FURUNO

Installation Manual
INMARSAT MINI-C MES
FELCOM19

FURUNO ELECTRIC CO., LTD.

www.furuno.com

ECF

(Elemental Chlorine Free)

The paper used in this manual
is elemental chlorine free.

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⚠ SAFETY INSTRUCTIONS

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

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^2 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 eqiupment 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

ANTENNA
UNIT
IC-119

POWER SUPPLY
100-115/200-230
1φ, 50/60 Hz

AC/DC
Power Supply
PR-240

POWER SUPPLY
24 VDC

POWER SUPPLY
12-24 VDC

PRINTER

PERSONAL
COMPUTER
(PC/AT compatible)

COMMUNICATION
UNIT IC-219 (with
internal GPS receiver)

JUNCTION BOX
IC-318

Navigation Equipment
(GNSS)

SSAS ALERT UNIT*
IC-307

SSAS ALERT UNIT*
IC-307

(Max. 3 units)

*: At least two SSAS Alert Units are required.

CATEGORY OF UNITS

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

EQUIPMENT LISTS

Standard supply

Name	Type	Code No.	Qty	Remarks
Antenna Unit	IC-119	-	1	
Communication Unit	IC-219	-	1	
Junction Box	IC-318	-	1	For SSAS only.
SSAS Alert Unit	IC-307	-	2	For SSAS only.
Installation Materials	CP16-02100	000-043-411	1	For Antenna Unit
	CP16-05301	001-179-990	1	For Communication unit
	CP16-05101	001-180-020	1	For Junction Box, SSAS only
Spare Parts	SP16-01401	004-439-530	1	For Communication unit, fuses
Accessories	FP16-02700	000-021-675	1	For Communication unit, CD-R

Optional supply

Name	Type	Code No.	Qty	Remarks
AC/DC Power Supply Unit	PR-240	000-013-632	1	
SSAS Alert Unit	IC-307	-	1	
Cable Assy.	COSPEVVSBC 5PX0.2LF	000-560-452-10	1	5P, 10 m
	COSPEVVSBC 5PX0.2LF	000-103-868-10	1	5P, 20 m
	COSPEVVSBC 5PX0.2LF	000-103-869-10	1	5P, 30m
	COSPEVVSBC 5PX0.2LF	000-132-829-10	1	5P, 40 m
	COSPEVVSBC 5PX0.2LF	000-132-828-10	1	5P, 50 m
Junction Box	IC-318	-	1	
Antenna Unit	IC-119	-	1	
Antenna Mounting Kit	CP16-03701	004-555-000	1	For IC-119
Antenna Bracket	CP16-03702	001-016-260	1	
Antenna Mounting Pipe	CP16-03703	001-014-510	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	CP16-03610	000-043-647	1	w/pipe, 30 m
	CP16-03620	000-043-648		w/pipe, 50 m
	CP16-03630	000-043-649		w/pipe, 100 m
	CP16-05020	000-016-923		w/pipe, 30 m, for armored cable
	CP16-03650	000-043-650		w/o pipe, 30 m
	CP16-03660	000-043-651		w/o pipe, 50 m
	CP16-03670	000-043-652		w/o pipe, 100 m
	CP16-05030	000-016-924		w/o pipe, 30 m, for armored cable

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1. MOUNTING

<div style="border:1px solid black">

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.

</div>

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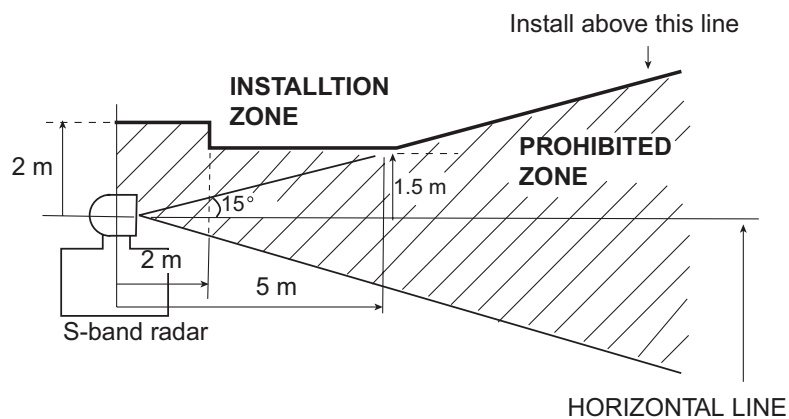
• The allowable vibration level as specified by Inmarsat is as shown in the table below.

Allowable vibration level

Frequency	Level
2 to 10 Hz	2.54 mm Peak Amplitude
10 to 100 Hz	9.8 m/s2 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.

1.1.2 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-CV	

To mount the antenna unit, a dedicated mounting pipe is necessary.

For how to mount the antenna, see the outline drawing at the end of this manual and "Installation and Replacement of Antenna Unit", **included with the antenna unit**.
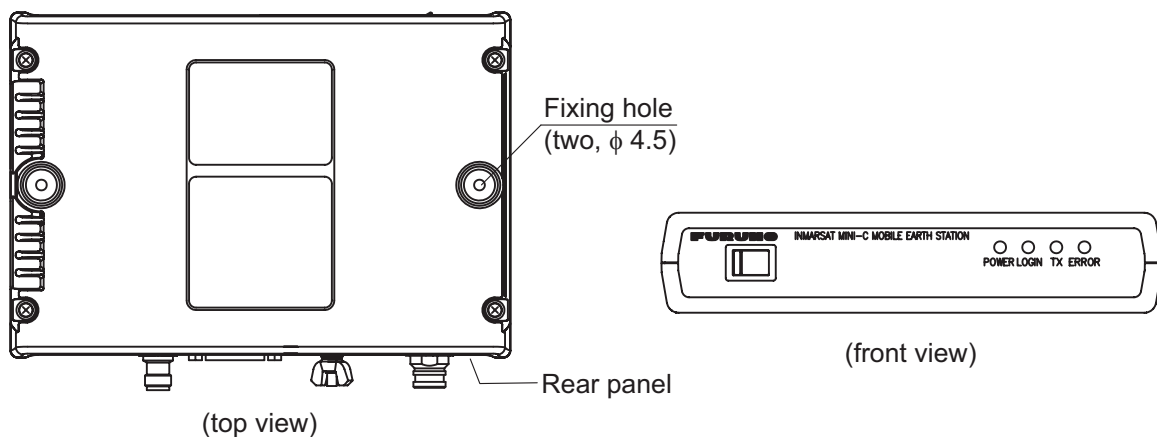
1.2 Communication Unit

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.

Fixing hole (two, φ 4.5)

Rear panel

(top view)

(front view)

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.


LAN cover

Fix the cable here with a cable tie.

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).
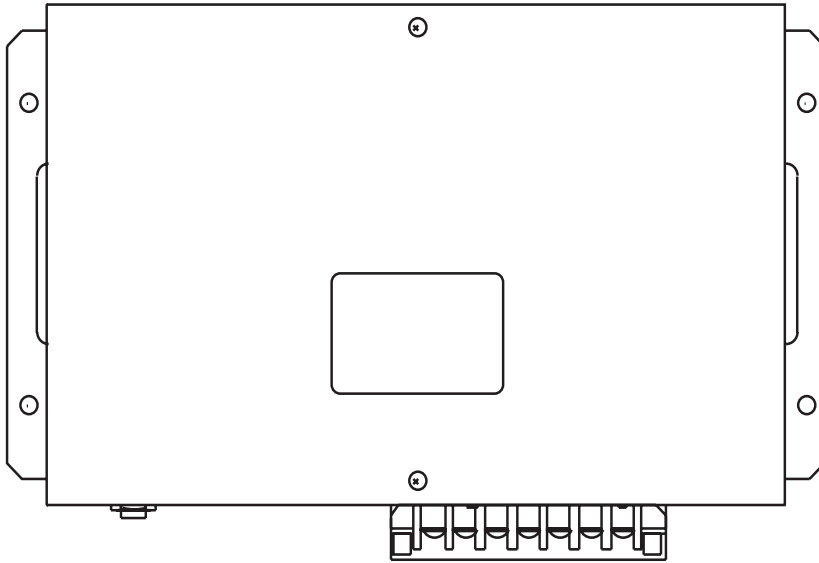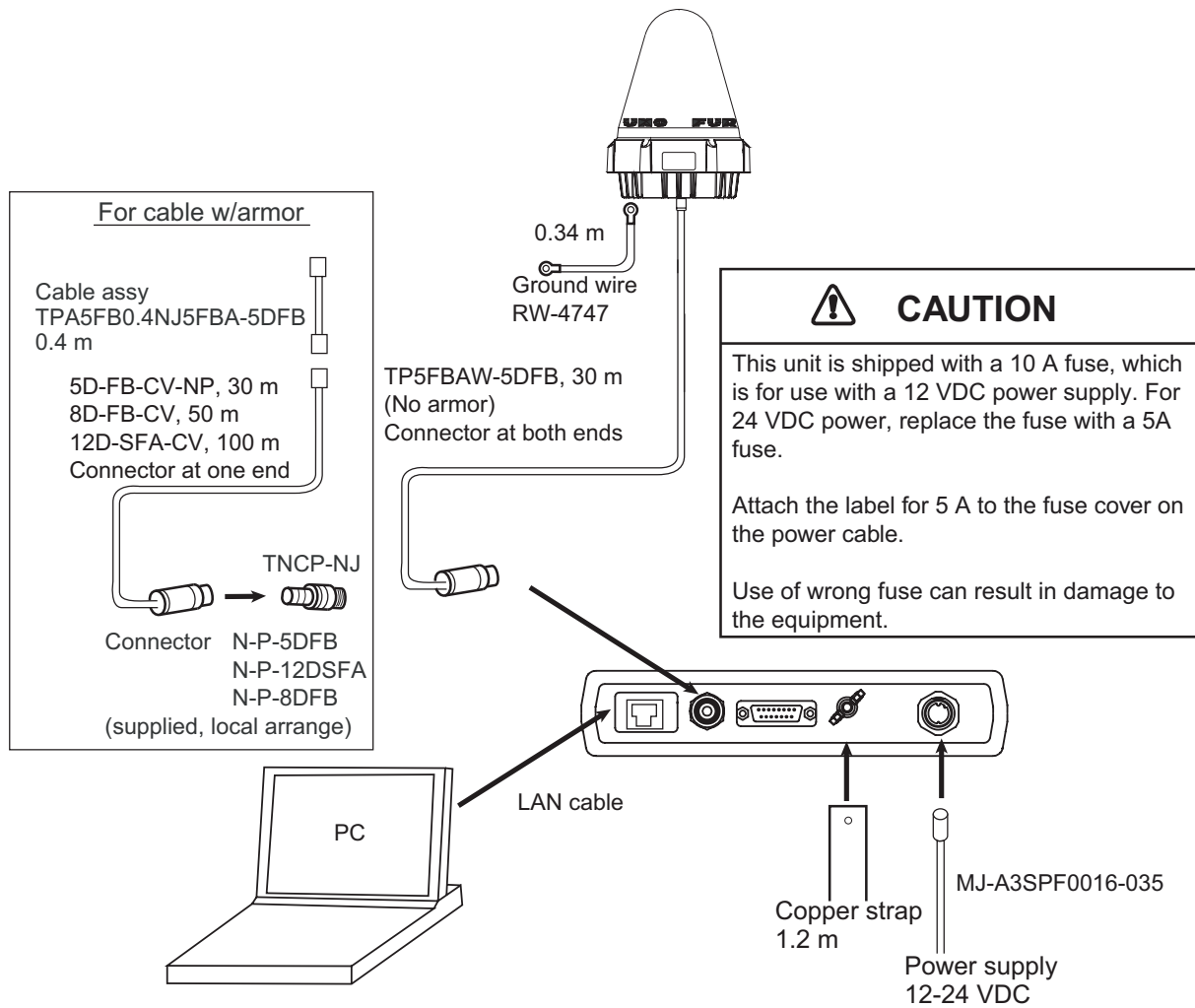3. Connect the cables referring to Chapter 2.
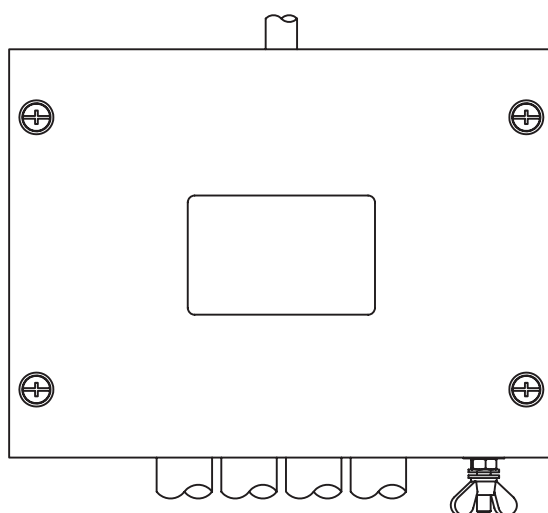
Junction box IC-318

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

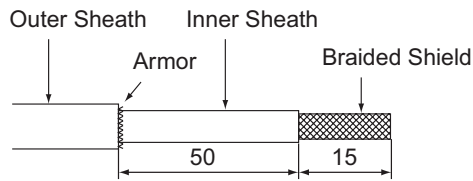# 2. WIRING

For cable w/armor

Cable assy
TPA5FB0.4NJ5FBA-5DFB
0.4 m

5D-FB-CV-NP, 30 m
8D-FB-CV, 50 m
12D-SFA-CV, 100 m
Connector at one end

TNCP-NJ

Connector   N-P-5DFB
             N-P-12DSFA
             N-P-8DFB
(supplied, local arrange)

0.34 m
Ground wire
RW-4747

TP5FBAW-5DFB, 30 m
(No armor)
Connector at both ends

⚠ **CAUTION**

This unit is shipped with a 10 A fuse, which is for use with a 12 VDC power supply. For 24 VDC power, replace the fuse with a 5A fuse.

Attach the label for 5 A to the fuse cover on the power cable.

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

PC

LAN cable

Copper strap
1.2 m

MJ-A3SPF0016-035

Power supply
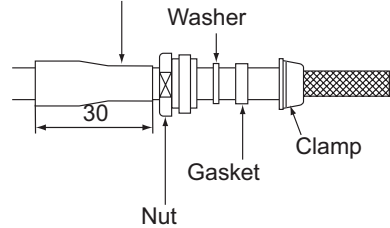12-24 VDC

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.

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

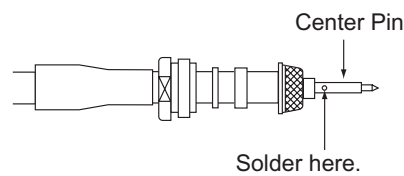- Be careful not to damage the braided shield.
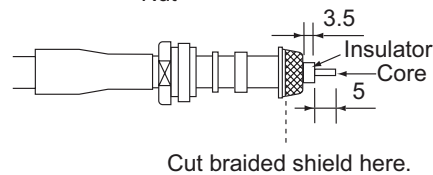
Fold back the braided shield onto the clamp and trim the shield as shown.

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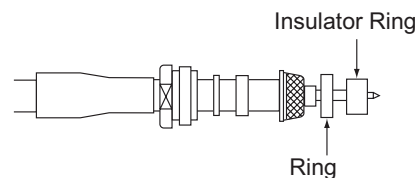
Set the ring and insulator ring onto the cable.
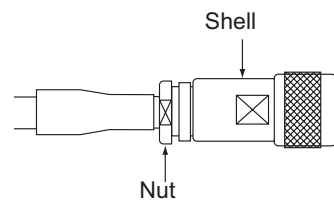
Set the shell to the cable then turn the nut to tighten. (Do not tighten by turning shell.) - Use a wrench or the like to tighten the nut securely.

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

8D-FB-CV (50 m)

Dimensions in millimeters.

Outer Sheath
Armor   Inner Sheath   Shield

50   30

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

Cover with heat-shrink tubing and heat.

30   10
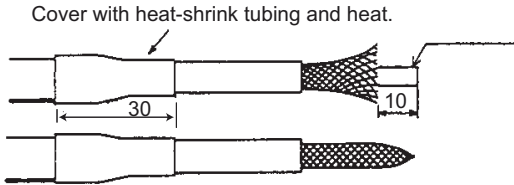
Remove insulator and core by 10 mm.

Twist shield end.

Clamp Nut   Clamp
Gasket (reddish brown)

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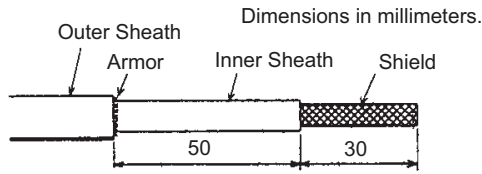
Aluminum Foil

Trim shield here.

Fold back shield over clamp and trim.
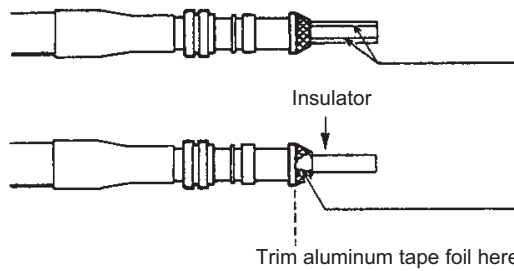
Insulator

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

Trim aluminum tape foil here.

Fold back aluminum tape foil onto shield and trim.

1

5
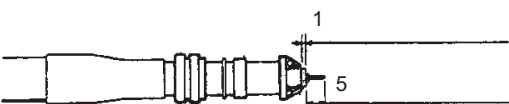
Expose the insulator by 1 mm.

Expose the insulator by 5 mm.
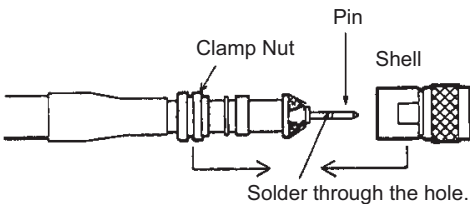
Pin
Clamp Nut   Shell

Solder through the hole.

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

2-3
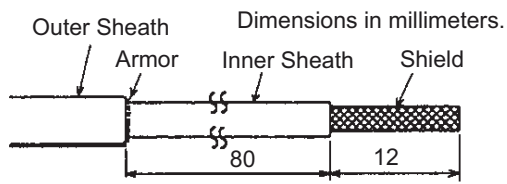
12D-SFA-CV (100 m)
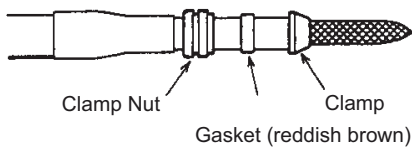
Remove outer sheath and armor by the dimensions shown left.
Expose inner sheath and shield by the dimensions shown left.
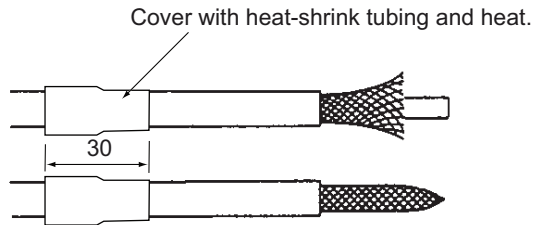
Twist shield end.
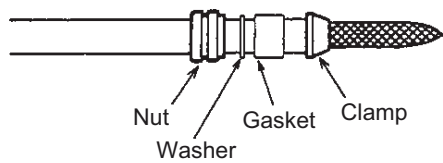
Slip on clamp nut, gasket and clamp as shown left.
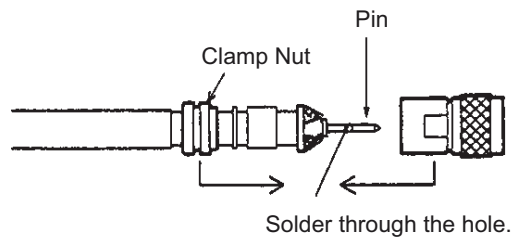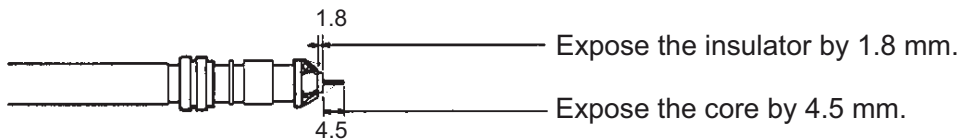
Expose the insulator by 1.8 mm.

Expose the core by 4.5 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 12D-SFA-CV

2.2 Junction Box IC-318

Use the junction box IC-318 to connect the distress alert/received call unit IC-305 and other units (max. four units) 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	IC-305/306
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	

Cover

Cable clamp

Terminal board

Sticker for connection of other equipment

Core 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.

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

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

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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 icon of "SETUP.EXE" in the CD-ROM. The setup procedure begins, showing the welcome dialog box.
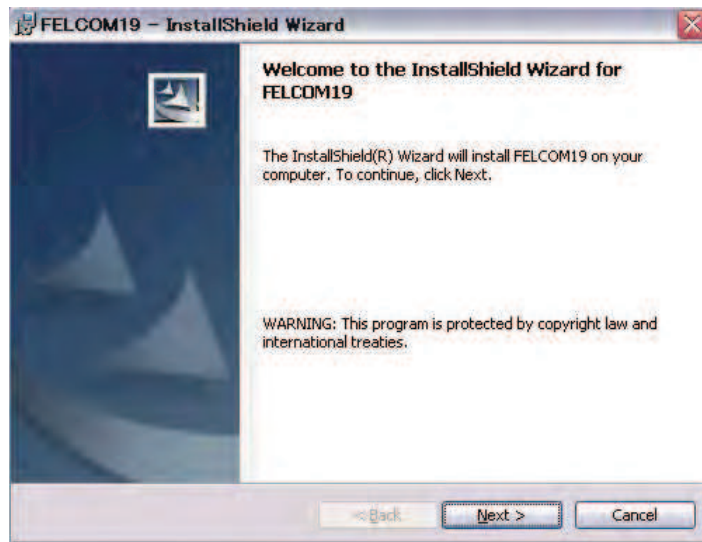
4. Click the **Next** button.
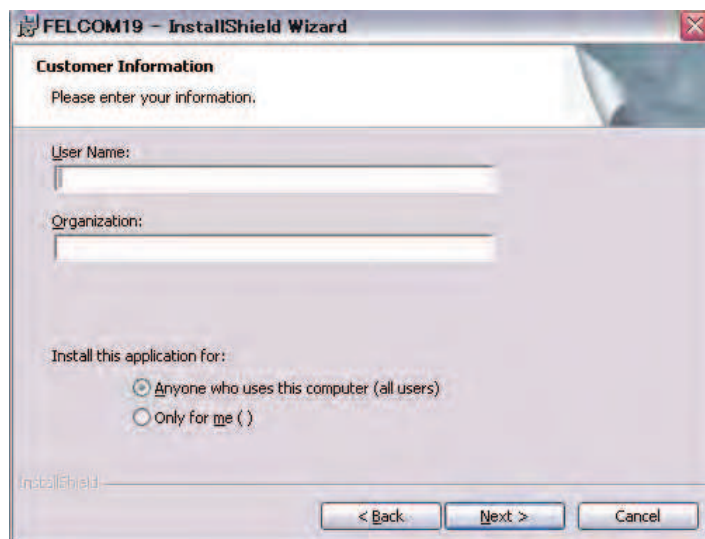
5.   Enter your name and organization.
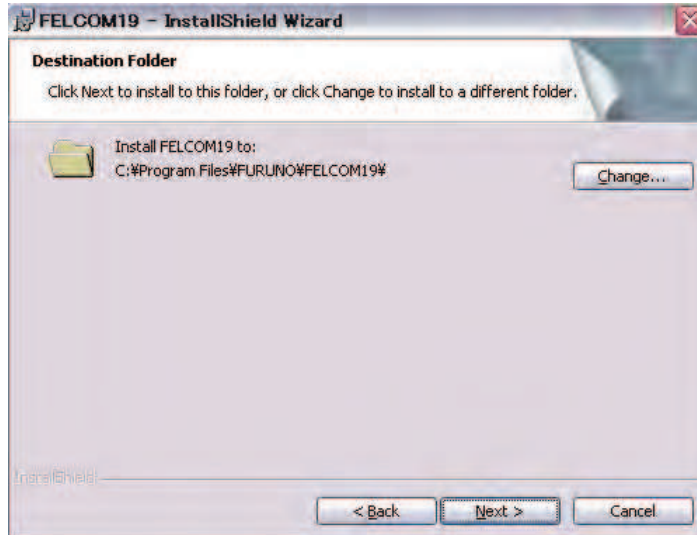
6.   Click the **Next** button.
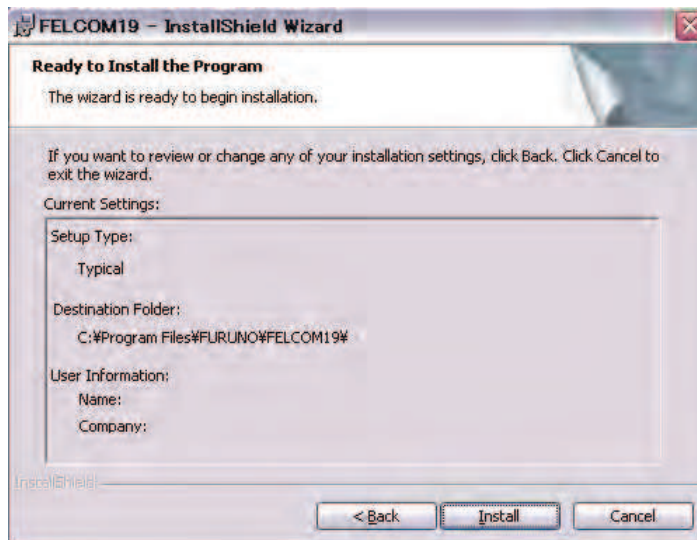
7.   Click the **Install** button and the installation begins. When the installation is completed, the FELCOM19 dialog box appears.
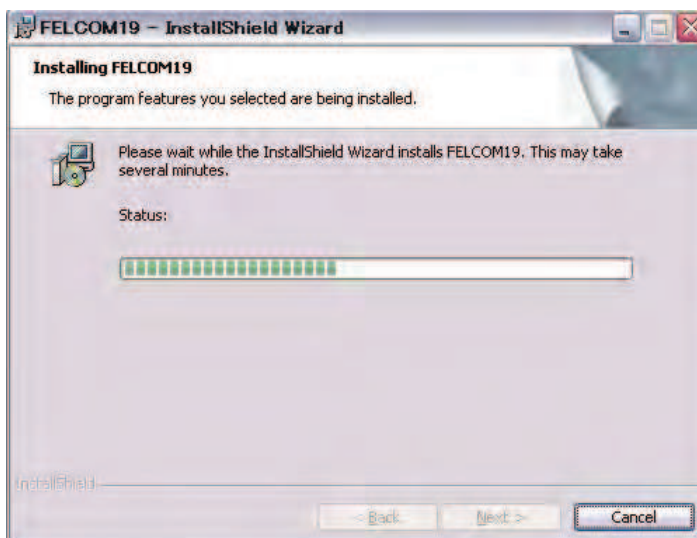
8. Click the **Next** button.
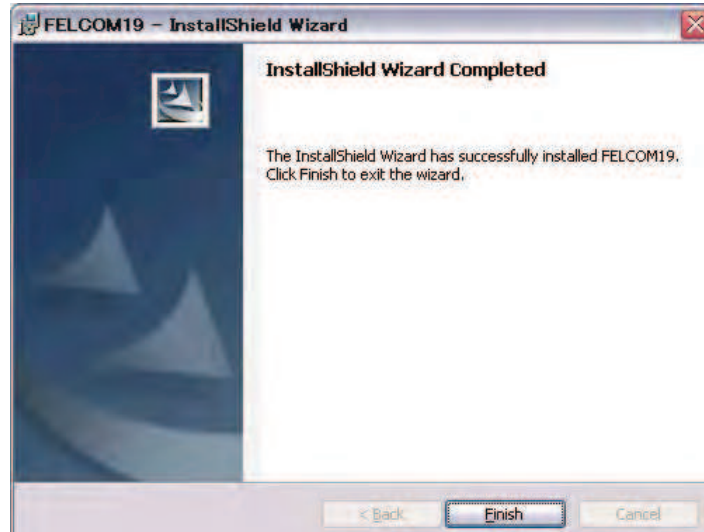
9. Click the **Finish** button. The FELCOM 19 PC application shortcut is created on the desktop.

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

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

| File | Edit | Transmit | EGC | Reports | Logs | Options | **Setup** | StopAlarm |

Setup
1. System Setup
2. Editor Setup
3. Terminal Setup
4. EGC Setup
5. Auto Mode Setup
6. E-Mail Setup
7. Directories
8. Configuration

4. Press **2** key to display the [System Setup] menu.

Setup
System Setup

System Date & Time	01:53 12-01-31 (YY-MM-DD)
IMN	
MES Operation Mode	INMARSAT-C
Nav Port	OFF
Active Port	INT
Message Output Port	INT
EGC Output Port	INT
Network Setup	
Command Window	
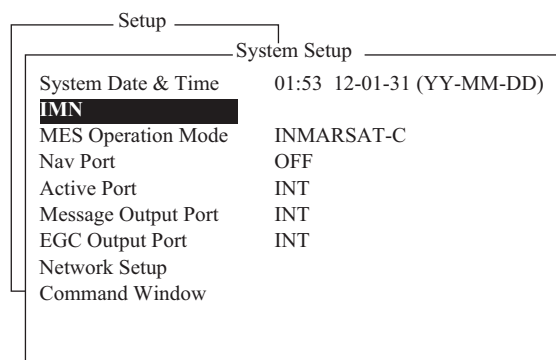
5. Confirm that the [IMN] is selected, and then press the **Enter** key.
An input box appears.

6. Key in your IMN.

7. Press the **Enter** key.

8. Press the **Esc** key to erase the input box.

9. Press the **Enter** key.

To clear the IMN, select IMN, then press **I**, **M**, **N** while pressing the **Alt** key. 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.

3.3   How to Select Position-fixing Equipment

Select the position-fixing equipment that is to feed navigation data to the FELCOM.

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

2. Select [Nav Port] then press the **Enter** key.

3. Select the navigator connected to the FELCOM then press the **Enter** key.
OFF: No navigator connected.
Auto: If two or more navigators are connected, the FELCOM automatically selects the position sensor in the order of GPS and Loran C.
INT: Use the navigator that is built into the communication unit.
EXT: Use an external navigator.

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

3.4   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 ────────┐
│ Connnection                    │
│   Detail        Terminal Network Information │
│                 Eth0 172.31.16.100    /24    │
│ Date Disp. Form YY-MM-DD       │
│ Screen Saver    OFF            │
│ Window Color                   │
└────────────────────────────────┘
```

2.   Select [Detail] then press the **Enter** key to show the [Network Adapter List].

```
┌──────── Network Adapter List ────────┐
│   Name      IP Address               │
│ - - - - - - - - - - - - - - - - - -  │
│  *Eth0      172.31.16.100/24         │
│   Eth1      192.168.16.11/24         │
│   Eth2      - - -.- - -.- - -.- - ./- - │
│   Eth3      - - -.- - -.- - -.- - ./- - │
│   Eth4      - - -.- - -.- - -.- - ./- - │
└──────────────────────────────────────┘
```

Note: The [Network Adapter List] shows the name of the LAN interface and the IP address of the PC (terminals installed for the FELCOM system). The LAN interfaces have names to distinguish them from one another. The asterisk marks the LAN interface currently selected for communication.

3.   Select the LAN interface to use for communication then press the **Enter** key.

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

```
┌──────────────── Connection 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.

5.   Select the terminal to use then press the **Enter** key.

6.   Select [Date Disp. Form] then press the **Enter** key to open its options window.

7.   Select [YY-MM-DD], [MMM-DD-YY] or [DD-MMM-YY] as appropriate then press the **Enter** key.

8.   Select [Screen Saver] then press the **Enter** key.

9.   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.

10. Select [Window Color] then press the **Enter** key.

```
┌──────────── Window Color ────────────┐
│ ▌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 │
└───────────────────────────────────────┘
```

11. Set the window colors as follows:

1) [Select Preset] provides three preconfigured 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	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

3-7

EDIT   BASE WINDOW

File   Edit   Transmit   EGC   Reports   Logs   Options   Setup   StopAlarm

1:                    < [1] UNTITLED1 >
2:

MENU

CAUTION
                                    MESSAGE
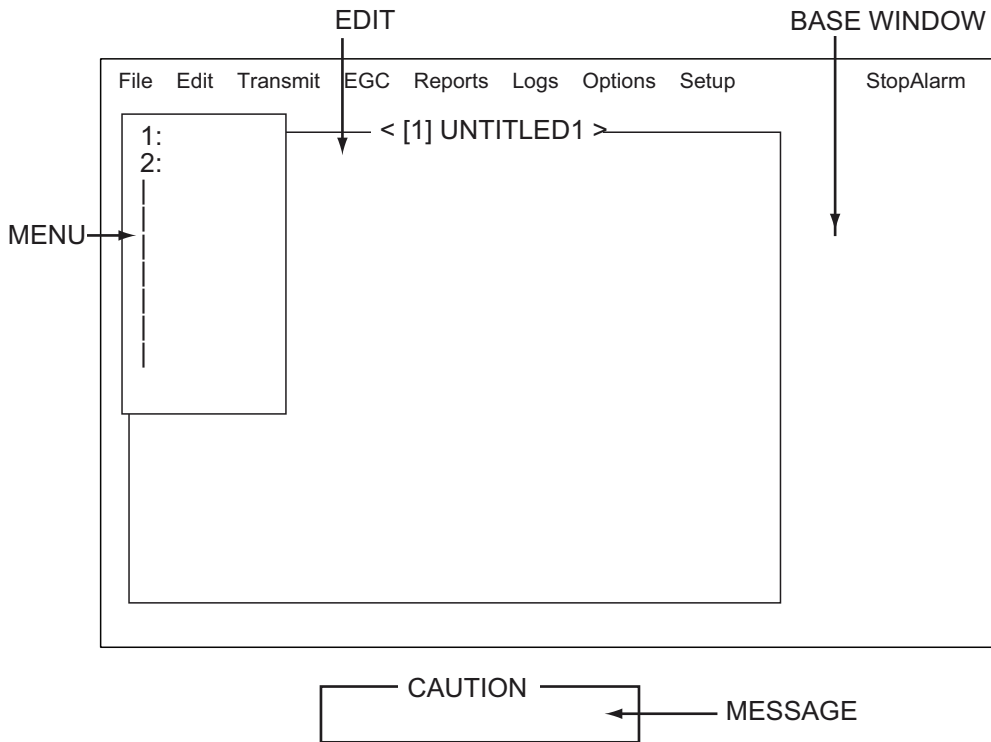
3) Select [Fore Color].

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).

12. Press the **Enter** key to show the [Update] window.

13. [Yes] is selected; press the **Enter** key.

14. 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.

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

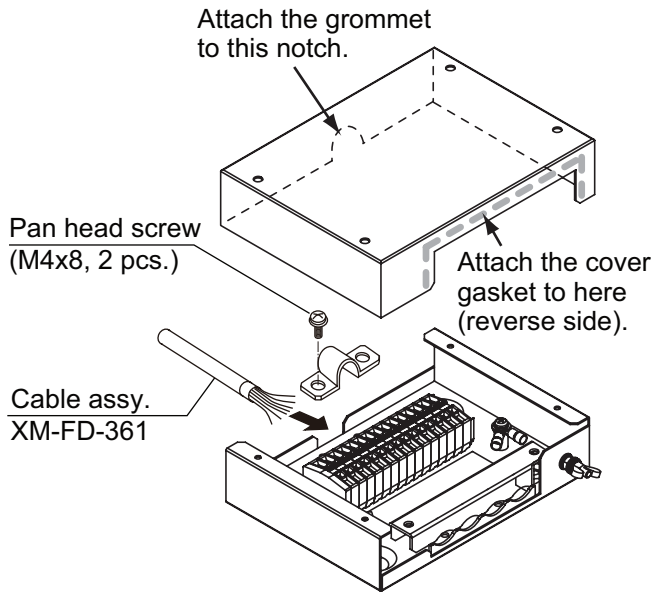To mount the IC-318 on a bulkhead, use the waterproofing kit to keep water splash out of the unit. When the OP16-58 is used, replace the cable from the IC-318 with the XM-FD-361 as shown on next page.

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	100-373-540-10	1

Attach the grommet
to this notch.

Pan head screw
(M4x8, 2 pcs.)

Cable assy.
XM-FD-361

Attach the cover
gasket to here
(reverse side).

#	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: When the communication unit is mounted on a bulkhead, the rear panel (
the side with connectors) should be downward for waterproofing.

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.
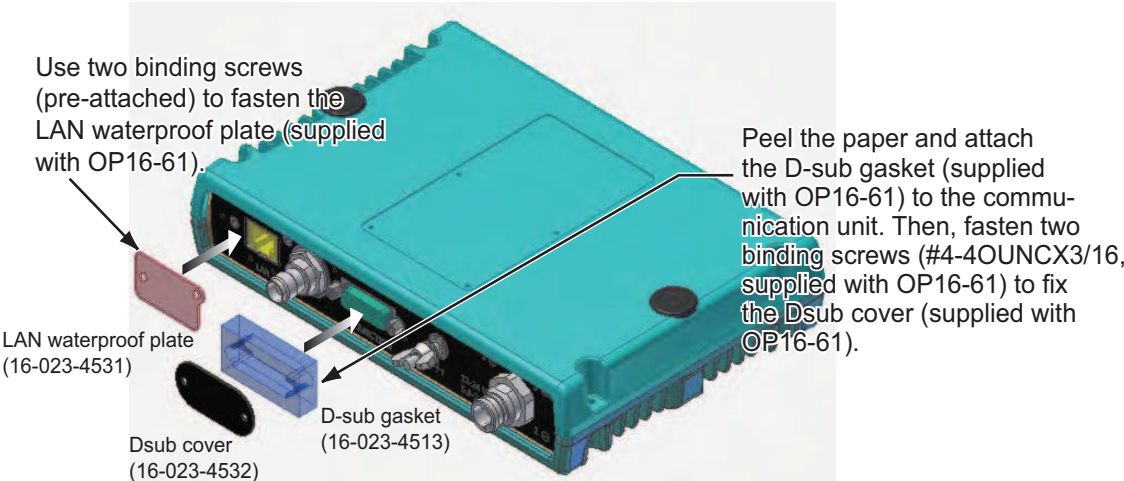3. Re-attach the LAN cover.
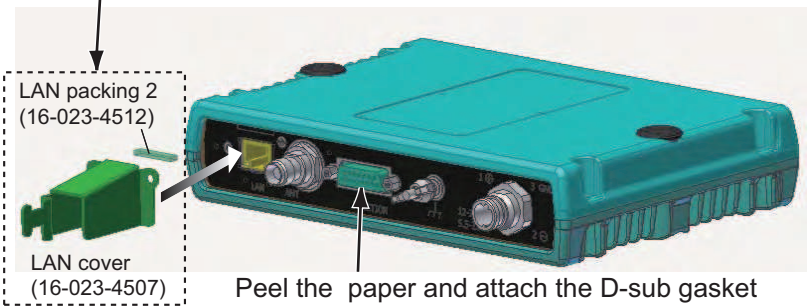
LAN packing 2
(16-023-4512)

LAN cover
(16-023-4507)

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

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).

LAN waterproof plate
(16-023-4531)

Dsub cover
(16-023-4532)

D-sub gasket
(16-023-4513)

4-3

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

Note: This kit cannot be used if the IC-307 is mounted face upward.

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.

Fixing tape

(IC-307)
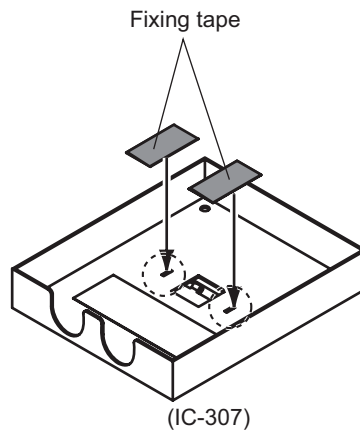
3. Attach the cover.

4. Remove the paper from the waterproofing cover and attach the cover as shown in the illustration below.
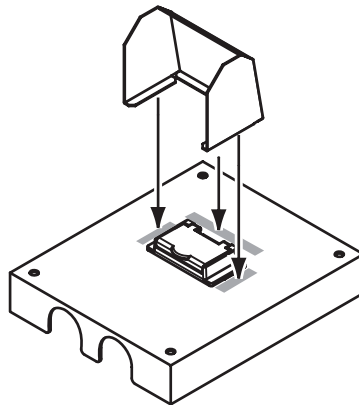
5. HOW TO CHANGE POWER SUP-PLY SPECIFICATIONS

The AC-DC power supply PR-240 is shipped ready for connection to a 200-230 VAC ship's mains. If the ship' 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.

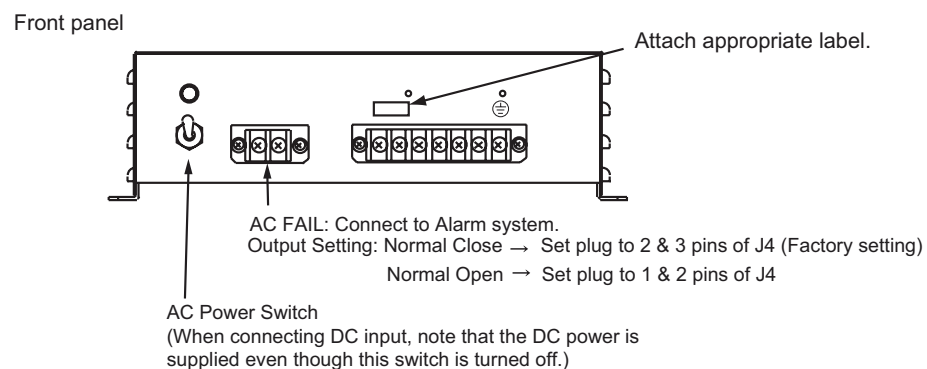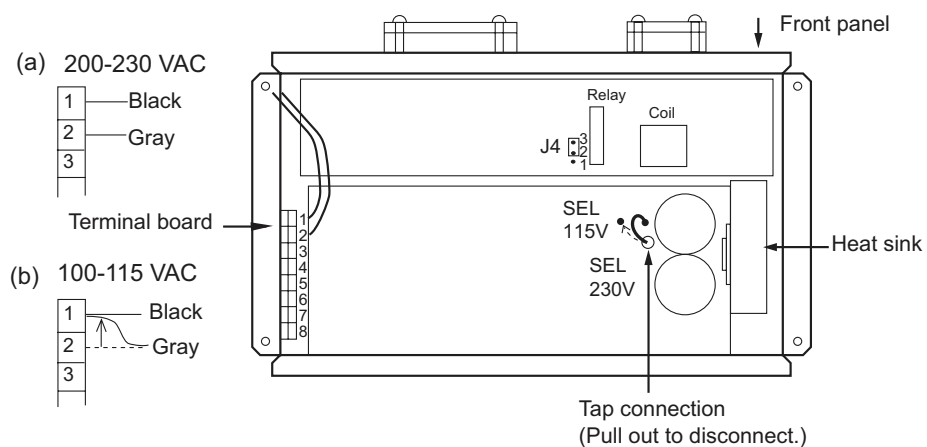| Ship's mains	Tap connection	Terminal board	Label
200 to 230 VAC	SEL 230 V	Below (a)	200-230 VAC, 2.2-1.7 A, 1φ 50/60 Hz
100 to 115 VAC	SEL 115 V	Below (b)	100-115 VAC, 3.2-2.6 A, 1φ 50/60 Hz

Remove screw and cover.

Cover

Front panel

(a) 200-230 VAC

1 — Black
2 — Gray
3

Terminal board

(b) 100-115 VAC

1 — Black
2 — Gray
3

Relay

Coil

J4

SEL 115V

SEL 230V

Heat sink

Tap connection (Pull out to disconnect.)

Front panel

Attach appropriate label.

AC FAIL: Connect to Alarm system.
Output Setting: Normal Close → Set plug to 2 & 3 pins of J4 (Factory setting)
                Normal Open → Set plug to 1 & 2 pins of J4

AC Power Switch
(When connecting DC input, note that the DC power is supplied even though this switch is turned off.)

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

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 1 mm Multi core
TT 0.75mm twisted pair communications (1Q=quad cable)

2. Insulation Type
P Ethylene Propylene

3. Sheath Type
Y Vinyl

4. Armor Type
C Steel

5. Shielding Type
Y Corrosive Resistant

6. Core Sheath
S All cores in one sheath
-S Individually sheathed cores
SLA All cores in one sheath, plastic tube sheath w/aluminum tape
-SLA Individually sheathed cores, plastic tube sheath w/aluminum tape

DPYC

TPYC

MPYC-5

TTYCS-4

EX: DPYCYS - 1.5   MPYC - 5

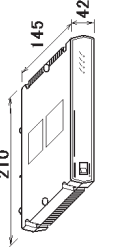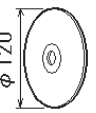Designation type | Core Area (mm²) | Designation type | # of cores
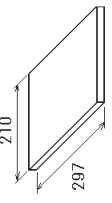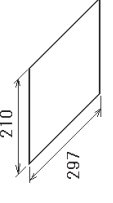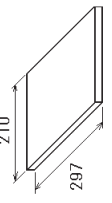
The following reference table lists gives the measurements of JIS cables commonly used with Furuno products:
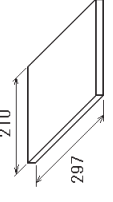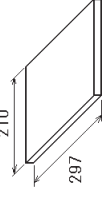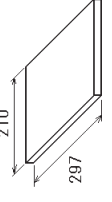
Type	Core Area	Core Diameter	Cable Diameter	Type	Core Area	Core Diameter	Cable Diameter
DPYC-1.5	1.5mm²	1.56mm	11.7mm	TTYC-7S	0.75mm²	1.11mm	20.8mm
DPYC-2.5	2.5mm²	2.01mm	12.8mm	TTYCSLA-1	0.75mm²	1.11mm	9.4mm
DPYC-4	4.0mm²	2.55mm	13.9mm	TTYCSLA-1Q	0.75mm²	1.11mm	10.8mm
DPYC-6	6.0mm²	3.12mm	15.2mm	TTYCSLA-4	0.75mm²	1.11mm	15.7mm
DPYC-10	10.0mm²	4.05mm	17.1mm	TTYCY-4S	0.75mm²	1.11mm	17.9mm
DPYC-16	16.0mm²	5.10mm	19.4mm	TTYCYS-1	0.75mm²	1.11mm	12.1mm
DPYCY-1.5	1.5mm²	1.56mm	13.7mm	TTYCYS-4	0.75mm²	1.11mm	18.5mm
DPYCY-2.5	2.5mm²	2.01mm	14.8mm	TPYCY-1.5	1.5mm²	1.56mm	14.5mm
DPYCY-4	4.0mm	2.55mm	15.9mm	TPYCY-2.5	2.5mm²	2.01mm	15.5mm
DPYCYSLA-1.5	1.5mm²	1.56mm	13.9mm	TPYCY-4	4.0mm²	2.55mm	16.9mm
DPYCYSLA-2.5	2.5mm²	2.01mm	15.0mm	TPYCYSLA-1.5	1.5mm²	1.56mm	13.9mm
MPYC-2	1.0mm²	1.29mm	10.0mm				
MPYC-4	1.0mm²	1.29mm	11.2mm				
MPYC-7	1.0mm²	1.29mm	13.2mm				
MPYCY-12	1.0mm²	1.29mm	19.0mm				
MPYCY-19	1.0mm²	1.29mm	22.0mm				

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
取扱説明書 (英) OPERATOR'S MANUAL (EN)	210 / 297	OME-56750-* 000-176-514-1*	1
操作要領書 (英) OPERATOR'S GUIDE (EN)	210 / 297	OSE-56750-* 000-176-515-1*	1
装備要領書 (英) INSTALLATION MANUAL (EN)	210 / 297	IME-56750-* 000-176-517-1*	1

PACKING LIST IC-219-E

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット UNIT			
通信制御ユニット COMMUNICATION UNIT	210 / 145 / 42	IC-219-* 000-020-969-00 **	1
予備品 SPARE PARTS			
予備品 SPARE PARTS		SP16-01401 004-439-530-00 FP16-02700	1
付属品 ACCESSORIES			
CD-R CD-R	φ120	16-5-0241 001-180-000-00	1
工事材料 INSTALLATION MATERIALS			
工事材料 INSTALLATION MATERIALS		CP16-05301 001-179-990-00	1
図書 DOCUMENT			
アクティベーションフォーム REGISTRATION FOR SERVICE ACTIVATION	210 / 297	J59-50010-* クミイ 000-807-330-1*	1
ヒューズ変更のお願い NOTIFICATION DOCUMENT	210 / 297	C52-00206-* クミイ 000-147-004-1*	1
取扱説明書 (英) OPERATOR'S MANUAL (EN)	210 / 297	OME-56351-* 000-150-359-1*	1

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期納品であり、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.)

A-1

C5675-Z02-B

PACKING LIST

IC-318

NAME		OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット	UNIT			
接続箱		160	IC-318	1
JUNCTION BOX			000-020-971-00	
工事材料	INSTALLATION MATERIALS			
工事材料			CP16-05101	1
INSTALLATION MATERIALS			001-180-020-00	

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

PACKING LIST

IC-119

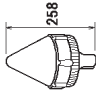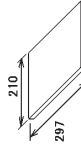| NAME		OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット	UNIT			
アンテナユニット		258	IC-119	1
ANTENNA UNIT			000-020-945-00	
付属品	ACCESSORIES			
付属品			FP16-02501	1
ACCESSORIES			001-175-970-00	
図書	DOCUMENT			
アンテナ交換方法		210 / 297	TIC-56351-*	1
ANTENNA INSTALL/REPALCE			000-173-370-1*	

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-A

FURUNO

工事材料表 INSTALLATION MATERIALS

CODE NO.	001-179-990-00	16AWX-9401 -0
TYPE	CP16-05301	1/1

番号 NO.	名 称 NAME	略 図 OUTLINE	型名/規格 DESCRIPTIONS	数量 Q'TY	用途/備考 REMARKS
1	ヒューズハリマーク FUSE LABEL	60 × 50 × 40	03-153-1312-0 ROHS / CODE NO. 100-292-140-10	1	
2	アース板 COPPER STRAP	⌀30 L=1.2M	05-003-0031-0 ROHS / CODE NO. 590-300-310-10	1	
3	LANカバー LAN COVER	24 39 59	16-023-4507-0 / CODE NO. 100-368-090-10	1	
4	トラスタッピンネジ SELF-TAPPING SCREW	40 ⌀4	4X40 SUS304 / CODE NO. 000-162-606-10	2	
5	コンベックタイス CABLE TIE	100	CV-100N / CODE NO. 000-162-167-10	3	
6	ヒューズ GLASS TUBE FUSE	30 ⌀6	FGB0-A 125V 5A PBF / CODE NO. 000-155-853-10	1	
7	マクツキグロメット GROMMET	⌀19 6	MG-15 / CODE NO. 000-166-458-10	2	
8	ケーブル組品MJ CABLE ASSY.	L=3.5M	MJ-A3SPF0016-035C / CODE NO. 000-154-024-10	1	

FURUNO

工事材料表 INSTALLATION MATERIALS

CODE NO.	001-189-560-00	16AVX-9404 -0
TYPE	CP16-05511	1/1

番号 NO.	名 称 NAME	略 図 OUTLINE	型名/規格 DESCRIPTIONS	数量 Q'TY	用途/備考 REMARKS
1	イラックスリーブ SCM2 INSULATION SLEEVE	40	07-1220 クロ *40MM* / CODE NO. 000-165-300-10	1	
2	ケーブル保護材 CABLE PROTECTION MATERIAL	23 15	16-018-1251-1 ROHS / CODE NO. 100-298-111-10	1	
3	ロックナット組品 LOCK NUT ASSEMBLY	32 5	CP16-05501 / CODE NO. 001-189-640-00	1	
4	コンベックタイス CABLE TIE	450	CV-450B / CODE NO. 000-173-169-10	5	
5	ブチルコムテープ SELF-BONDING TAPE	100 20	NO.15 / CODE NO. 000-174-646-10	1	
6	ケーブル組品 CABLE ASSY.	340	RW-4747 / CODE NO. 000-566-000-12	1	
7	セミシール SILICON RUBBER	135	S-8400W アルミチューブ 50G / CODE NO. 000-158-483-10	1	

FURUNO

CODE NO.	004-439-530-00	16AK-X-9302 -3 1/1
TYPE	SP16-01401	BOX NO. P

SPARE PARTS LIST FOR

SETS PER VESSEL

SHIP NO.

U S E

ITEM NO.	NAME OF PART	OUTLINE	DWG. NO. OR TYPE NO.	QUANTITY WORKING PER SET	PER VES	SPARE	REMARKS/CODE NO.
1	ヒューズ GLASS TUBE FUSE	30 φ6	FGB0 125V 10A PBF			1	000-155-826-10
2	ヒューズ GLASS TUBE FUSE	30 φ6	FGB0-A 125V 5A PBF			1	000-155-853-10

MFR'S NAME	FURUNO ELECTRIC CO., LTD.	DWG NO.	C5635-P02-D	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.

FURUNO

工事材料表
INSTALLATION MATERIALS

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

番号 NO.	名称 NAME	略図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	+トラスタッピンネジ 1シュ SELF TAPPING SCREW	16 φ4	4X16 SUS304 CODE NO. 000-162-605-10	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. DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)
(略図の寸法は、参考値です。
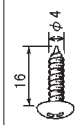
FURUNO ELECTRIC CO ., LTD.

C5674-M03-A
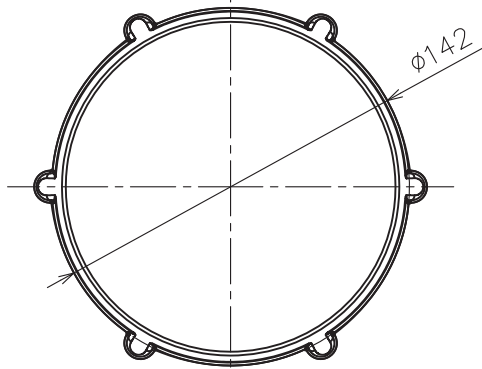
表2 工事材料　　TABLE 2 INSTALLATION MATERIAL

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≦50	±1.5
50<L≦100	±2.5
100<L≦500	±3

φ142

156

258

型式銘板 NAMEPLATE

(φ25.4)

183

③

②

ケーブル CABLE

（引出場所は選択） (SELECT EITHER ONE)

①
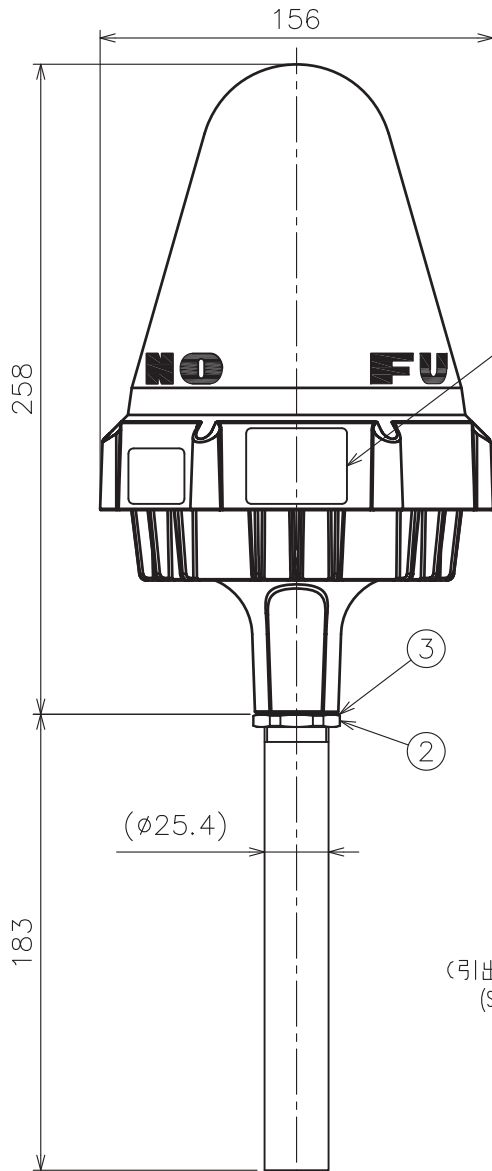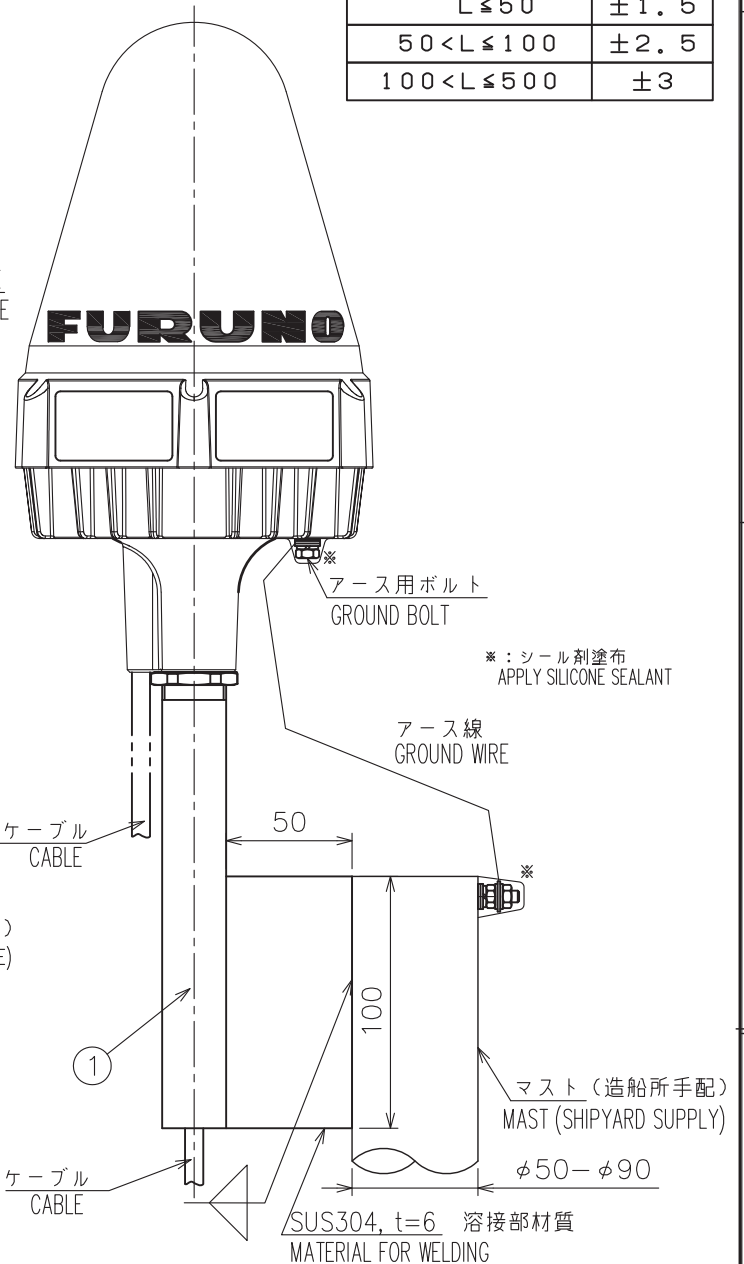
ケーブル CABLE

アース用ボルト GROUND BOLT

※：シール剤塗布 APPLY SILICONE SEALANT

アース線 GROUND WIRE

50

100

マスト（造船所手配） MAST (SHIPYARD SUPPLY)

φ50-φ90

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	FELCOM 15/16/18/19	外寸図	
SCALE 1/3	MASS 1.4 kg ±10%	質量はパイプ工材を含まず。 MASS W/O MOUNTING PIPE.	NAME	ANTENNA UNIT
DWG. No. C5635-G01-H	REF. No. 16-023-250G-1		OUTLINE DRAWING	
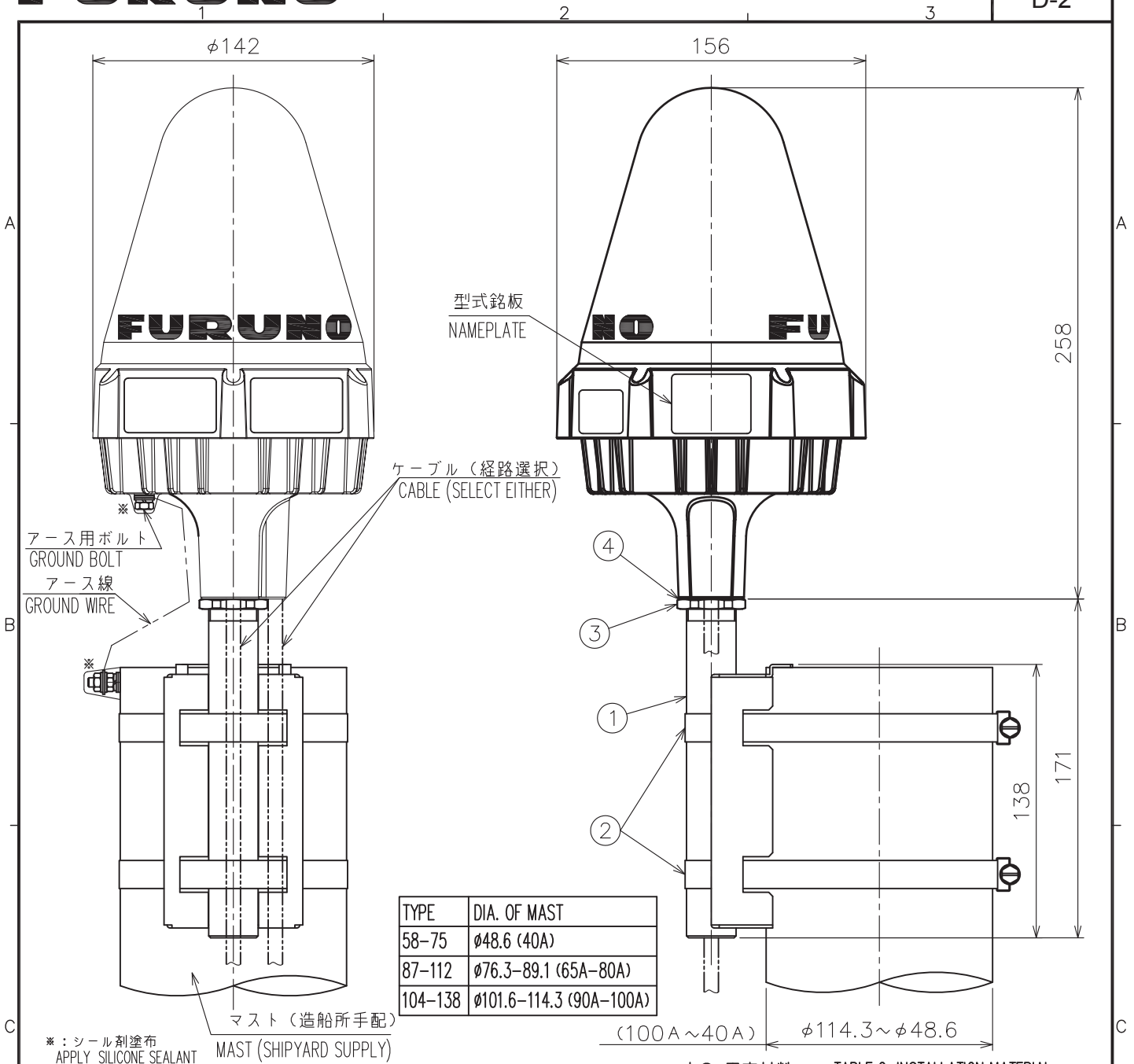
FURUNO ELECTRIC CO., LTD.

φ142

156

258

型式銘板
NAMEPLATE

ケーブル（経路選択）
CABLE (SELECT EITHER)

アース用ボルト
GROUND BOLT

アース線
GROUND WIRE

④

③

①

②

171

138

マスト（造船所手配）
MAST (SHIPYARD SUPPLY)

※：シール剤塗布
APPLY SILICONE SEALANT

(100A～40A)   φ114.3～φ48.6

TYPE	DIA. OF MAST
58－75	φ48.6 (40A)
87－112	φ76.3－89.1 (65A－80A)
104－138	φ101.6－114.3 (90A－100A)

表2 工事材料   TABLE 2 INSTALLATION MATERIAL

品番 ITEM	品　名 NAME	図番 DWG. No.	摘要 REMARK
1	アンテナ固定金具 ANTENNA PIPE	16-018-1311	SUS
2	ホースクランプ HOSE CLAMP	ABA SUS316 12mm	
3	ロックナット LOCK NUT	16-023-2518	
4	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。
　　　　2）アンテナケーブル経路はパイプ内または外のいずれかを選択。
　　　　3）対応マスト径は40A（φ48.6）～100A（φ114.3）

NOTE　1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
　　　　2. PATH THE ANTENNA CABLE OUTSIDE OR INSIDE THE PIPE.
　　　　3. MAST DIAMETER: 40A (φ48.6) TO 100A (φ114.3)

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

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
APPROVED	30/Apr/2012 Y.NISHIYAMA	FELCOM 15/16/18/19	外寸図
SCALE 1/3	MASS 1.8 ±10% kg	質量は工材を含む MASS INCLUDES INSTALLATION MATERIALS	NAME ANTENNA UNIT
DWG.No. C5635-G20- F	REF.No. 16-023-251G-1		OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

表1 TABLE1

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
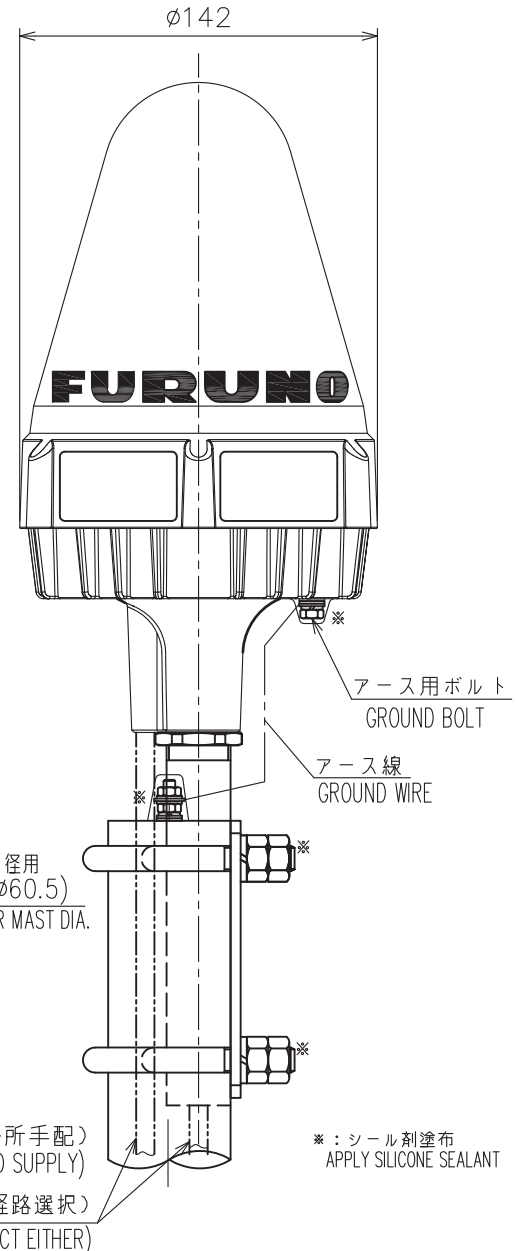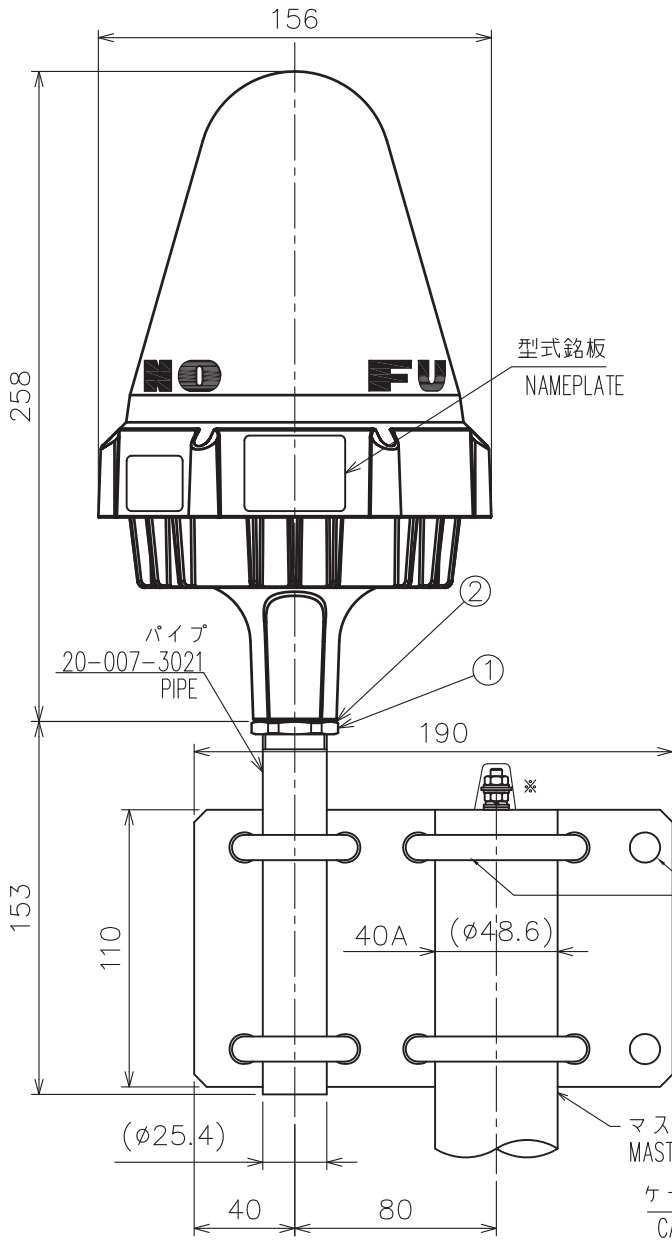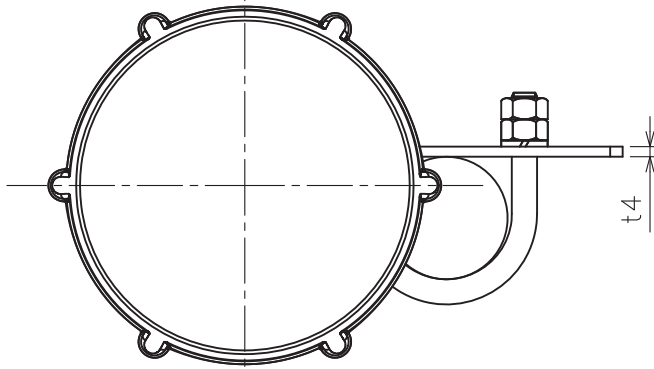
t4

156

258

型式銘板
NAMEPLATE

パイプ
20-007-3021
PIPE

②

①

190

153

110

40A （ø48.6）

（ø25.4）

40

80

別マスト径用
50A（ø60.5）
ANOTHER MAST DIA.

マスト（造船所手配）
MAST (SHIPYARD SUPPLY)

ケーブル（経路選択）
CABLE (SELECT EITHER)

ø142

アース用ボルト
GROUND BOLT

アース線
GROUND WIRE

※：シール剤塗布
APPLY SILICONE SEALANT

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	FELCOM 15/16/18/19		外寸図
SCALE	1/3	MASS 2.3 ±10% kg 質量は工材を含む。 MASS INCLUDES INSTALLATION MATERIALS.	NAME	ANTENNA UNIT (W/ FIXTURE PLATE)
DWG. No.	C5635-G19-D	REF. No. 16-023-252G-1		OUTLINE DRAWING
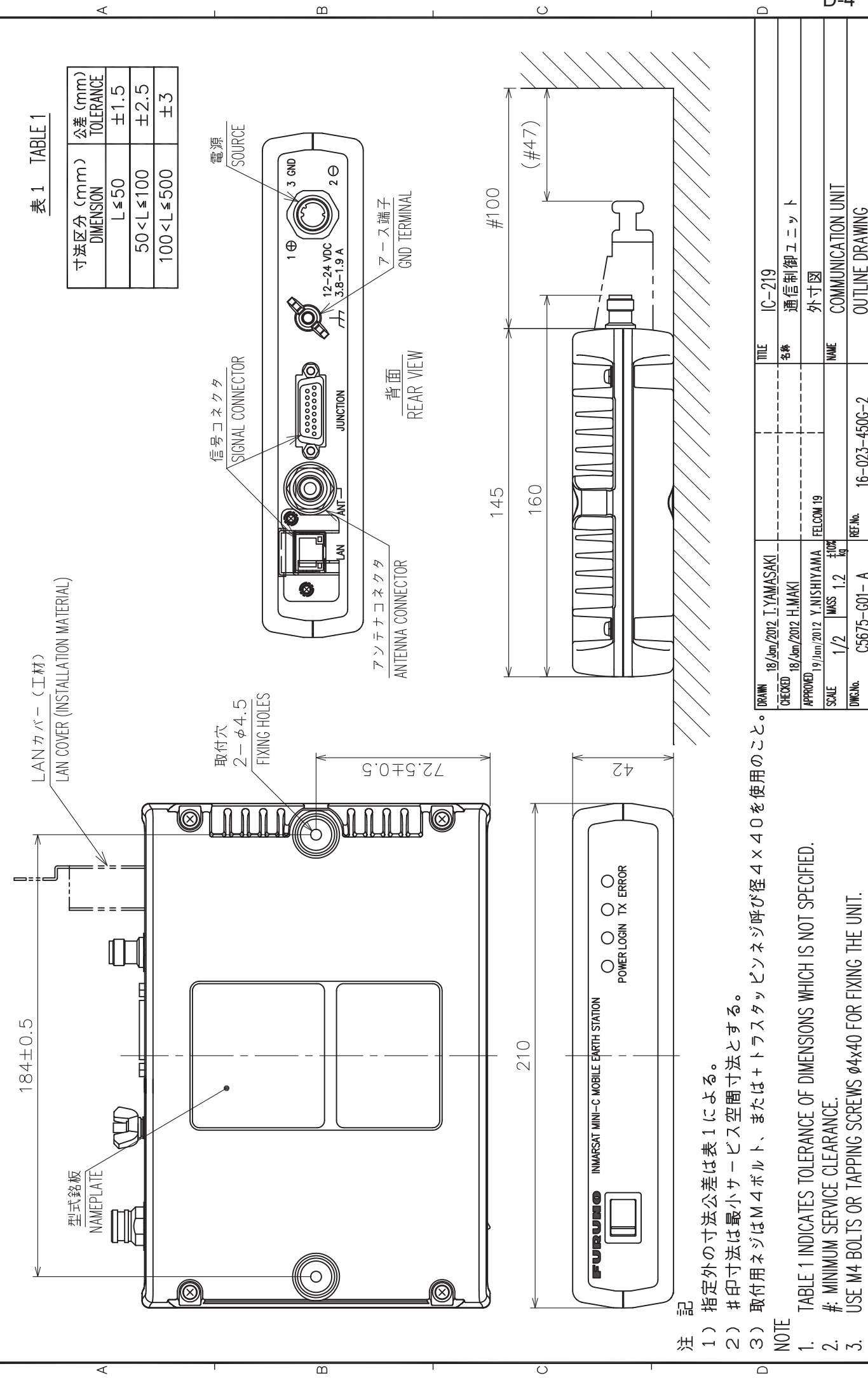
FURUNO ELECTRIC CO., LTD.

D-4

FURUNO ELECTRIC CO., LTD.

表1 TABLE1

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

電源 SOURCE
アース端子 GND TERMINAL
背面 REAR VIEW
信号コネクタ SIGNAL CONNECTOR
アンテナコネクタ ANTENNA CONNECTOR

LANカバー（工材）LAN COVER (INSTALLATION MATERIAL)
取付穴 2-φ4.5 FIXING HOLES
型式銘板 NAMEPLATE

TITLE	IC-219
名称	通信制御ユニット
	外寸図
NAME	COMMUNICATION UNIT
	OUTLINE DRAWING

DRAWN 18/Jan/2012 T.YAMASAKI
CHECKED 18/Jan/2012 H.MAKI
APPROVED 19/Jun/2012 Y.NISHIYAMA FELCOM 19
SCALE 1/2 MASS 1.2 ±10% kg
DWG.No. C5675-G01-A REF.No. 16-023-450G-2

注記 NOTE
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M4ボルト、またはトラスタッピンネジ呼び径4×40を使用のこと。

1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
2. #: MINIMUM SERVICE CLEARANCE.
3. USE M4 BOLTS OR TAPPING SCREWS ø4x40 FOR FIXING THE UNIT.

INMARSAT MINI-C MOBILE EARTH STATION
POWER LOGIN TX ERROR

184±0.5 72.5±0.5 42 210 145 160 #100 (#47)

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

ケーブル導入口
CABLE ENTRY

120±0.5

取付穴
4-φ5
FIXING HOLES

型式銘板
NAMEPLATE

70±0.5

25

160

#50

3   40

137   120

#100

Ø10~17

ケーブル導入口
CABLE ENTRY

アース端子
GND TERMINAL
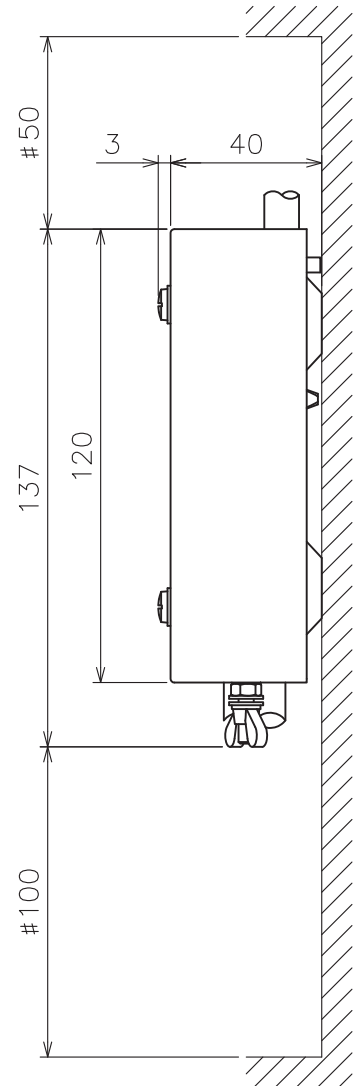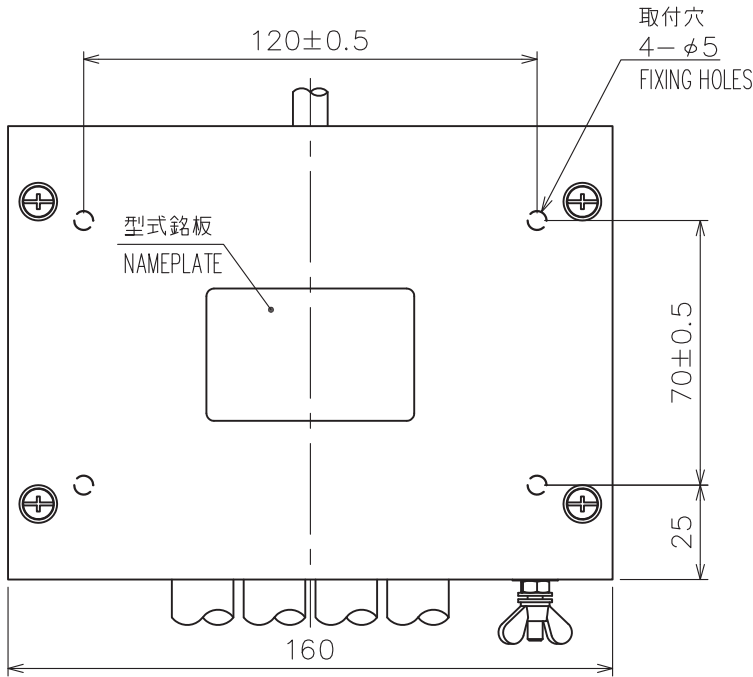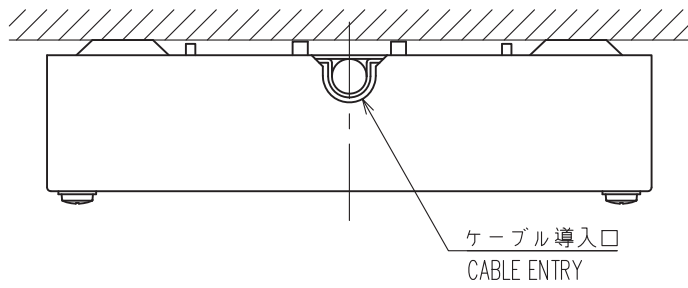
注記
１）指定なき寸法公差は表１による。
２）＃印寸法は、最小サービス空間寸法とする。
３）取付にはトラスタッピンネジ呼び径４×16を使用のこと。

NOTE
1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
2. #: MINIMUM SERVICE CLEARANCE.
3. USE TAPPING SCREWS ø4x16 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.	NAME	JUNCTION BOX
DWG. No.	C5674-G03-B	REF. No.	16-023-550G-1	OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

70±0.5

4−φ4 取付穴
FIXING HOLES

(15)

70±0.5

35

型式銘板
NAMEPLATE

※25

※3

※76

100

ケーブル導入口（背面時）
CABLE ENTRY (REAR ENTRY)

20   32

2   24

192°

120

#100

10.5

ケーブル導入口（背面）
CABLE ENTRY (REAR)

16

※25

6.5

※3

ケーブル導入口（底面時）
CABLE ENTRY (BOTTOM ENTRY)

※76

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 DIMESIONS WHICH IS NOT SPECIFIED.
2.   #: MINIMUM SERVICE CLEARANCE.
3.   USE TAPPING SCREWS ø3x10 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≦５０	±１.５
５０＜Ｌ≦１００	±２.５
１００＜Ｌ≦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	外寸図
SCALE 1/2	MASS 0.35 ±10% kg	NAME SSAS ALERT UNIT (BULKHEAD MOUNT)
DWG.No. C5635-G10- C	REF.No. 16-018-700G-3	OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

D-7

FURUNO

表1 TABLE 1

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

132±0.5

124±1.5

111±0.5

107±1.5

取付穴位置（4ヵ所）
FIXING LOCATION (4 PLACES)

取付穴寸法図
CUTOUT DIMENSIONS

120

33（背面時）

24

29

9

192°

2
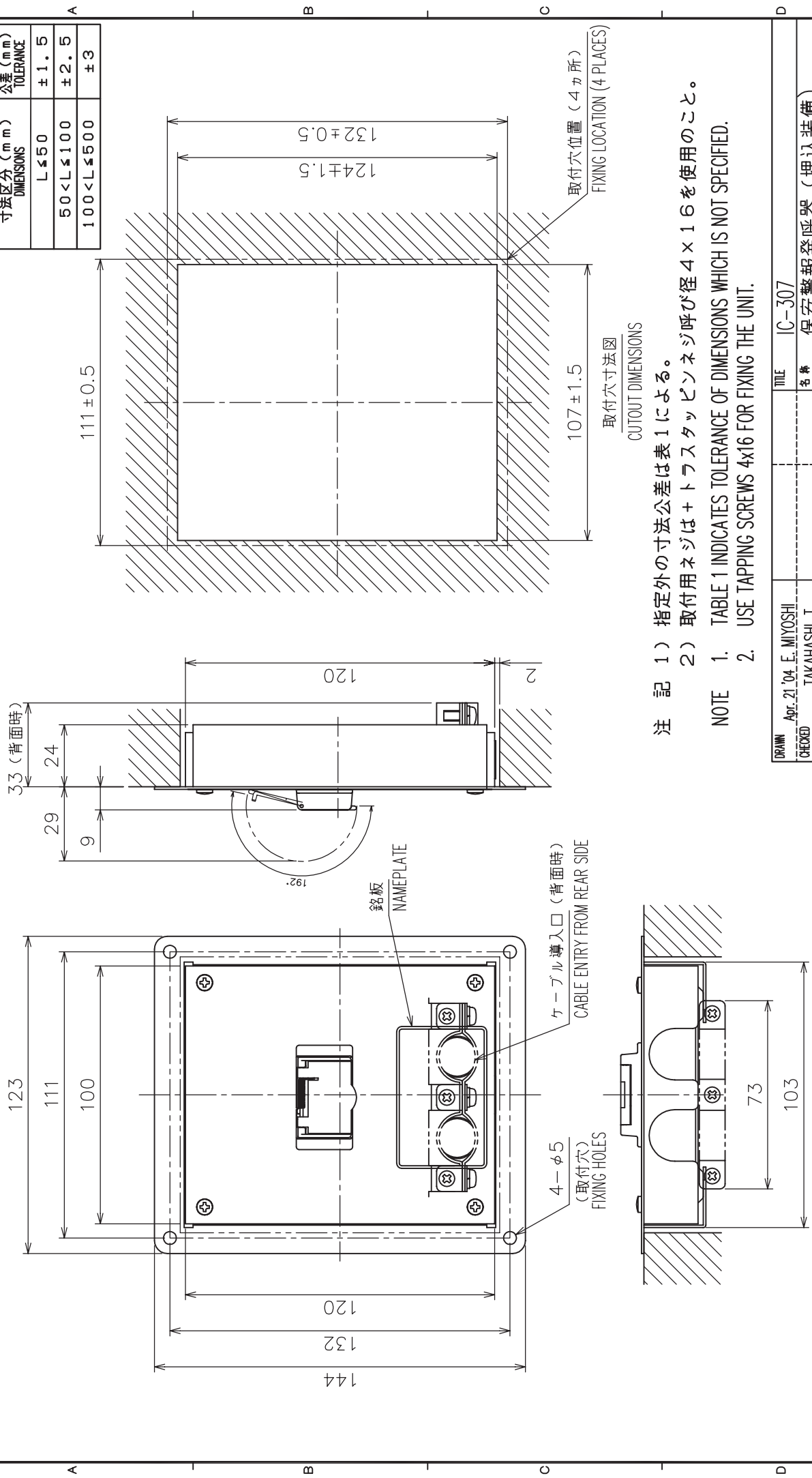
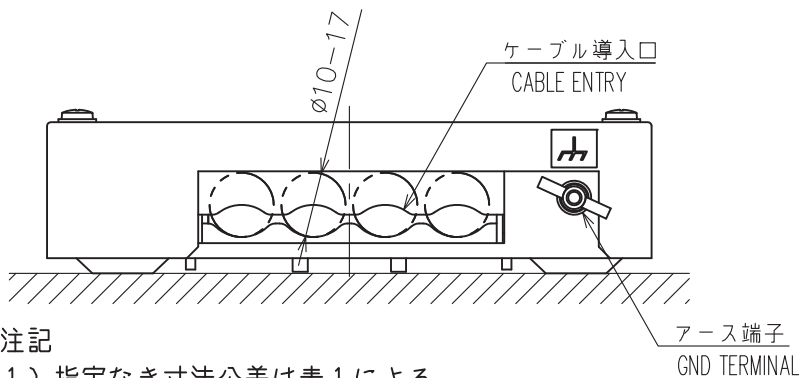注記 1）指定外の寸法公差は表1による。
　　　2）取付用ネジは＋トラスタッピンネジ呼び径4×16を使用のこと。

NOTE 1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
　　　2. USE TAPPING SCREWS 4x16 FOR FIXING THE UNIT.

銘板
NAMEPLATE

ケーブル導入口（背面時）
CABLE ENTRY FROM REAR SIDE

123

111

100

4－φ5
（取付穴）
FIXING HOLES

120

132

144

73

103

FURUNO

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

通気口
AIR VENT

187

#10

#100

取付穴
4-φ6
FIXING HOLES

警告ラベル
SAFETY INSTRUCTIONS

型式銘板
NAMEPLATE

286

272±1

100±1

33.5

167

18

電源貼りマーク
POWER LABEL

端子台
TERMINAL BOARD

#50

4

258

AC-DC POWER SUPPLY PR-240

AC IN
100-115 / 200-230VAC
AC BREAKER

DC IN
24 VDC

DC OUT
24 VDC

DC BREAKER

AC FAIL

AC
(GREEN)
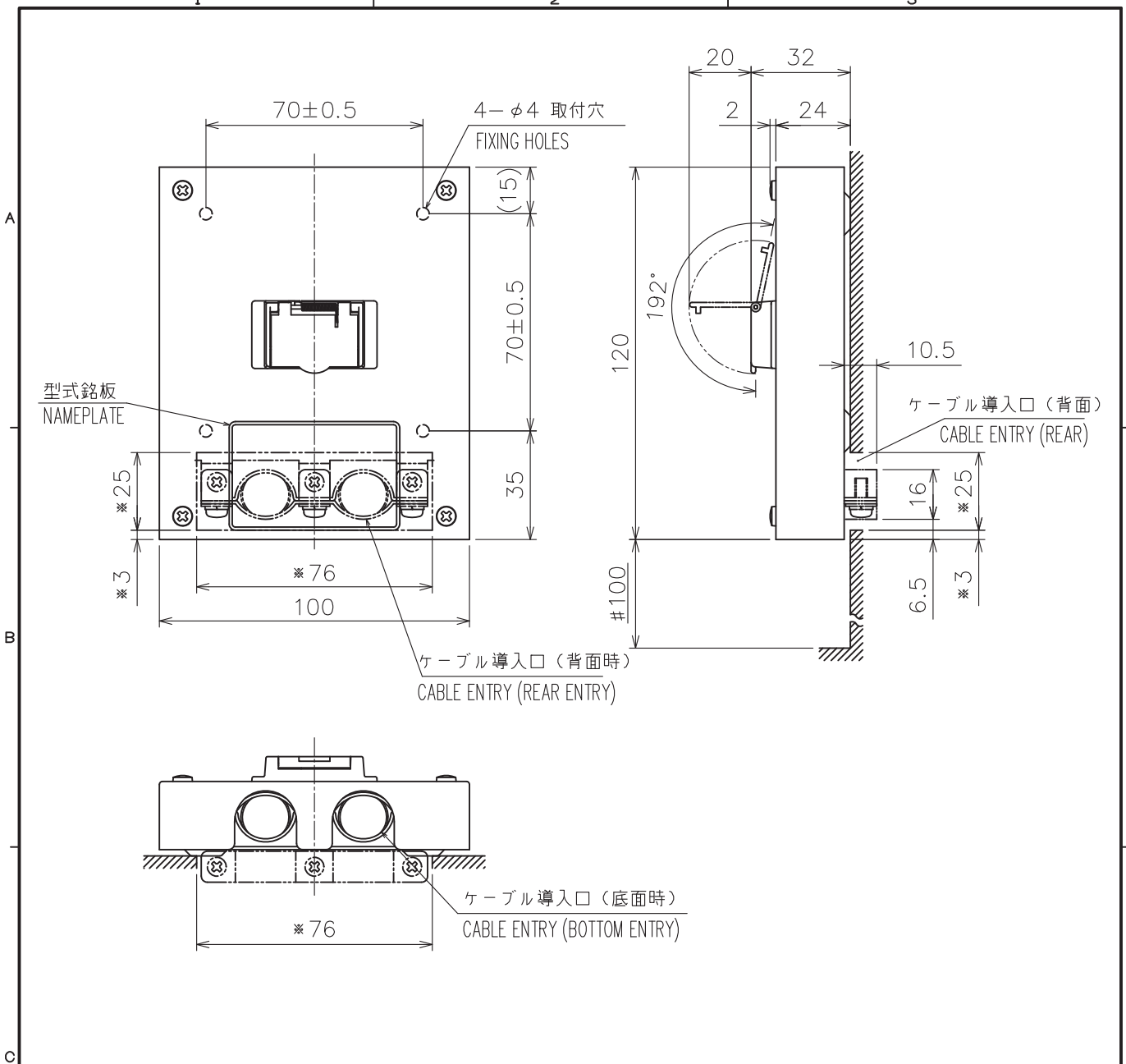
BATT/DC
(RED)

ON I

OFF O
POWER

#50

4

81

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) 取付用ネジは＋トラスタッピンネジ 呼び径４ｘ１６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 ø4x16 FOR FIXING THE UNIT.

DRAWN	25/Sep/09 T.YAMASAKI	TITLE	PR-240
CHECKED	25/Sep/09 T.TAKEND	名称	AC/DC電源ユニット
APPROVED	26/Oct/09 R.Esumi		外寸図
SCALE	1/3	MASS	3.2	±10% kg	NAME	AC/DC POWER SUPPLY UNIT OUTLINE DRAWING
DWG No.	C5003-G03-J		REF.No.	24-003-500G-4

FURUNO ELECTRIC CO., LTD.

Figure ① — UPPER UNIT / BASE UNIT assembly:
- シリコンシール剤 SILICONE SEALANT
- イラックススリーブ SHRINK TUBE
- ビニルテープ VINYL TAPE
- アンテナ上部 UPPER UNIT
- アンテナベース BASE UNIT
- シリコンシール剤塗布 APPLY SILICONE SEALANT CHEMISEAL: S-8400W OR EQUIVALENT
- ナットシート NUT SHEET
- ロックナット（工材） 16-023-2518 LOCK NUT (INSTALLATION MATERIAL)
- ケーブル保護材 CABLE PROTECTOR
- ケーブル CABLE
- アンテナ固定金具（工材） 16-018-1311 ANTENNA BRACKET (INSTALLATION MATERIAL) CP16-03702 (No. 001-016-260)

Figure ② — mast mounting:
- ロックナット締付け（54N・m）TIGHTEN THE LOCK NUT
- シール剤で隙間を埋める APPLY SEALANT INTO GAP
- 爪をマストに掛ける HOOK STOPPER ONTO MAST-HEAD
- ホースクランプ（工材）HOSE CLAMP (INSTALLATION MATERIAL)

TYPE	DIA. OF MAST
58-75	φ48.6 (40A)
87-112	φ76.3-89.1 (65A-80A)
104-138	φ101.6-114.3 (90A-100A)

- パテで隙間を埋める FILL THE GAP WITH SEALANT （100A～40A）
- φ114.3～φ48.6

金属製クランプで巻くときは、ケーブルを傷つけないように保護すること
WHEN USE A STEEL CLAMP TO BIND THE CABLE, PROTECT THE CABLE TO AVOID INJURY

Figure ③ — ground wiring:
- アース用ボルト※ GROUND BOLT
- 3—固定ネジ※ FIXING SCREWS
- アース線 GROUND WIRE RW-4747
- M5
- アース用ボルト（造船所手配）GROUND STUD (SHIPYARD SUPPLY) ※
- 耐候性コンベックス CABLE TIE (WEATHERPROOF)
- ケーブル CABLE

Cable detail:
- コネクタ付0.4mケーブル 0.4m CABLE W/ CONNECTOR
- ビニルテープ VINYL TAPE
- ブチルゴムテープ SELF-BONDING TAPE
- 耐候性コンベックス CABLE TIE (WEATHERPROOF)
- 延長ケーブル（切断禁止）EXTENSION CABLE (DO NOT SHORTEN)
- φ200以上 φ200 OR MORE

ケーブルをループ状に巻くときは芯線が断線しないようにφ200mm以上とること。
WHEN A LOOP OF CABLE IS FORMED, DIAMETER OF LOOP SHOULD BE φ200mm OR MORE TO AVOID INJURY FROM STRESS.

注記
パイプ内を通してコネクタ付ケーブルを直接接続するときは、アンテナベースを通す前に、固定金具パイプを通すこと。

NOTE
PASS THE CABLE WITH PLUG THRU THE ANTENNA BRACKET PIPE BEFORE THE ANTENNA BASE WHEN THE CABLE WITH PLUG IS CONNECTED TO ANTENNA UNIT DIRECTLY.

手順
1）アンテナ固定金具をホースクランプでマストに仮固定する。
　　対応マスト径：40A（φ48.6）～100A（φ114.3）
　　58-75：40A（φ48.6）
　　87-112：65A（φ76.3）～80A（φ89.1）
　　104-138：90A（φ101.6）～100A（φ114.3）
2）ロックナットをアンテナ固定金具のパイプネジ部にねじ込む。
3）アンテナ固定金具のネジ部にシール剤を塗布する。
4）アンテナベースをねじ込み、ロックナットで固定する。
5）アンテナ固定金具、アンテナベースに下からケーブルを通す。
6）イラックススリーブをケーブルに通して、コネクタプラグをアンテナ上部のコネクタに接続する。
7）イラックススリーブを熱で固着し、ビニルテープで固定する。
8）アンテナベースをアンテナ上部にネジ3本で固定する。
9）アンテナ全体をマストに本固定する。
10）ケーブルをマストに固定し、アース線（工材）を布設する。
　　ケーブル、アース線は耐候性コンベックスで固定する。
11）※部分をシール剤で完全に覆う。

PROCEDURE
1. FIX THE ANTENNA BRACKET TO MAST TEMPORALLY.
   MAST DIAMETER: 40A (φ48.6) ~100A (φ114.3)
      58-75：40A (φ48.6)
      87-112：65A (φ76.3) ~80A (φ89.1)
      104-138：90A (φ101.6) ~100A (φ114.3)
2. SCREW A LOCK NUT TO THE PIPE OF ANTENNA BRACKET.
3. APPLY SILICONE SEALANT TO SCREW OF THE BRACKET.
4. SCREW THE ANTENNA BASE AND FIX IT WITH THE LOCK NUT.
5. PASS THE CABLE THRU THE PIPE AND ANTENNA BASE FROM BOTTOM.
6. CONNECT THE CABLE PLUG TO THE CONNECTOR ON UPPER UNIT THRU SHRINK TUBE.
7. FIX THE SHRINK TUBE WITH HEAT AND BIND WITH VINYL TAPE.
8. FIX THE BASE UNIT TO UPPER ANTENNA WITH 3 SCREWS.
9. FIX THE ANTENNA UNIT TO MAST SECURELY.
10. FIX THE ANTENNA CABLE AND GROUND WIRE TO MAST.
11. SECURE THEM WITH WEATHERPROOF CABLE TIE.
    COVER SCREW HEADS MARKED '※' WITH SILICONE SEALANT.

DRAWN	30/May/2012 T.YAMASAKI		TITLE	IC-115/116/118/119
CHECKED	30/May/2012 H.MAKI		名称	アンテナユニット（ホースクランプ取付）
APPROVED	31/May/2012 Y.NISHIYAMA	FELCOM 15/16/18/19		装備要領
SCALE	MASS ±10% kg		NAME	ANTENNA UNIT (HOSE CLAMP FIXING)
DWG No.	C5635-Y01-J			INSTALLATION PROCEDURE

FURUNO ELECTRIC CO., LTD.

FURUNO

S-1

FURUNO ELECTRIC CO., LTD.

アンテナユニット
ANTENNA UNIT
IC-119

TPA5FB0.4NJ5
FBA-5DFB, 0.4m

12D-SFA-CV, 100m, φ20: N-P-12DSFA
8D-FB-CV, 50m, φ14.3: N-P-8DFB
5D-FB-CV, 30m, φ10.7: N-P-5DFB

TP5FBAW-5DFBB, 30m, φ7.7

TNCP-NJ

通信制御ユニット
COMMUNICATION UNIT
IC-219

JUNCTION

ANT

Vcc (ALM) C1
GND C2
TD/RD-A C3
TD/RD-B C4
NC C5
ALM-H C6
ALM-C C7
RD-A C8
RD-B C9
GND C10
SSAS_OUT-H C11
SSAS_OUT-C C12
SSAS_CHECK C13
SSAS_IN-C C14
SSAS_CTRL C15

LAN

DC IN
DC+ 1
DC- 2
GND 3

RJ45

STP (CAT5) *1

銅板
COPPER STRAP
W=30, 1.2m

MJ-A3SPF

シロ WHT 1
クロ BLK 2

10A (12V)
5A (24V)

AC/DC
電源ユニット
AC/DC POWER
SUPPLY UNIT
PR-240 *2

24VDC
OUT

AC IN
DC IN
E

PE
IV-2sq.
保護アース

MJ-A3SPF0016-O35
3.5m

12-24VDC

DPYC-2.5 *1
DPYC-4 *1

100-115/
200-230 VAC
1φ, 50/60Hz

24 VDC

17JE-23150
-O2(D8C) 2m

接続箱
JUNCTION BOX
IC-318 *2 *4

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

IV-2sq. *1

パソコン/HUB
PC OR HUB

TTYCSLA-1(*1) OR
CO-0.2x2P(*2)

TTYCSLA-1(*1) OR
CO-0.2x2P(*2)

TTYCSLA-4(*1) OR
CO-0.2x5P(*2)

航法装置
NAV EQUIPMENT

アラームシステム
ALARM SYSTEM

保安警報発呼器
SSAS ALERT UNIT
IC-307 *2 *3 *4

1 SSAS_OUT-H
2 NC
3 SSAS_CHECK
4 SSAS_IN-C
5 SSAS_CTRL
6 GND

TTYCSLA-4(*1) OR
CO-0.2x5P(*2)
合計: 最大200m
TOTAL: UP TO 200m

IC-307 (No. 2) *2 *3 *4
1 2 3 4 5 6

IC-307 (No. 3) *2 *3
1 2 3 4 5 6

最大3台まで接続可能
MAX. 3 UNITS AVAILABLE.

防水仕様ケーブル
WATERPROOF CABLE
XM-FD-361.2m *2

1 アオ BLU
2 チャ BRN
3 石ツ PPL
4 ハイ GRY
5
6 ミドリ GRN
7 キ YEL
8 ダイ ORG
9 モモ PNK
10 ウスミドリ L-GRN
11 シロ/クロ WHT/BLK
12 シロ/アカ WHT/RED
13 クロ BLK
14 アカ RED
15 ミズ L-BLU

接続箱
JUNCTION BOX
IC-318

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

IC-219
JUNCTION

CO-0.2x2P: CO-SPEVV-SB-C 0.2x2P, φ10.5
CO-0.2x5P: CO-SPEVV-SB-C 0.2x5P, φ13.5

DRAWN	31/May/2012	T. YAMASAKI
CHECKED	31/May/2012	H. MAKI
APPROVED	31/May/2012	Y.NISHIYAMA
SCALE		MASS kg
DWG. No.	C5675-C01- D	REF. No. 16-023-4001-1

TITLE FELCOM 19
名称 インマルサットMINI-C携帯移動地球局
相互結線図
NAME INMARSAT MINI-C MES
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.