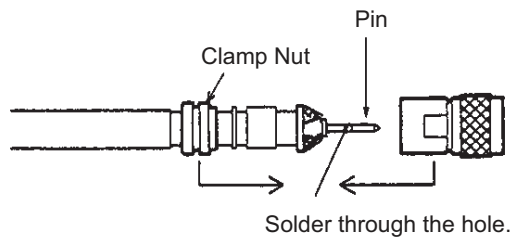
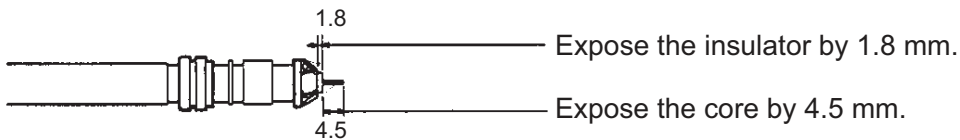
Remove outer sheath and armor by the dimensions shown left.  
Expose inner sheath and shield by the dimensions shown left.



Twist shield end.



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



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

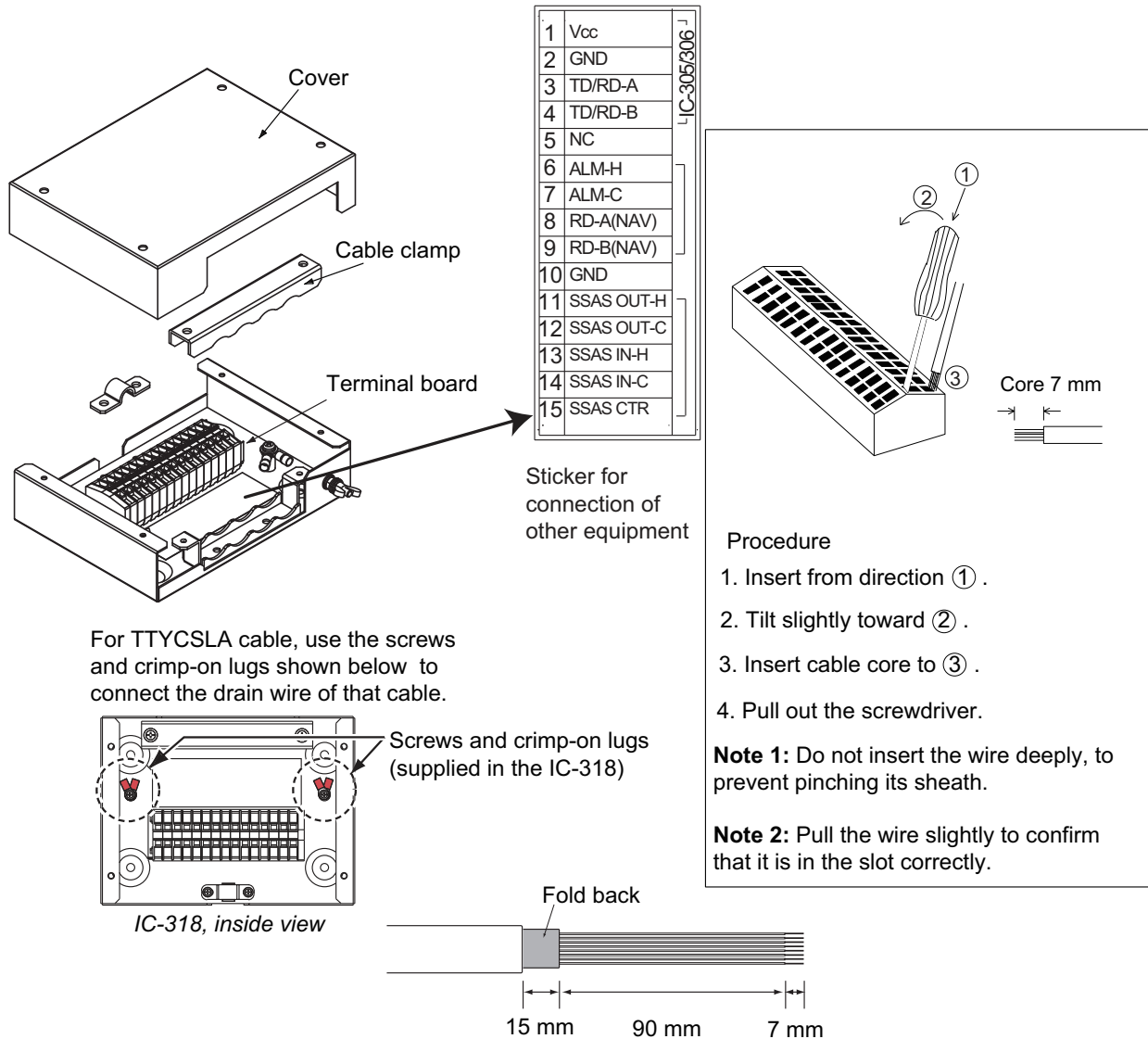
Insert the pin into the shell. Screw the clamp nut into the shell.  
(Tighten by turning the clamp nut. Do not tighten by turning the shell.)

*How to fabricate antenna cable 12D-SFA-LITE-CV*

## 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.



### 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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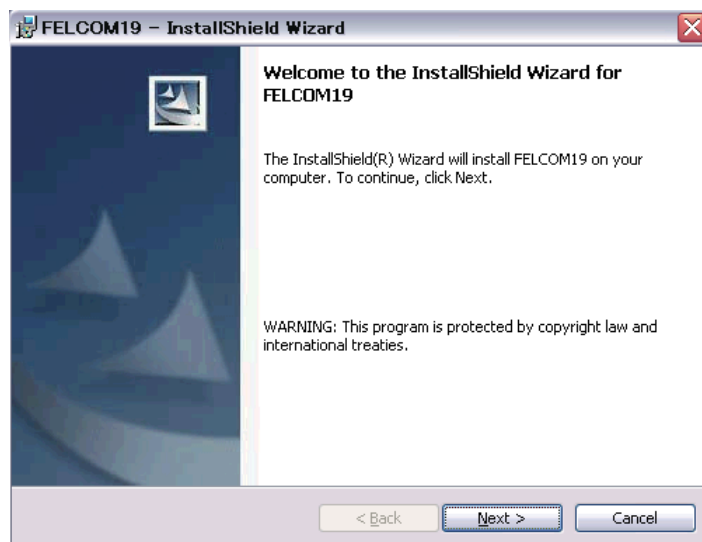
# 3. INITIAL SETTINGS

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

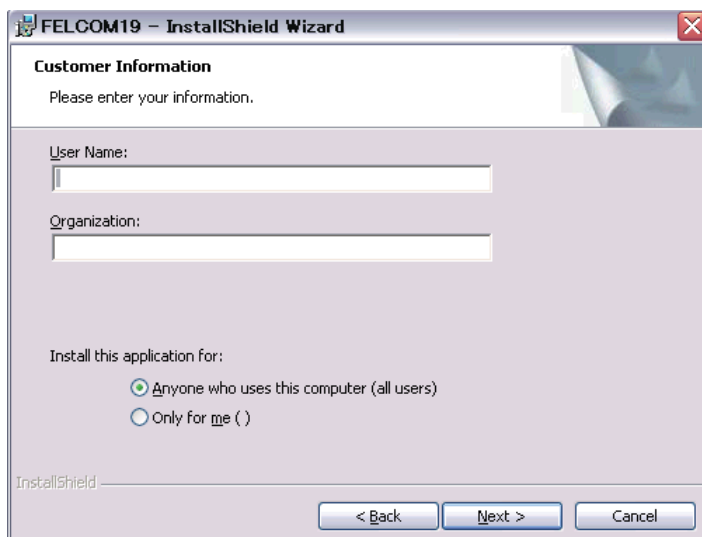
## 3.1 How to Install Software

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.

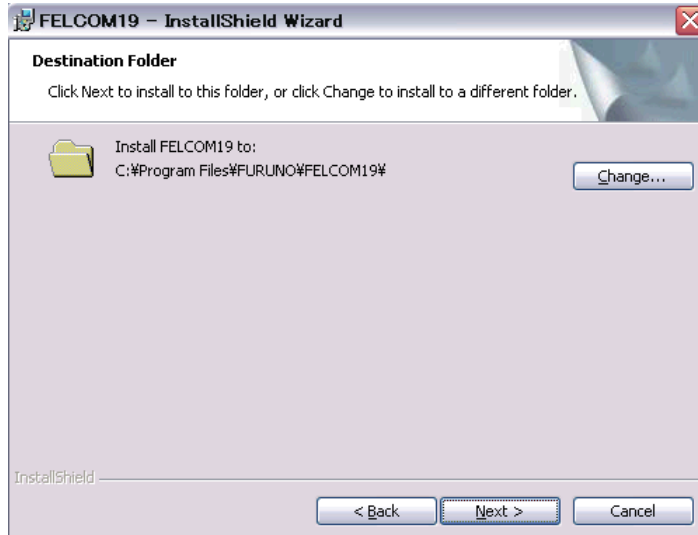


4. Click the **Next** button.

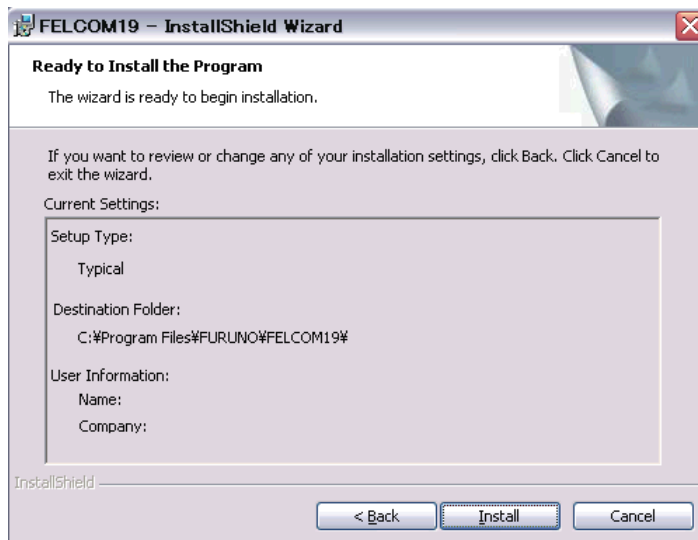


### 3. INITIAL SETTINGS

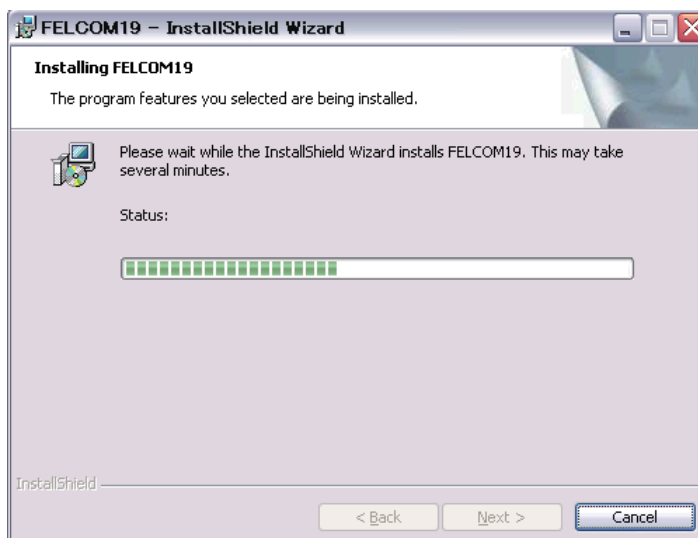
5. Enter your name and organization.



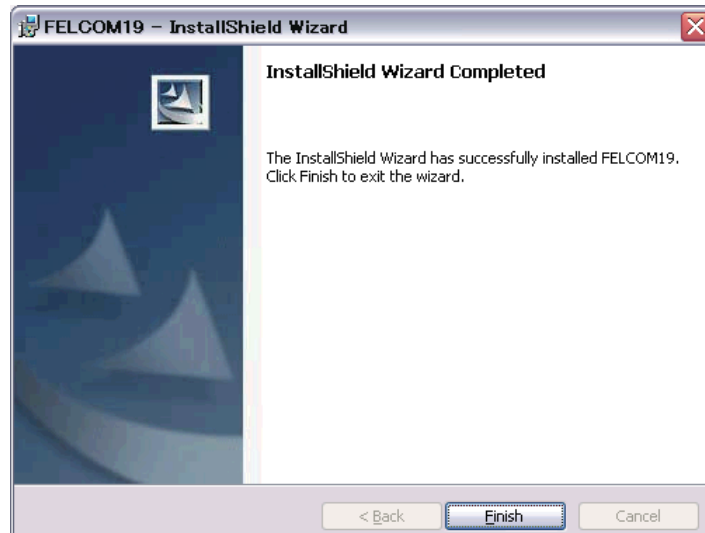
6. Click the **Next** button.



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



- Click the **Next** button.

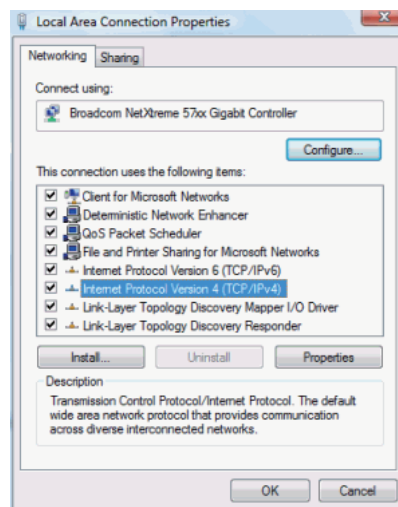


- Click the **Finish** button. The FELCOM 19 PC application shortcut is created on the desktop.

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

## 3.2 How to Start Up the Software

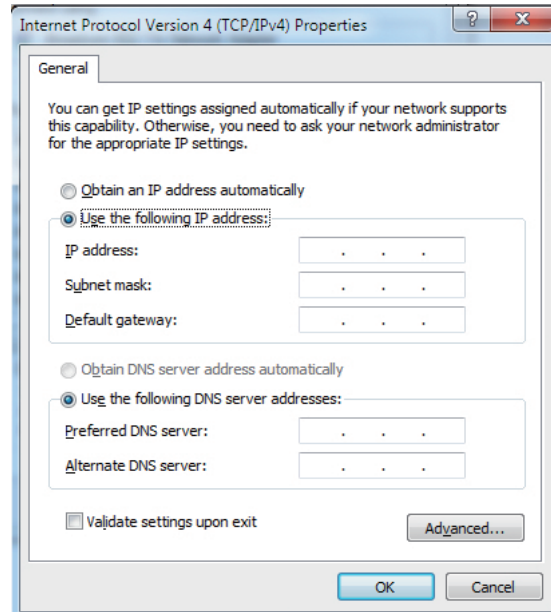
- After the software is installed, open the [Local Area Connection Properties ].



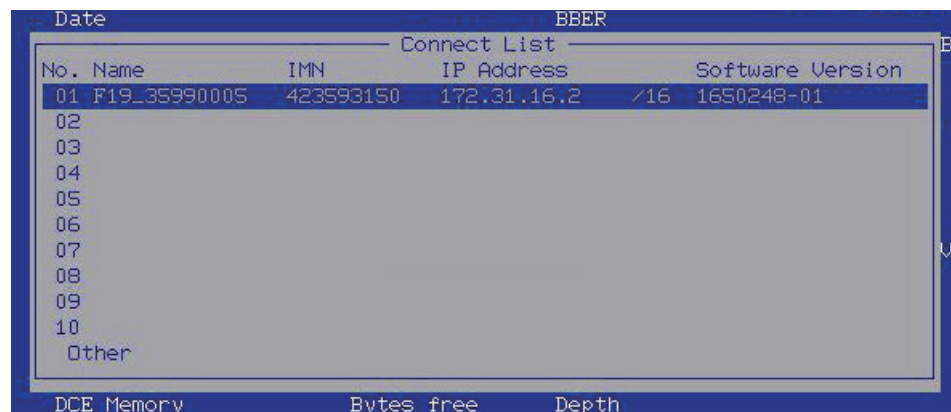
**Note:** Refer to your PC's manual for how to open [Local Area Connection Properties].

### 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.

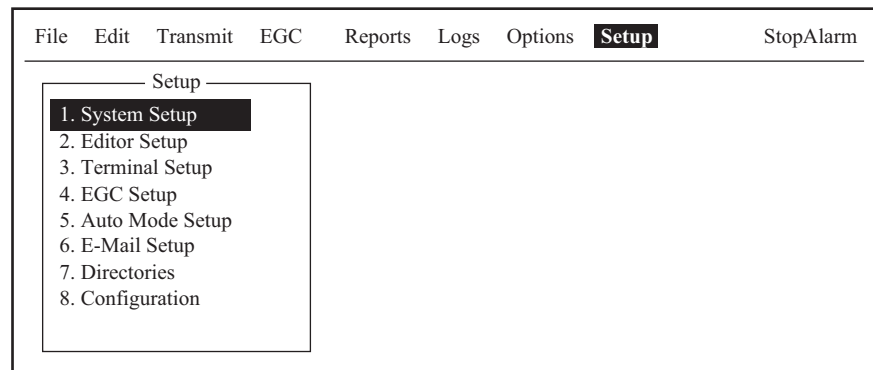


7. Click the [No.] column of the item you wish to set up. A popup menu appears.

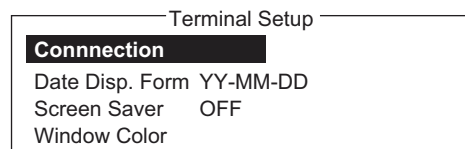


If the Connect list screen disappears during setup, do following procedure to show the list.

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

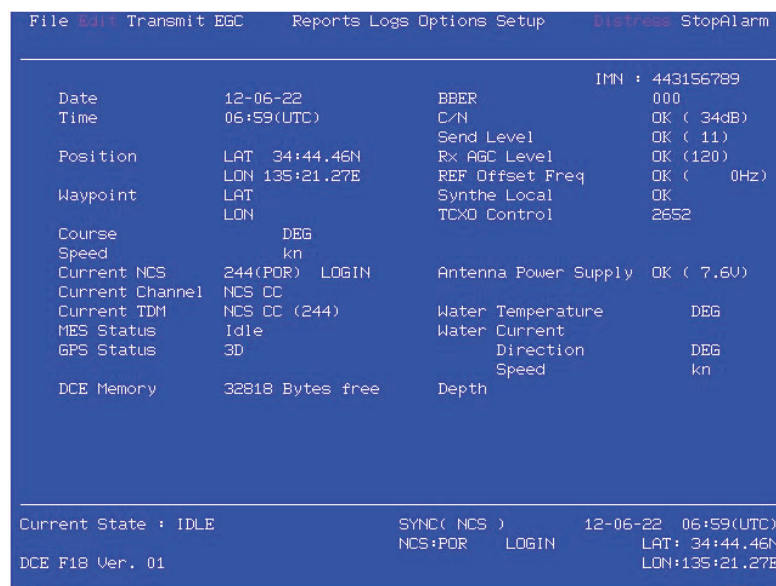


- 2) Press the 3 key to show the [Terminal Setup] menu.



- 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.

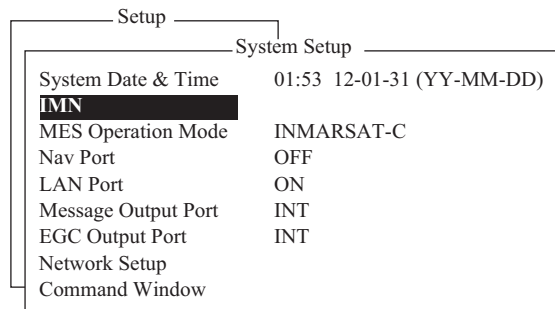
1. Power on the communication unit and PC in order.
2. Double click [F19PC] on the screen to start the program.
3. Select the terminal (FELCOM19) to use then press the **Enter** key. The [Connect] window is shown on the screen. Select [Yes] then press the **Enter** key to connect the terminal selected.

### 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.

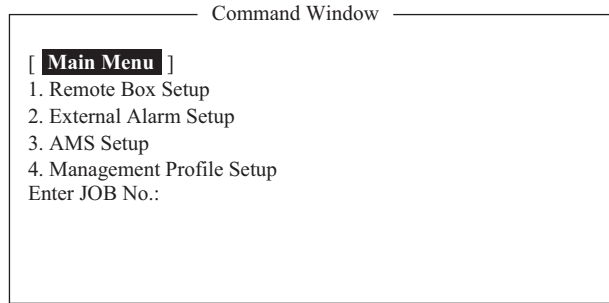
To clear the IMN, select IMN, then press **I**, **M**, **N** while pressing the **Alt** key. Repeat step 6 to step 8 to input the correct IMN. When using the FELCOM19 for VMS (Vessel Monitoring System), DNID (Data Network ID) has to be downloaded via the LES (Land Earth Station). This arrangement is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

5. Press the **3** key, and the **Enter** key.



6. 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.

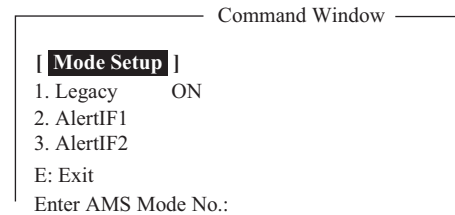
**1 key: [Mode Setup]**

Set the alert mode.

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

[AlertIF1]: Select when AMS is connected.

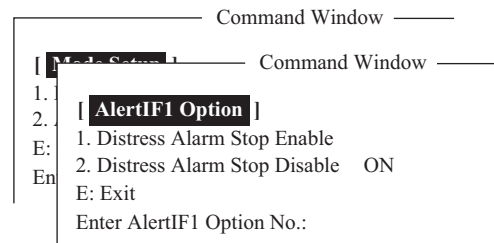
[AlertIF2]: Select when BAM is connected.



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.

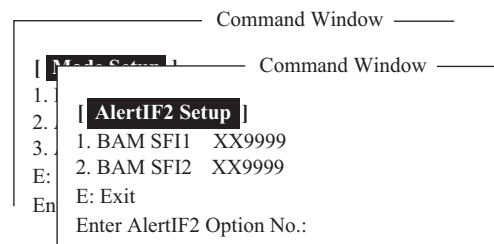
[Distress Alarm Stop Enable]: The AMS can stop the alarm sound when the Distress Priority message is received.

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



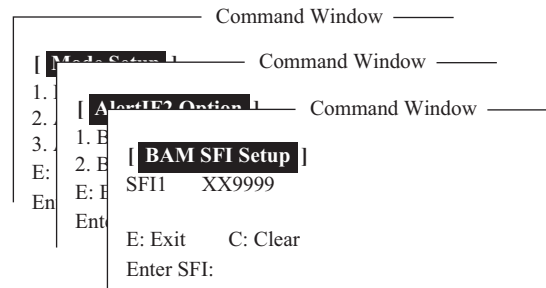
For [AlertIF2], the option window shown to the right is displayed. To return to the [AMS Setup Menu] from this window, press the **E** key twice.

Select the appropriate BAM unit to setup.



The [AlertIF2 Setup] option window shown to the right is displayed.

Set the SFI for the connected BAM unit.



### 3. INITIAL SETTINGS

#### **2 key: [MY SFI Setup]**

Set the SFI of FELCOM19. Enter the four-digit number that follows "CS".

```

Command Window
[ MY SFI Setup ]
SFI          CS0001

0000 to 9998: SFI No.
E: Exit
Enter SFI No.:
    
```

#### **3 key: [Transmission Group Setup]**

Set the AMS transmission group.

```

Command Window
[ Transmission Group Setup ]
1. MISC      ON
2. TGTD
3. SATD
4. NAVD
5. VDRD
6. RCOM
7. TIME
8. PROP
9. USR
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<br>239.192.0.16 | 60009 to<br>60016 |

#### **4 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.

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

```

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
    
```

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
    
```



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.

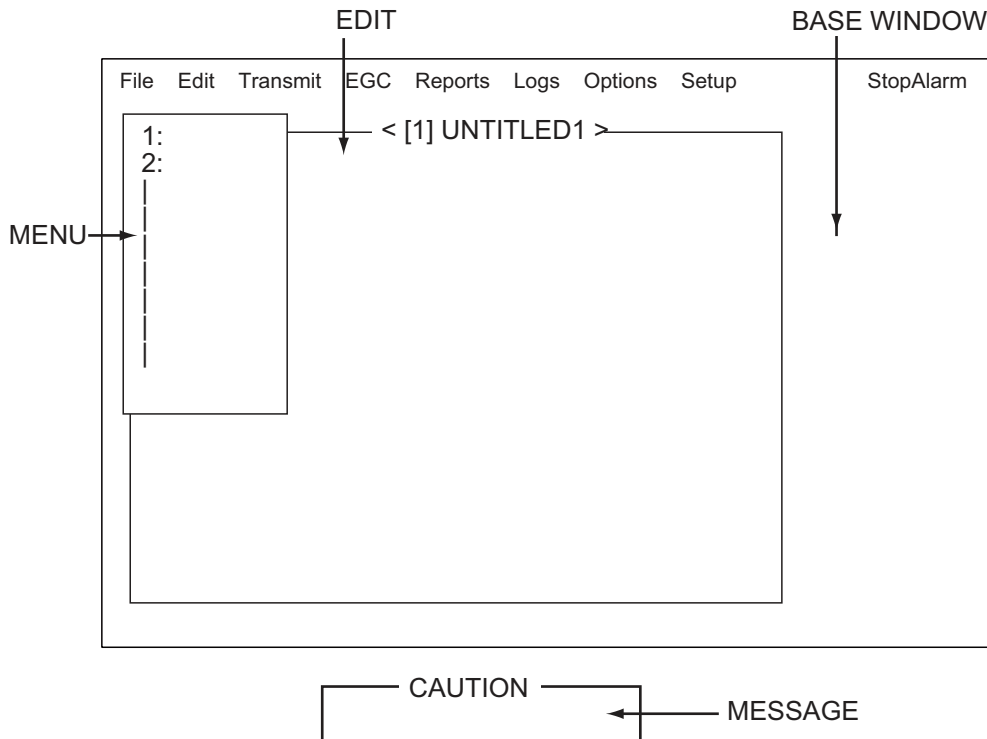
3. Select the terminal to use then press the **Enter** key.
4. Select [Date Disp. Form] then press the **Enter** key to open its options window.
5. Select [YY-MM-DD], [MMM-DD-YY] or [DD-MMM-YY] as appropriate then press the **Enter** key.
6. Select [Screen Saver] then press the **Enter** key.
7. Turn 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                     |               |     |
|--|---------------|-----|
| <b>Select Preset</b>                   | <b>1</b>      | 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

3. INITIAL SETTINGS

| 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          | 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. 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.

# 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 IPX2 Kit OP16-58 (cables)/Waterproofing Kit OP16-60 (for IC-318)

### OP16-58

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 |

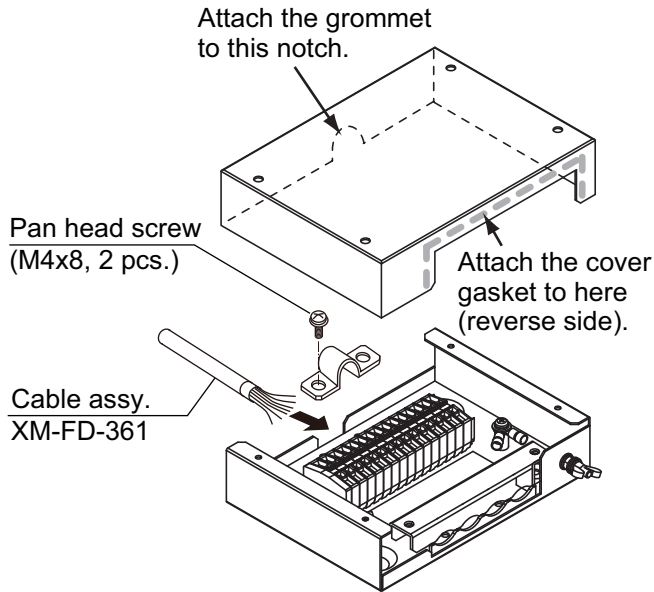
### OP16-60

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   |

#### 4. HOW TO INSTALL OPTIONAL EQUIPMENT



| #  | Color                |
|----|----------------------|
| 1  | Blue                 |
| 2  | Brown                |
| 3  | Purple               |
| 4  | Gray                 |
| 5  | -                    |
| 6  | Green                |
| 7  | Yellow               |
| 8  | Orange               |
| 9  | Pink                 |
| 10 | Light-green          |
| 11 | White (w/black dots) |
| 12 | White (w/red dots)   |
| 13 | Black                |
| 14 | Red                  |
| 15 | Light-blue           |

## 4.2 Waterproofing Kit OP16-61 (for IC-219)

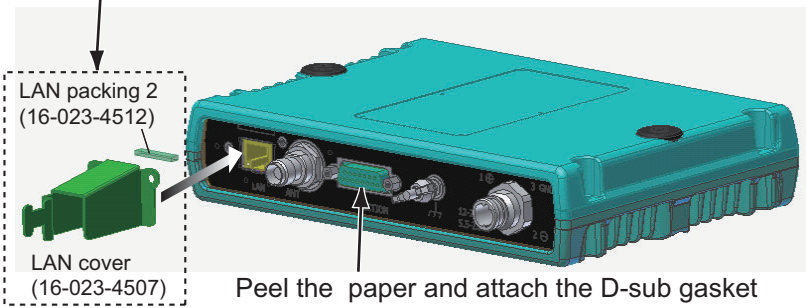
**Note:** To maintain the waterproofing, the unit must be installed on a bulkhead or wall, with the cable entry facing downwards. Further, the optional kit does not provide waterproofing if the unit is installed with the cable entry facing upwards.

*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   |

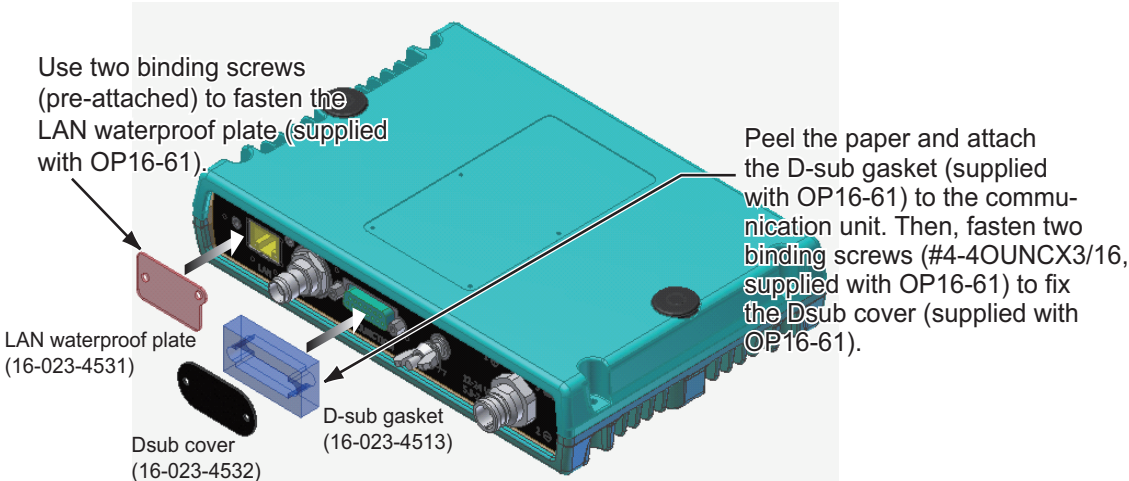
**Cables connected**

- 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.

**No cables connected**



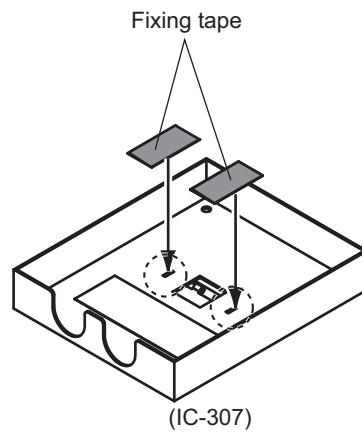
### 4.3 Waterproofing Kit OP16-68 (for IC-307)

**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.

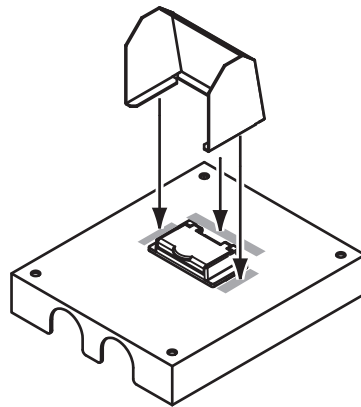
*OP16-68 (Code No.: 001-189-400)*

| 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   |

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.

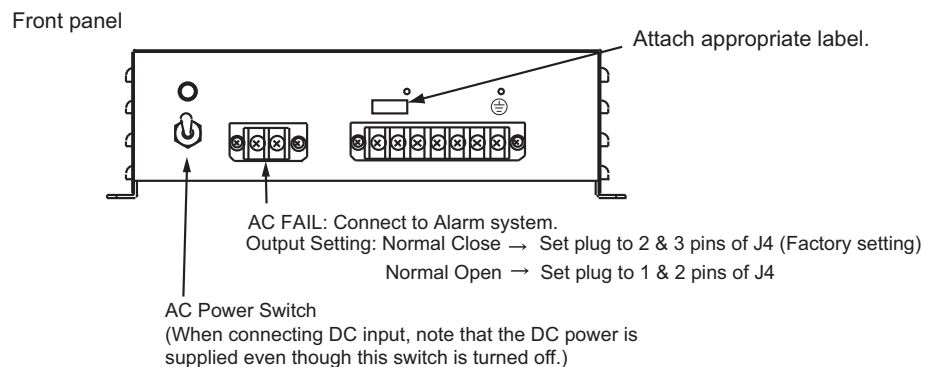
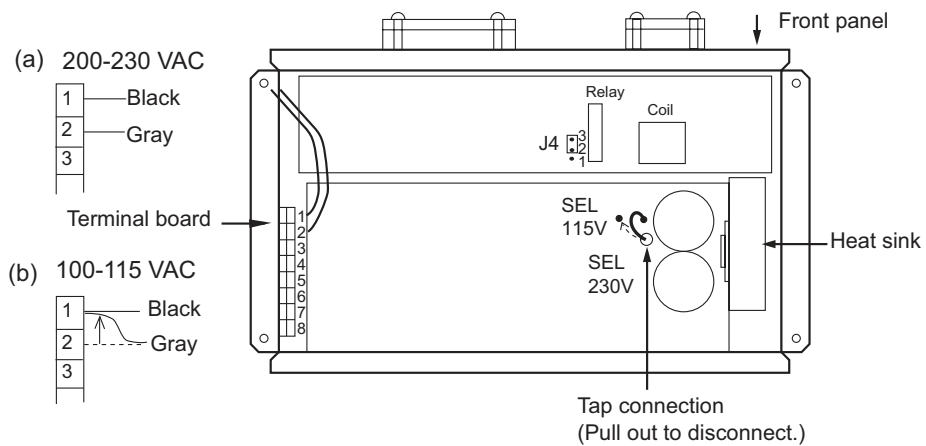
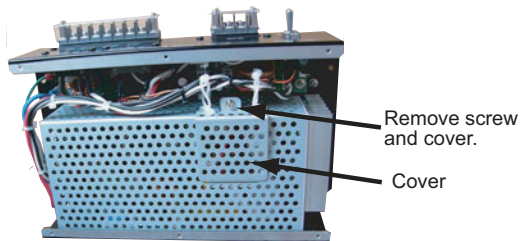




# 5. HOW TO CHANGE POWER SUPPLY SPECIFICATIONS

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 $\phi$ 50/60 Hz |
| 100 to 115 VAC | SEL 115 V      | Below (b)      | 100-115 VAC, 3.2-2.6 A, 1 $\phi$ 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 (mm<sup>2</sup>)* 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: <sup>1 2 3 4 5 6</sup> **TTYCYSLA - 4**  
 Designation type | Core Area (mm<sup>2</sup>)

EX: <sup>1 2 3 4</sup> **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 <sup>2</sup>  | 1.56mm        | 11.7mm         | TTYCS-1    | 0.75mm <sup>2</sup> | 1.11mm        | 10.1mm         |
| DPYC-2.5  | 2.5mm <sup>2</sup>  | 2.01mm        | 12.8mm         | TTYCS-1T   | 0.75mm <sup>2</sup> | 1.11mm        | 10.6mm         |
| DPYC-4    | 4.0mm <sup>2</sup>  | 2.55mm        | 13.9mm         | TTYCS-1Q   | 0.75mm <sup>2</sup> | 1.11mm        | 11.3mm         |
| DPYC-6    | 6.0mm <sup>2</sup>  | 3.12mm        | 15.2mm         | TTYCS-4    | 0.75mm <sup>2</sup> | 1.11mm        | 16.3mm         |
| DPYC-10   | 10.0mm <sup>2</sup> | 4.05mm        | 17.1mm         | TTYCSLA-1  | 0.75mm <sup>2</sup> | 1.11mm        | 9.4mm          |
| DPYCY-1.5 | 1.5mm <sup>2</sup>  | 1.56mm        | 13.7mm         | TTYCSLA-1T | 0.75mm <sup>2</sup> | 1.11mm        | 10.1mm         |
| DPYCY-2.5 | 2.5mm <sup>2</sup>  | 2.01mm        | 14.8mm         | TTYCSLA-1Q | 0.75mm <sup>2</sup> | 1.11mm        | 10.8mm         |
| DPYCY-4   | 4.0mm <sup>2</sup>  | 2.55mm        | 15.9mm         | TTYCSLA-4  | 0.75mm <sup>2</sup> | 1.11mm        | 15.7mm         |
| MPYC-2    | 1.0mm <sup>2</sup>  | 1.29mm        | 10.0mm         | TTYCY-1    | 0.75mm <sup>2</sup> | 1.11mm        | 11.0mm         |
| MPYC-4    | 1.0mm <sup>2</sup>  | 1.29mm        | 11.2mm         | TTYCY-1T   | 0.75mm <sup>2</sup> | 1.11mm        | 11.7mm         |
| MPYC-7    | 1.0mm <sup>2</sup>  | 1.29mm        | 13.2mm         | TTYCY-1Q   | 0.75mm <sup>2</sup> | 1.11mm        | 12.6mm         |
| MPYC-12   | 1.0mm <sup>2</sup>  | 1.29mm        | 16.8mm         | TTYCY-4    | 0.75mm <sup>2</sup> | 1.11mm        | 17.7mm         |
| TPYC-1.5  | 1.5mm <sup>2</sup>  | 1.56mm        | 12.5mm         | TTYCY-4S   | 0.75mm <sup>2</sup> | 1.11mm        | 21.1mm         |
| TPYC-2.5  | 2.5mm <sup>2</sup>  | 2.01mm        | 13.5mm         | TTYCY-4SLA | 0.75mm <sup>2</sup> | 1.11mm        | 19.5mm         |
| TPYC-4    | 4.0mm <sup>2</sup>  | 2.55mm        | 14.7mm         | TTYCYS-1   | 0.75mm <sup>2</sup> | 1.11mm        | 12.1mm         |
| TPYCY-1.5 | 1.5mm <sup>2</sup>  | 1.56mm        | 14.5mm         | TTYCYS-4   | 0.75mm <sup>2</sup> | 1.11mm        | 18.5mm         |
| TPYCY-2.5 | 2.5mm <sup>2</sup>  | 2.01mm        | 15.5mm         | TTYCYSLA-1 | 0.75mm <sup>2</sup> | 1.11mm        | 11.2mm         |
| TPYCY-4   | 4.0mm <sup>2</sup>  | 2.55mm        | 16.9mm         | TTYCYSLA-4 | 0.75mm <sup>2</sup> | 1.11mm        | 17.9mm         |

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

16AW-X-9851-3

1/1

| NAME   | OUTLINE | DESCRIPTION/CODE No.               | Q'TY |
|--|---------|------------------------------------|------|
| <b>ユニット</b>  |         |                                    |      |
| 通信制御ユニット<br>COMMUNICATION UNIT                       |         | IC-219-*<br>000-020-969-00 **      | 1    |
| <b>予備品</b>   |         |                                    |      |
| 予備品  |         | SP16-01401                         | 1    |
| SPARE PARTS  |         | 004-439-530-00                     |      |
| <b>付属品</b>   |         |                                    |      |
| CD-R   |         | 16-5-0241                          | 1    |
| CD-R   |         | 001-180-000-00                     |      |
| <b>工事材料</b>  |         |                                    |      |
| 工事材料   |         | CP16-05301                         | 1    |
| INSTALLATION MATERIALS                               |         | 001-179-990-00                     |      |
| <b>図書</b>  |         |                                    |      |
| 7P リケーションフォーム<br>REGISTRATION FOR SERVICE ACTIVATION |         | J59-50010-* 7/I1<br>000-807-330-1* | 1    |
| テストモード操作手順<br>SSAS TEST MODE HANDBOOK                |         | C52-01502-*<br>000-191-063-1*      | 1    |
| ヒューズ変更のお願い<br>NOTIFICATION DOCUMENT                  |         | C52-00206-* 7/I1<br>000-147-004-1* | 1    |

1. コド番号末尾の[\*\*]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 No.          | Q'TY      |
|--------------------------------------|---------|-------------------------------|-----------|
| 取扱説明書(英)<br>OPERATOR'S MANUAL (EN)   |         | OME-56351-*<br>000-150-359-1* | 1<br>(*1) |
| 取扱説明書(英)<br>OPERATOR'S MANUAL (EN)   |         | OME-56750-*<br>000-176-514-1* | 1<br>(*1) |
| 取扱説明書(和)<br>OPERATOR'S MANUAL (JP)   |         | OMJ-56351-*<br>000-150-358-1* | 1<br>(*2) |
| 取扱説明書(和)<br>OPERATOR'S MANUAL (JP)   |         | OMJ-56750-*<br>000-176-513-1* | 1<br>(*2) |
| 操作要領書(英)<br>OPERATOR'S GUIDE (EN)    |         | OSE-56750-*<br>000-176-515-1* | 1<br>(*1) |
| 装備要領書(英)<br>INSTALLATION MANUAL (EN) |         | IME-56750-*<br>000-176-517-1* | 1<br>(*1) |
| 装備要領書(和)<br>INSTALLATION MANUAL (JP) |         | IMJ-56750-*<br>000-176-516-1* | 1<br>(*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

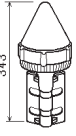

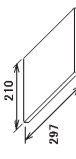
C5675-Z02-D

# PACKING LIST

16AV-X-9870 -1 1/1

A-2

IC-119

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

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.

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

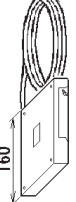

C5675-Z01-B

# PACKING LIST

16AV-X-9854 -0 1/1

A-3

IC-318

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

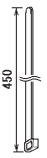

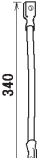
型式/コート番号が2段の場合、下段より上段に代わる過渡期品であり、どちらかが入っています。なお、品質は変わりません。  
TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.

(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**

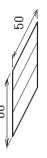


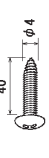
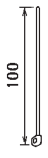


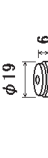
| 番号<br>NO. | 名称<br>NAME                  | 略図<br>OUTLINE   | 型名/規格<br>DESCRIPTIONS              | 数量<br>QTY | 用途/備考<br>REMARKS                               |
|-----------|-----------------------------|---|------------------------------------|-----------|--|
| 1         | コパ'ツカス<br>CABLE TIE         |  | CP-450B<br>CODE NO. 000-173-169-10 | 5         | アンテナケーブルの固定用<br>For securing the antenna cable |
| 2         | テープ'組品<br>SELF-BONDING TAPE |  | NO.15<br>CODE NO. 000-174-646-10   | 1         |  |
| 3         | ケーブル'組品<br>CABLE ASSY.      |  | RM-4747<br>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-9401-1 | 1/1 |
| TYPE     | CP16-05301     |               |     |

**工事材料表**

| 番号<br>NO. | 名称<br>NAME                      | 略図<br>OUTLINE   | 型名/規格<br>DESCRIPTIONS                         | 数量<br>QTY | 用途/備考<br>REMARKS |
|-----------|---------------------------------|---|---|-----------|------------------|
| 1         | ヒューズ'ラベル<br>FUSE LABEL          |    | CG-153-1312-0 R0HS<br>CODE NO. 100-292-140-10 | 1         |                  |
| 2         | 銅板<br>COPPER STRAP              |    | 05-003-0031-0 R0HS<br>CODE NO. 590-300-310-10 | 1         |                  |
| 3         | LANカバー<br>LAN COVER             |    | 16-023-4507-0<br>CODE NO. 100-386-090-10      | 1         |                  |
| 4         | セルフ'タッピング<br>SELF-TAPPING SCREW |    | 4X40 SUS304<br>CODE NO. 000-162-606-10        | 2         |                  |
| 5         | ケーブル'ツカス<br>CABLE TIE           |    | CY-100N<br>CODE NO. 000-162-167-10            | 3         |                  |
| 6         | ヒューズ<br>GLASS TUBE FUSE         |    | FG80-A 125V 5A PBF<br>CODE NO. 000-155-653-10 | 1         |                  |
| 7         | ケーブル'組品<br>CABLE ASSY.          |   | MJ-A3SPF001G-055C<br>CODE NO. 000-154-024-10  | 1         |                  |
| 8         | マカ'ネット<br>GROMMET               |  | TM-M6-15<br>CODE NO. 000-166-458-10           | 2         |                  |

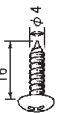
(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

FURUNO ELECTRIC CO., LTD.

**FURUNO**

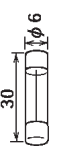
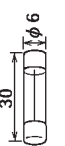
|          |                |               |     |
|----------|----------------|---------------|-----|
| CODE NO. | 001-180-020-00 | 16AV-X-9401-0 | 1/1 |
| TYPE     | CP16-05101     |               |     |

**工事材料表**

| INSTALLATION MATERIALS |  |   |           |
|------------------------|--|---|-----------|
| 番号<br>NO.              | 名称<br>NAME                               | 略図<br>OUTLINE   | 数量<br>QTY |
| 1                      | +selfタッピングビス / 1/4<br>SELF TAPPING SCREW |  | 4         |
|                        |  | 4X16 SUB304<br>CODE NO. 000-162-605-10  |           |
|                        |  | 用途/備考<br>REMARKS  |           |

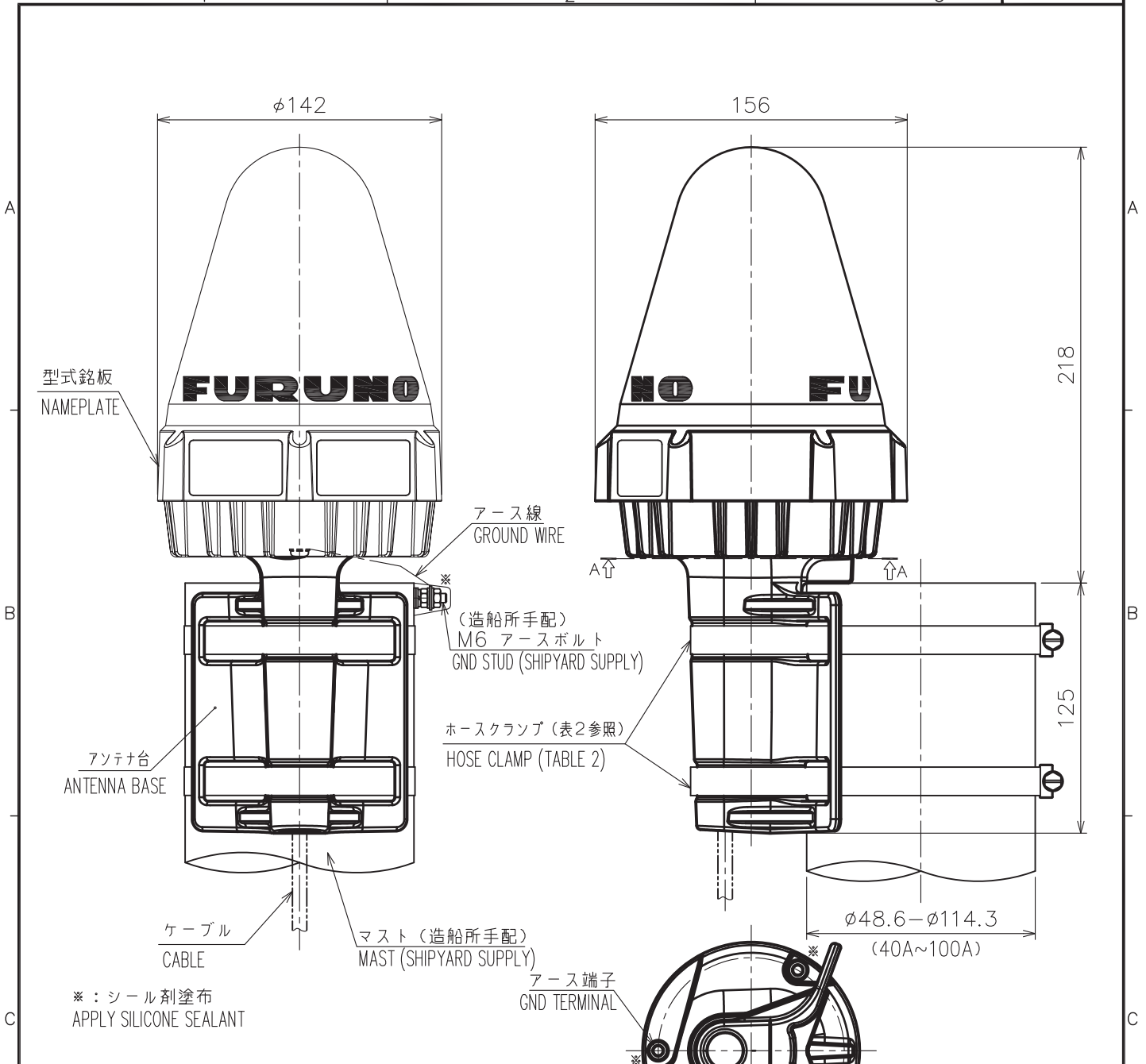
**FURUNO**

|          |                |               |     |
|----------|----------------|---------------|-----|
| 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   |                        | REMARKS/CODE NO. |                  |                |
|------------|---------------------------|-------------------------|---|------------------------|------------------|------------------|----------------|
|            | ITEM NO.                  | NAME OF PART            | OUTLINE   | DWG. NO. OR TYPE NO.   |                  | QUANTITY         |                |
|            |                           |                         |   |                        | WORKING PER SET  | SPARE PER VESSEL |                |
|            | 1                         | ガラス管<br>GLASS TUBE FUSE |  | F680-A 125V<br>5A PBF  | 1                | 1                | 000-155-853-10 |
|            | 2                         | ガラス管<br>GLASS TUBE FUSE |  | F680-A 125V<br>10A PBF | 1                | 1                | 000-155-826-10 |
|            |                           |                         |   |                        |                  |                  |                |
|            |                           |                         |   |                        |                  |                  |                |
|            |                           |                         |   |                        |                  |                  |                |
|            |                           |                         |   |                        |                  |                  |                |
|            |                           |                         |   |                        |                  |                  |                |
|            |                           |                         |   |                        |                  |                  |                |
|            |                           |                         |   |                        |                  |                  |                |
|            |                           |                         |   |                        |                  |                  |                |
|            |                           |                         |   |                        |                  |                  |                |
|            |                           |                         |   |                        |                  |                  |                |
|            |                           |                         |   |                        |                  |                  |                |
|            |                           |                         |   |                        |                  |                  |                |
|            |                           |                         |   |                        |                  |                  |                |
|            |                           |                         |   |                        |                  |                  |                |
|            |                           |                         |   |                        |                  |                  |                |
|            |                           |                         |   |                        |                  |                  |                |
| MFR'S NAME | FURUNO ELECTRIC CO., LTD. |                         | DWG. NO.  | C5635-P02-F            | SETS PER VESSEL  | 1/1              |                |

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

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. 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)<br>DIMENSION | 公差 (mm)<br>TOLERANCE |
|------------------------|----------------------|
| $L \leq 50$            | $\pm 1.5$            |
| $50 < L \leq 100$      | $\pm 2.5$            |
| $100 < L \leq 500$     | $\pm 3$              |

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<br>MASS INCLUDES INSTALLATION MATERIALS | NAME               | ANTENNA UNIT    |
|          |                        | REF.No.  | 16-023-254G-1      | OUTLINE DRAWING |



表 1 TABLE 1

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

LANカバー (工材)  
LAN COVER (INSTALLATION MATERIAL)

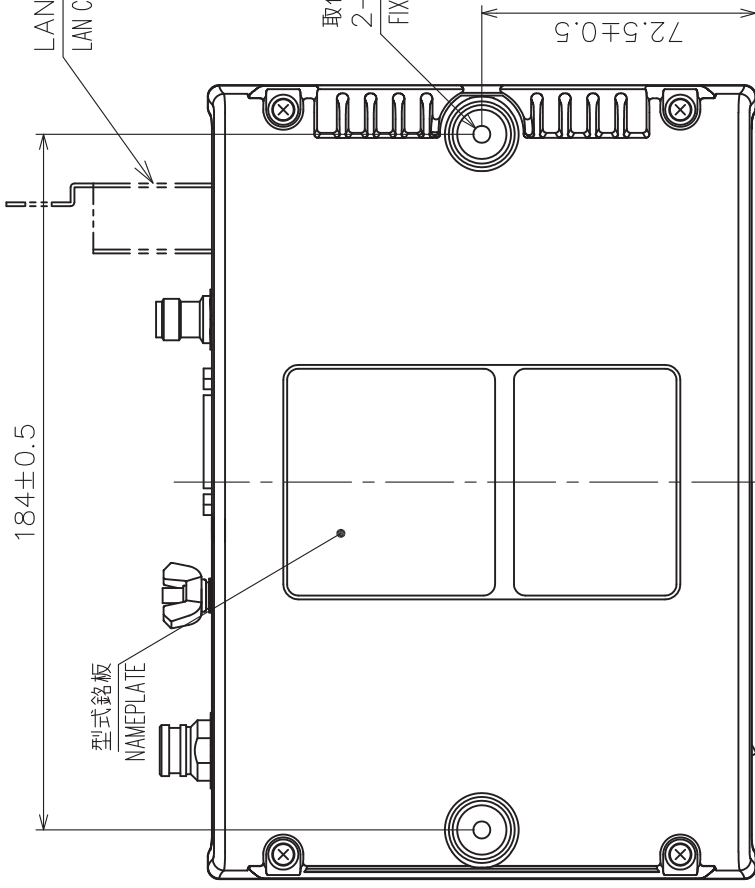
型式銘板  
NAMEPLATE

取付穴  
2-φ4.5  
FIXING HOLES

72.5±0.5

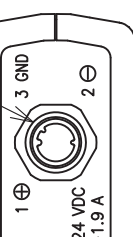
210

42



信号コネクタ  
SIGNAL CONNECTOR

電源  
SOURCE



アース端子  
GND TERMINAL

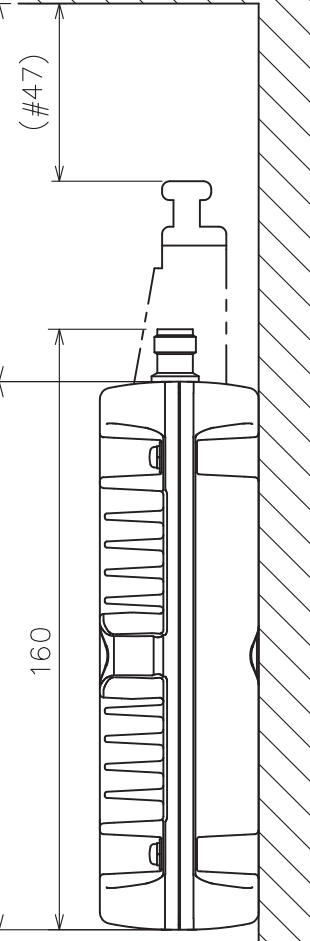
アンテナコネクタ  
ANTENNA CONNECTOR

背面  
REAR VIEW

#100

145

160



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。

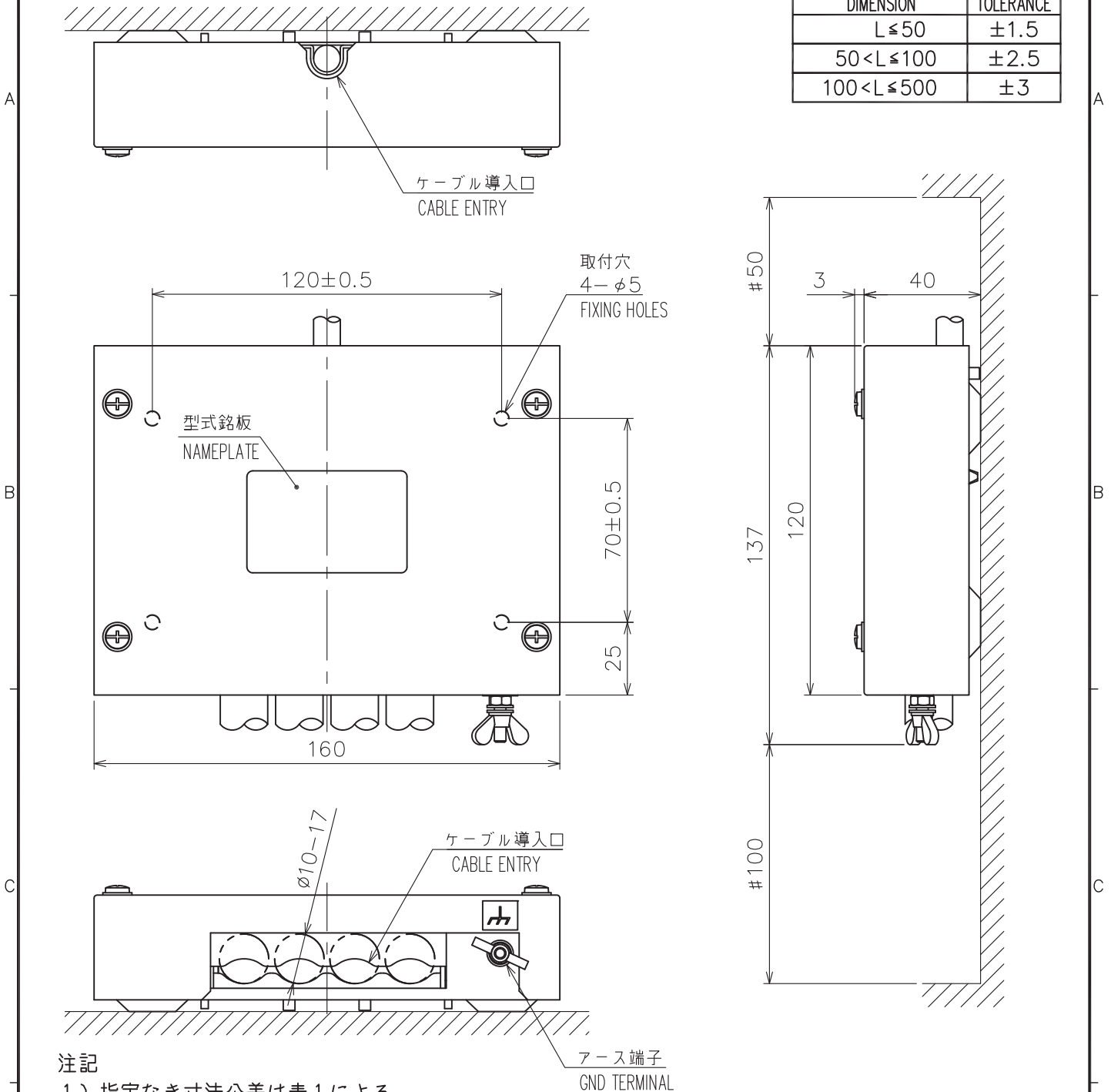
NOTE

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         | 1/200        | 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)<br>DIMENSION | 公差 (mm)<br>TOLERANCE |
|------------------------|----------------------|
| $L \leq 50$            | $\pm 1.5$            |
| $50 < L \leq 100$      | $\pm 2.5$            |
| $100 < L \leq 500$     | $\pm 3$              |



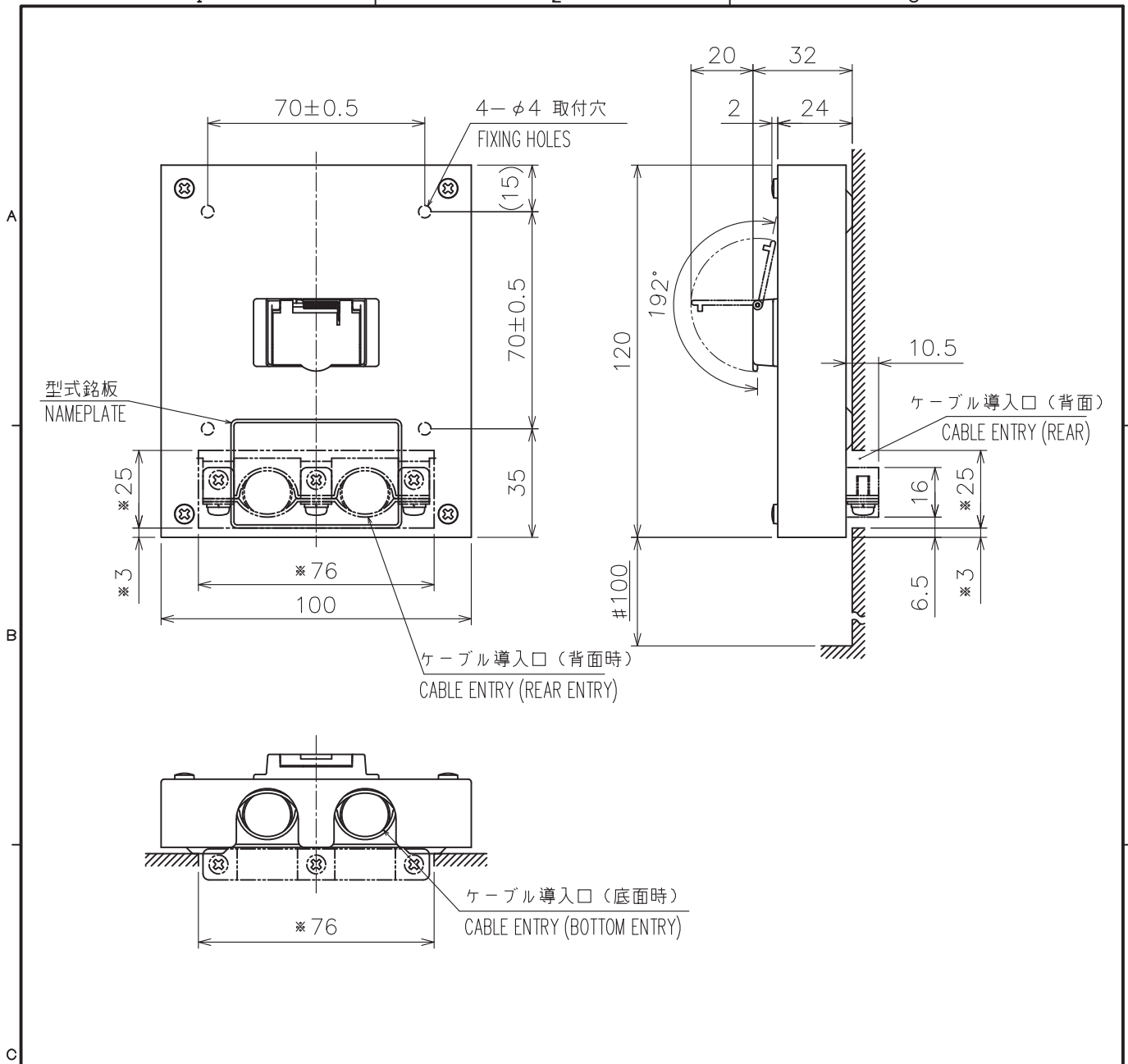
注記

- 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 $\pm 10\%$ kg |
| DWG. No. | C5674-G03-B             | 質量はケーブルを含まず。<br>MASS DOES NOT INCLUDE CABLE. | NAME              |
|          | REF. No.                | 16-023-550G-1                                | 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.

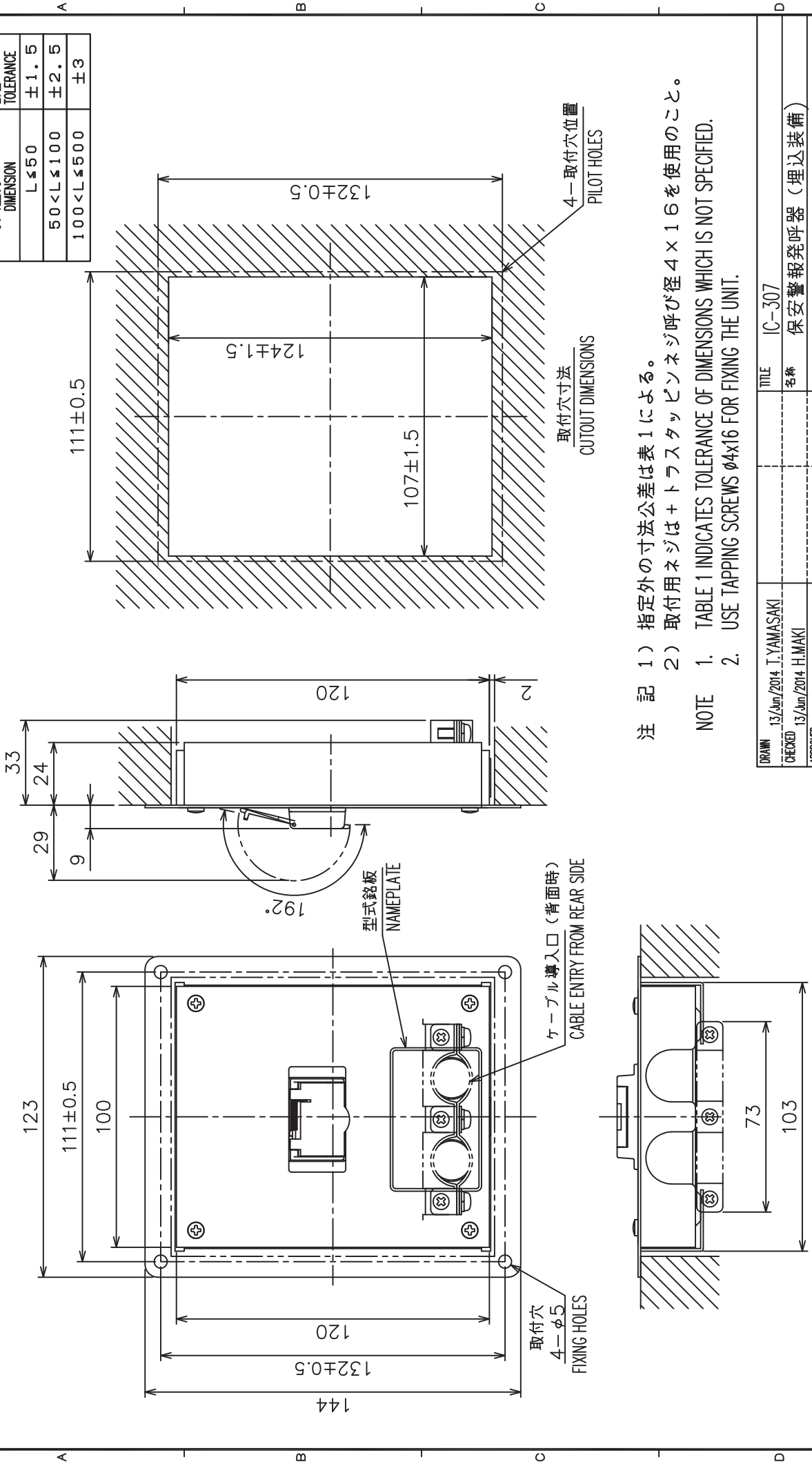
表1 TABLE 1

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

|          |                        |                 |                                  |
|----------|------------------------|-----------------|----------------------------------|
| DRAWN    | 5/0ct/2010 T.YAMASAKI  | TITLE           | IC-307                           |
| CHECKED  | 5/0ct/2010 T.TAKAHASHI | 名称              | 保安警報発呼器 (壁掛装備)                   |
| APPROVED | 6/0ct/2010 Y.NISHIYAMA | FELCOM          | 12/15/16                         |
| SCALE    | 1/2                    | MASS            | 0.35 ±10%<br>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)<br>DIMENSION | 公差 (mm)<br>TOLERANCE |
|------------------------|----------------------|
| L ≤ 50                 | ±1.5                 |
| 50 < L ≤ 100           | ±2.5                 |
| 100 < L ≤ 500          | ±3                   |



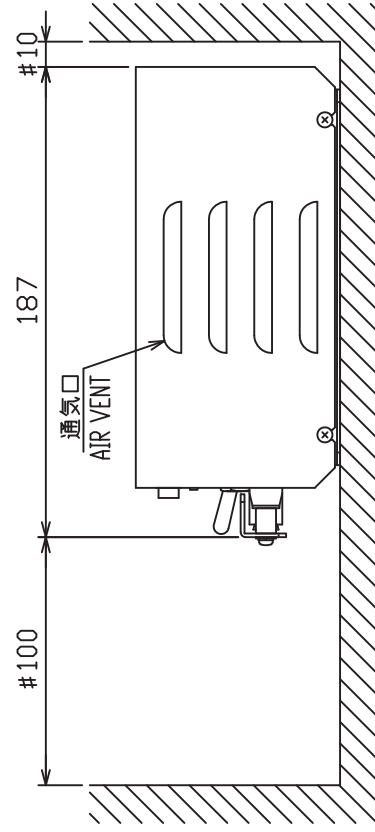
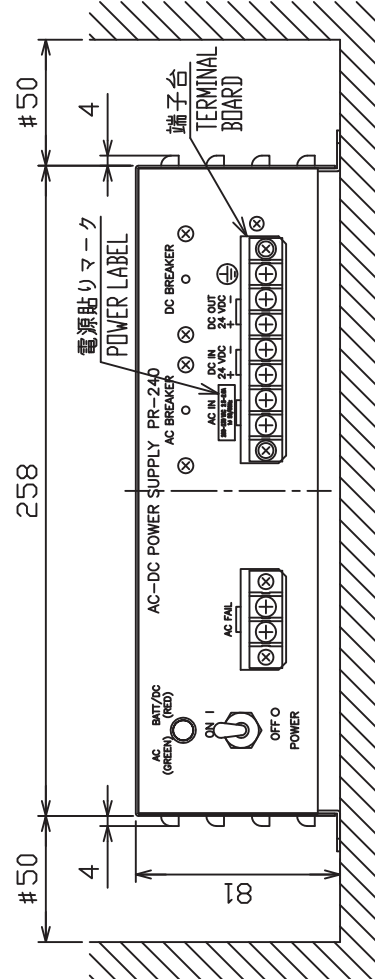
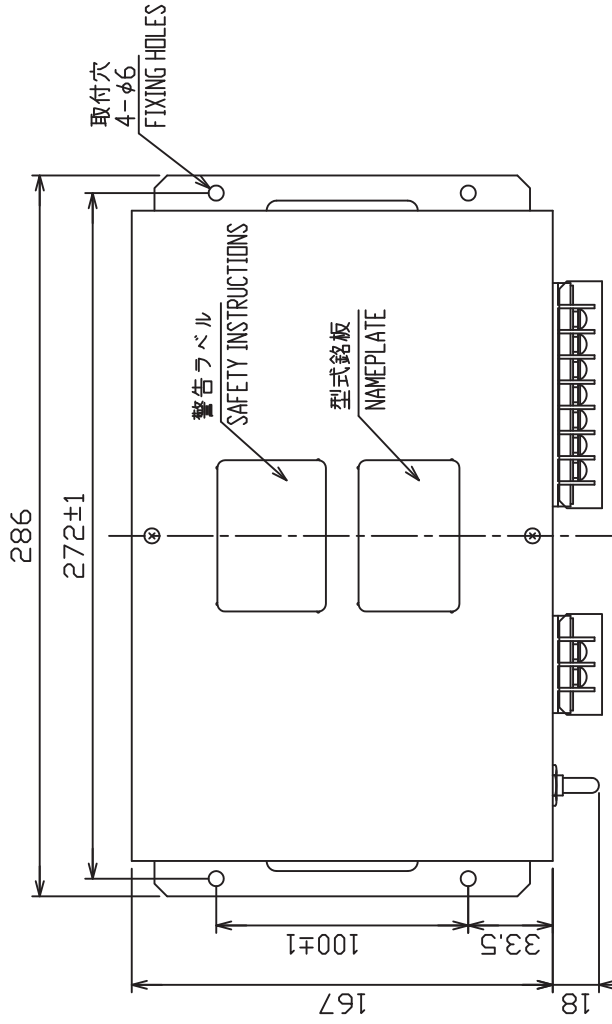
注 記 1) 指定外の寸法公差は表 1 による。  
 2) 取付用ネジは +トラスチック呼び径 4 × 16 を使用のこと。

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. M. A. K. I. | 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)<br>DIMENSION | 公差 (mm)<br>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         |

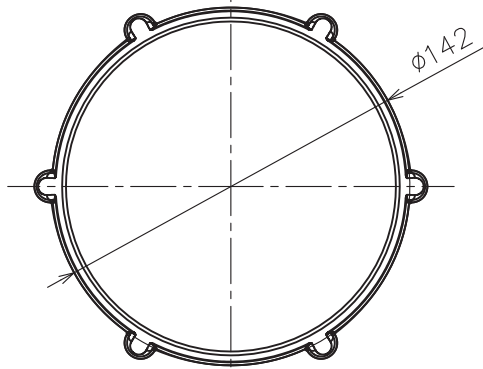


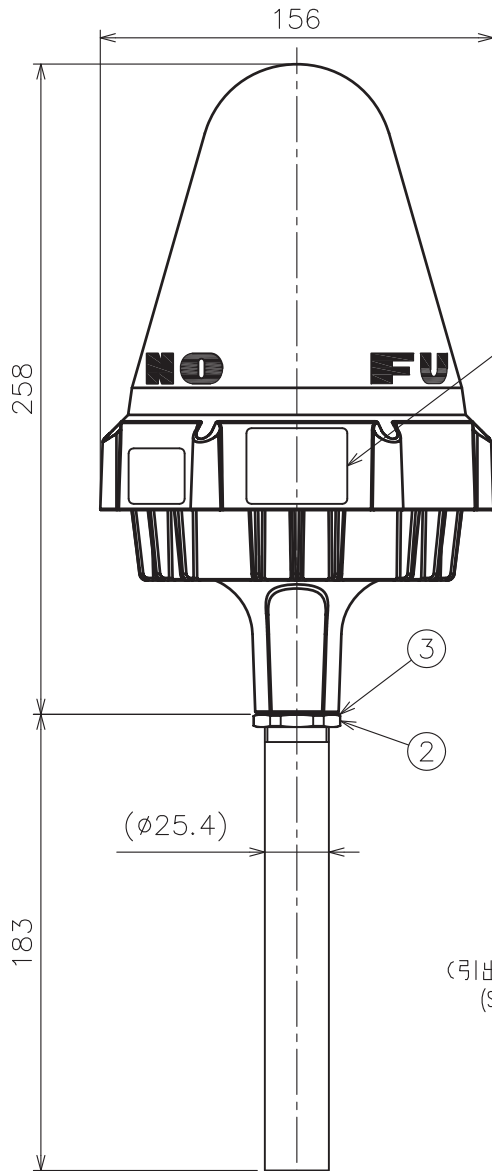
表2 工事材料

TABLE 2 INSTALLATION MATERIAL

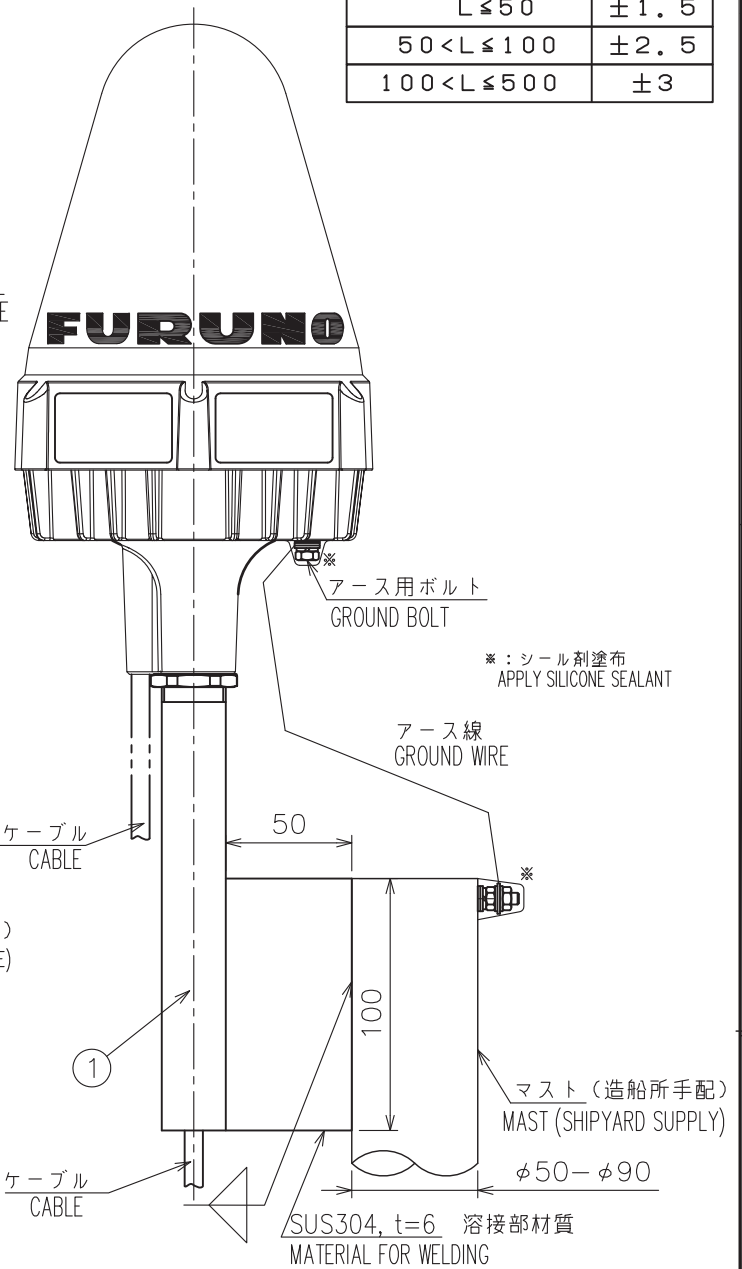
| 品番<br>ITEM | 品名<br>NAME                         | 図番<br>DWG. No. | 摘要<br>REMARK   |
|------------|------------------------------------|----------------|----------------|
| 1          | アンテナ取付パイプ<br>ANTENNA MOUNTING PIPE | 16-018-1301    | 0.3 kg APPROX. |
| 2          | ロックナット<br>LOCK NUT         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

表1 TABLE 1

| 寸法区分 (mm)<br>DIMENSION | 公差 (mm)<br>TOLERANCE |
|------------------------|----------------------|
| $L \leq 50$            | $\pm 1.5$            |
| $50 < L \leq 100$      | $\pm 2.5$            |
| $100 < L \leq 500$     | $\pm 3$              |



型式銘板  
NAMEPLATE



\*: シール剤塗布  
APPLY SILICONE SEALANT

アース線  
GROUND WIRE

マスト (造船所手配)  
MAST (SHIPYARD SUPPLY)

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

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。<br>MASS W/O MOUNTING PIPE. |
| DWG. No. | C5635-G01-H             | REF. No. | 16-023-250G-1                            |
|          |                         |          | NAME ANTENNA UNIT                        |
|          |                         |          | OUTLINE DRAWING                          |

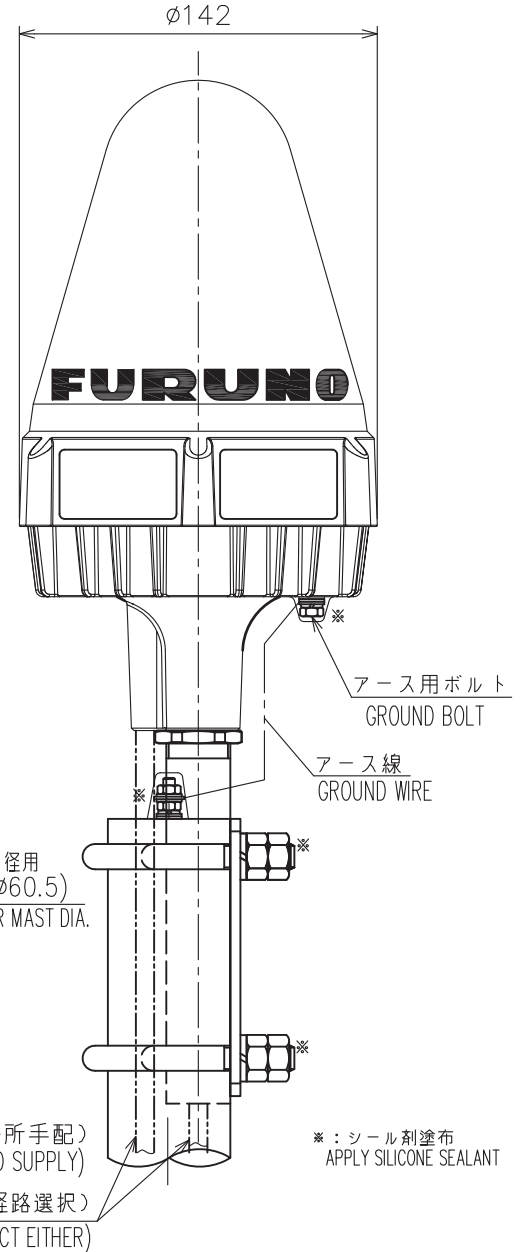
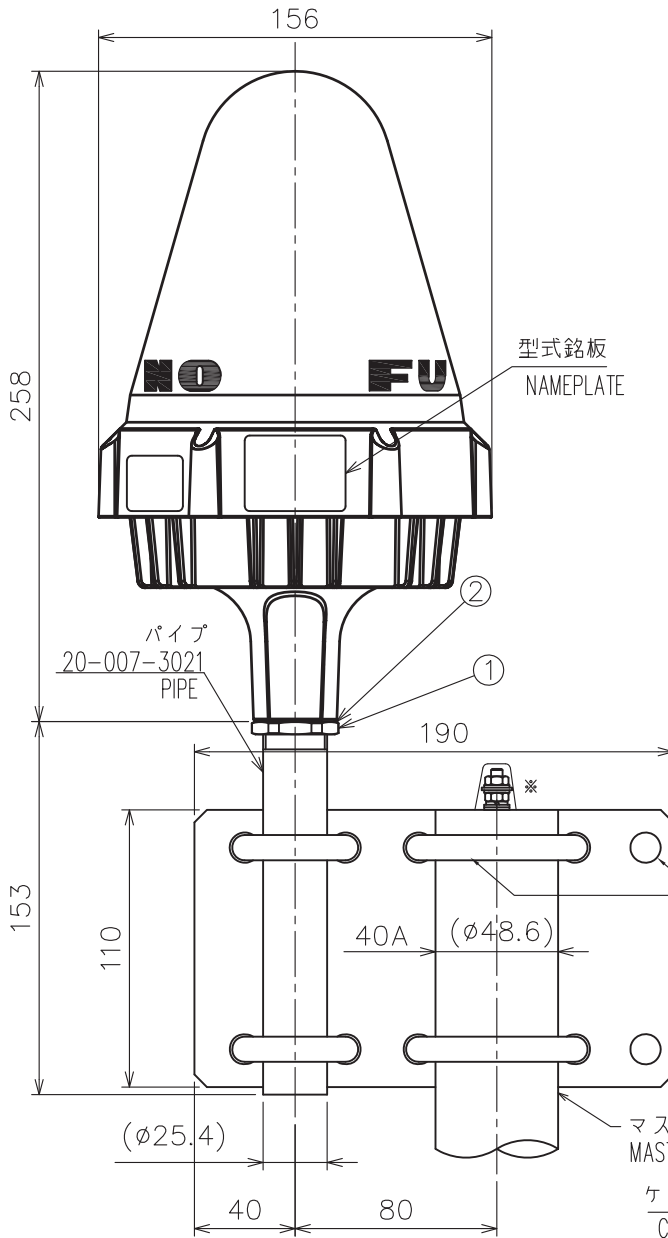
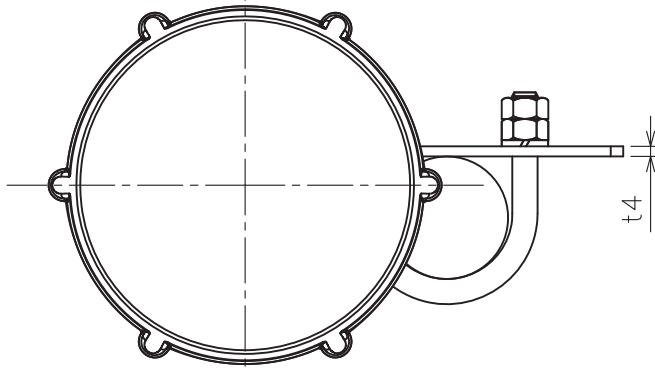
表1 TABLE 1

| 寸法区分 (mm)<br>DIMENSION | 公差 (mm)<br>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<br>ITEM | 品名<br>NAME          | 図番<br>DWG. No. |
|------------|---------------------|----------------|
| 1          | ロックナット<br>LOCK NUT  | 16-023-2518    |
| 2          | ナットシート<br>NUT SHEET | 16-023-2519    |

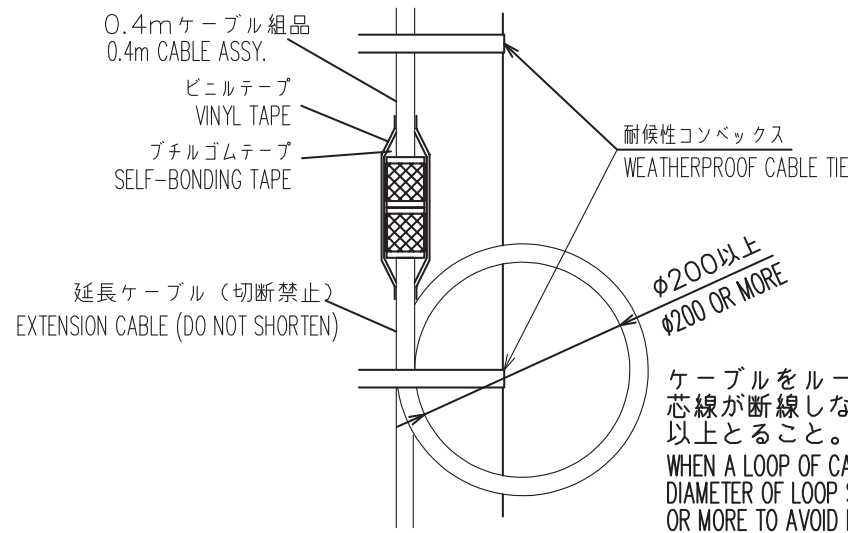
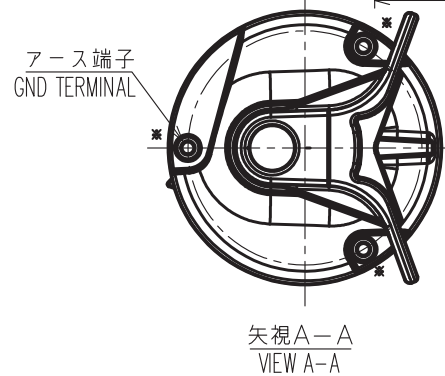
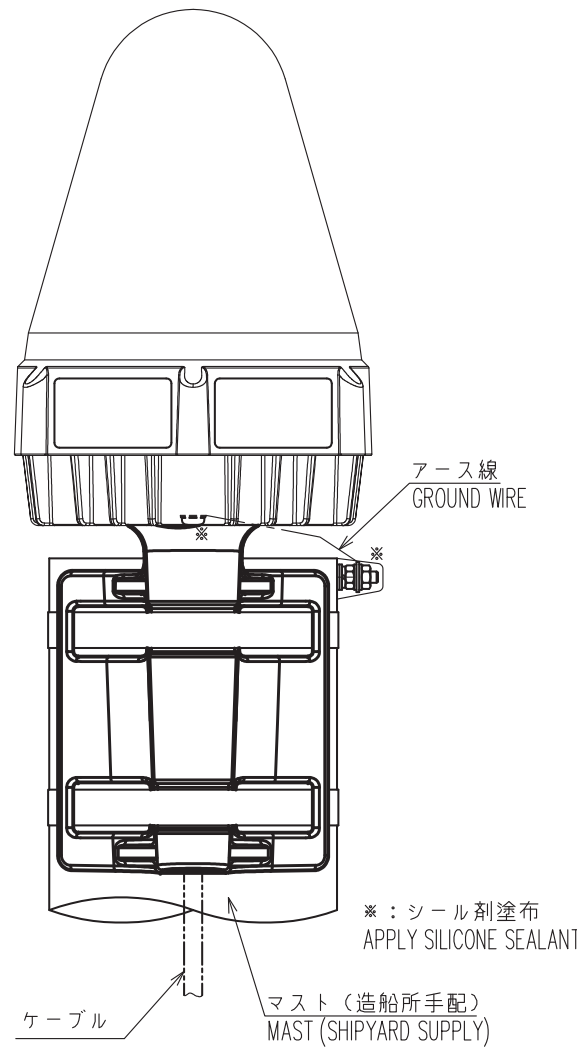
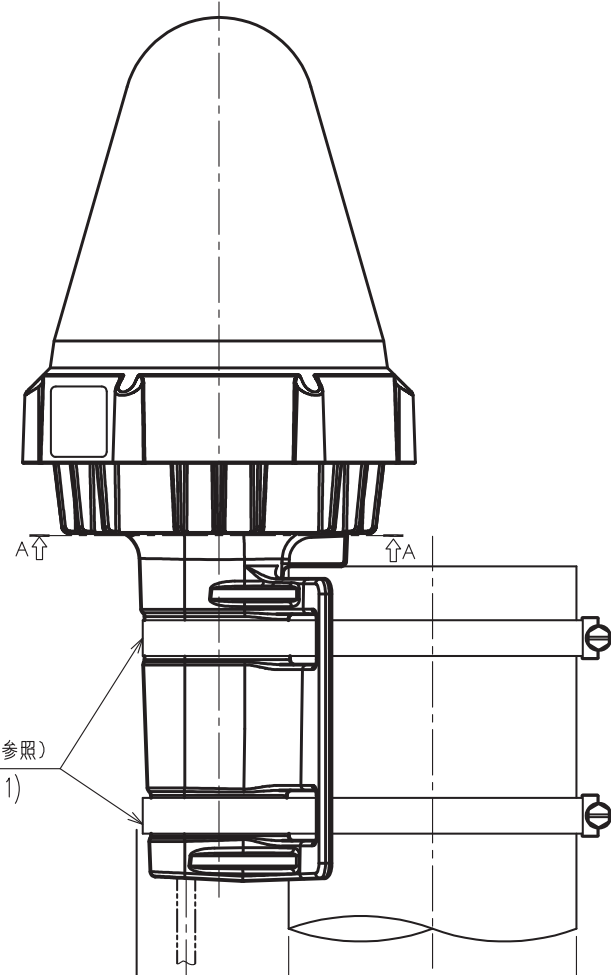
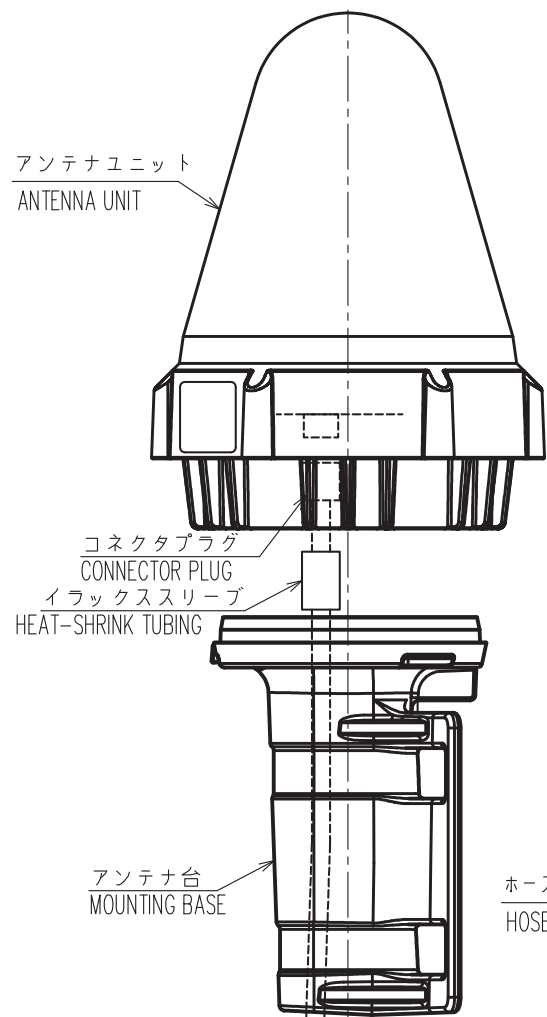


注記 1) 指定外の寸法公差は表1による。

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。<br>MASS INCLUDES INSTALLATION MATERIALS. | NAME                            |
|          | REF. No.                | 16-023-252G-1                                      | ANTENNA UNIT (W/ FIXTURE PLATE) |
|          |                         |  | OUTLINE DRAWING                 |





手順

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。
- 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。
- 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。
- アンテナ台のネジ部にシール剤を塗布する。
- アンテナ台をホースクランプ2本でマストに固定する。
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。
- 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。
- \*部分をシール剤で完全に覆う。

PROCEDURE

- 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.
- 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.
- FIX THE MOUNTING BASE TO ANTENNA UNIT WITH 3 SCREWS.  
FASTEN THE GROUND WIRE TO A SCREW WITH THEM WITH CRIMP-ON LUG.
- APPLY SILICONE SEALANT TO SCREWS OF MOUNTING BASE.
- FIX THE MOUNTING BASE TO MAST WITH TWO HOSE CLAMPS SECURELY.
- CONNECT THE ARMORED CABLE CONNECTOR TO THE CABLE ASSY.
- WRAP THE CONNECTORS WITH SELF-BONDING TAPE AND VINYL TAPE.
- FIX THE ANTENNA CABLE WITH WEATHERPROOF CABLE TIES AND CONNECT GROUND WIRE TO MAST.
- 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) |

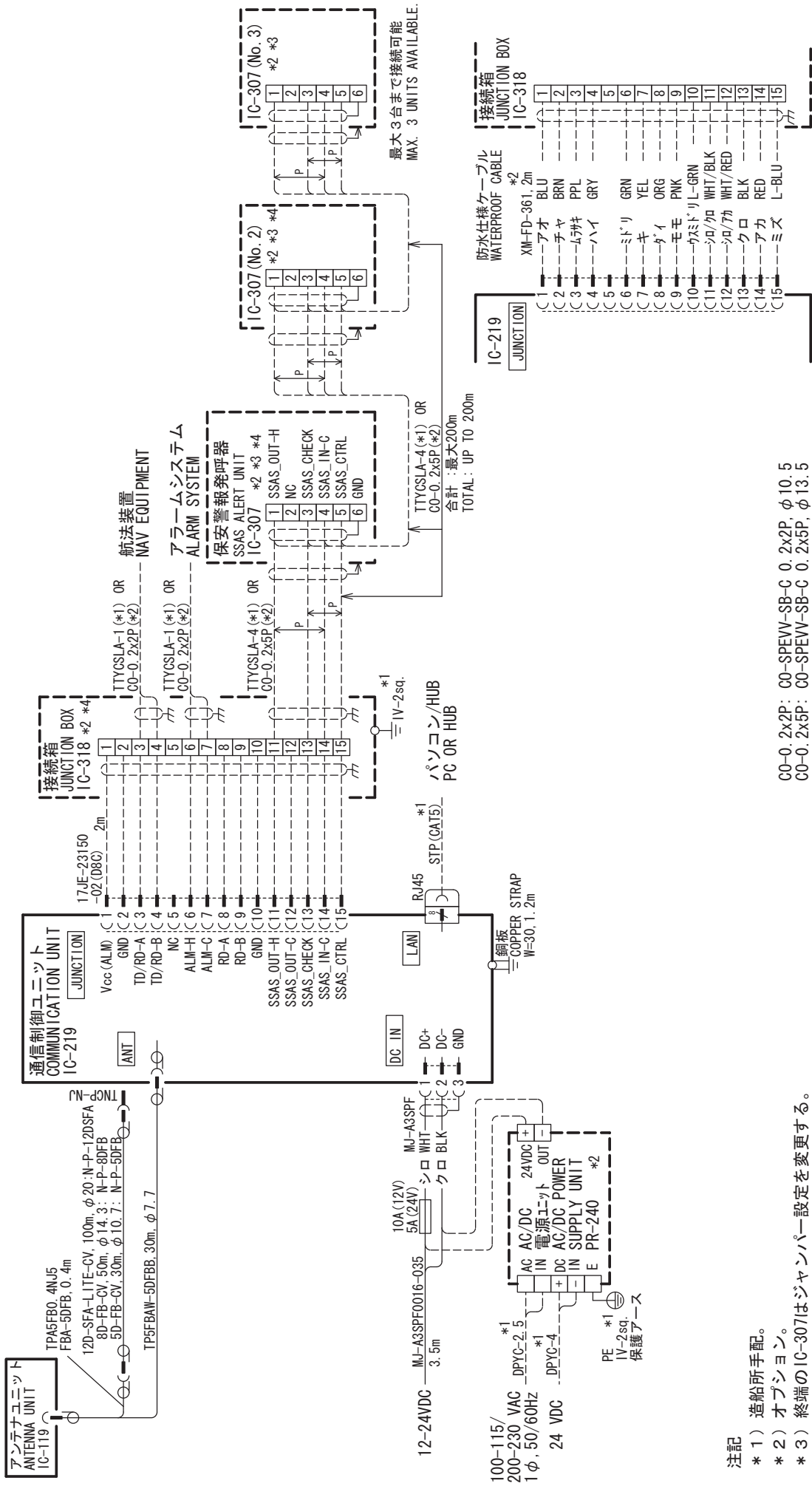
|          |                        |                        |                                  |
|----------|------------------------|------------------------|----------------------------------|
| DRAWN    | 18/Feb/2016 T.YAMASAKI | TITLE                  | IC-115/116/118/119               |
| CHECKED  | 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%<br>kg        | NAME                   | ANTENNA UNIT (HOSE CLAMP FIXING) |
| DWG.No.  | C5674-Y01-C            | INSTALLATION PROCEDURE |                                  |



2

3

4



CO-0, 2x2P: CO-SPEVV-SB-C 0, 2x2P, φ10, 5  
 CO-0, 2x5P: CO-SPEVV-SB-C 0, 2x5P, φ13, 5

|          |             |              |               |                         |
|----------|-------------|--------------|---------------|-------------------------|
| DRAWN    | 6/Mar/2013  | T. YAMASAKI  | TITLE         | FELCOM 19               |
| CHECKED  | 6/Mar/2013  | H. MAKI      | 名称            | インマルサットMINI-C携帯移動地球局    |
| APPROVED | 7/Mar/2013  | Y. NISHIYAMA | 相互結線図         |                         |
| SCALE    |             | IMASS kg     | NAME          | INMARSAT MINI-C MES     |
| DWG. No. | C5675-C01-E | REF. No.     | 16-023-4001-1 | INTERCONNECTION DIAGRAM |

- 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.