

# FURUNO

# INSTALLATION MANUAL

**UAIS TRANSPONDER**

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**MODEL FA-100**

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**FURUNO ELECTRIC CO., LTD.**  
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\*IME44170D00\*



# 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.

**Turn off the power at the switchboard before beginning the installation.**

Fire or electrical shock can result if the power is left on.

**Do not install the equipment where it may get wet from rain or water splash.**

Water in the equipment can result in fire, electrical shock or damage the equipment.

**Be sure that the power supply is compatible with the voltage rating of the equipment.**

Connection of an incorrect power supply can cause fire or damage the equipment. The voltage rating of the equipment appears on the label above the power connector.



## CAUTION

**Observe the following compass safe distances to prevent interference to a magnetic compass:**

|           | Standard compass | Steering compass |
|-----------|------------------|------------------|
| FA-100    | 1.0 m            | 0.6 m            |
| CB-100    | 0.6 m            | 0.4 m            |
| GVA-100   | 0.3 m            | 0.3 m            |
| DB-1      | 0.3 m            | 0.3 m            |
| PR-240-CE | 0.9m             | 0.6 m            |



**Attach securely protection earth to the ship's body.**

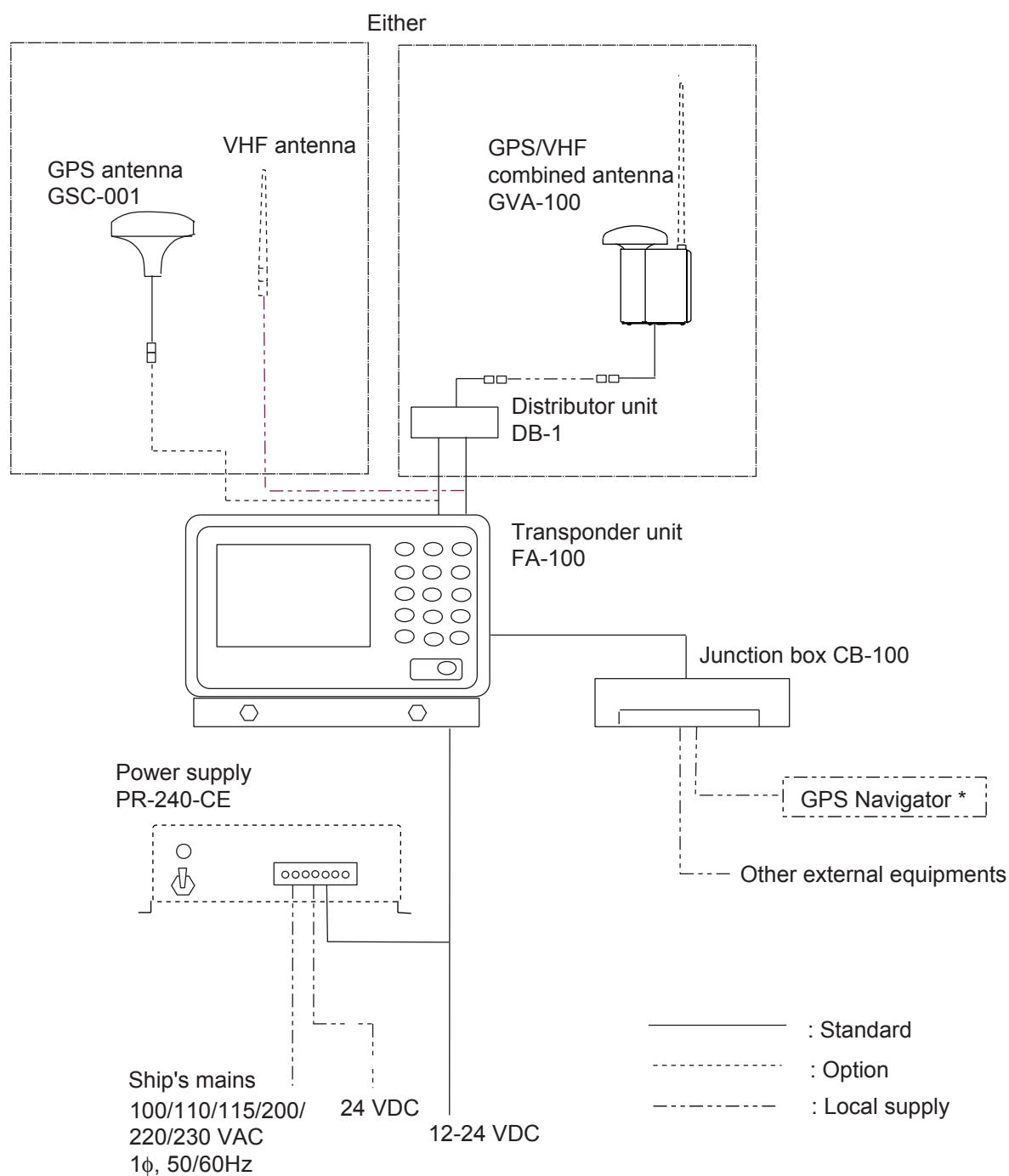
The protection earth is required to the power supply to prevent electrical shock

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# SYSTEM CONFIGURATION



## Category of the units

|           |                            |
|-----------|----------------------------|
| GSC-001   | Exposed to the weather     |
| GVA-100   | Exposed to the weather     |
| FA-100    | Protected from the weather |
| CB-100    | Protected from the weather |
| DB-1      | Protected from the weather |
| PR-240-CE | Protected from the weather |

# EQUIPMENT LISTS

## Standard supply

| No. | Name                     | Type        | Code no.    | Qty | Remarks     |
|-----|--------------------------|-------------|-------------|-----|-------------|
| 1   | Transponder Unit         | FA-100      | -           | 1   |             |
| 2   | Junction Box             | CB-100      | -           | 1   |             |
| 3   | GPS Antenna              | GSC-001     | -           | 1   | Select one. |
|     | GPS/VHF Combined Antenna | GVA-100*    | -           |     |             |
| 4   | Installation Materials   | CP24-00101* | 005-950-730 | 1   | For DB-1    |
|     |                          | CP24-00102* | 005-950-700 | 1   | For FA-100  |
|     |                          | CP05-08701* | 005-949-280 | 1   | For CB-100  |
|     |                          | CP24-00121* | 005-952-350 | 1   | For GSC-100 |
|     |                          | CP24-00141* | 005-952-330 | 1   | For GVA-100 |

## Optional supply

| No. | Name                        | Type            | Code no.    | Remarks                                    |
|-----|-----------------------------|-----------------|-------------|--------------------------------------------|
| 1   | Antenna cable set           | CP20-01700(30m) | 004-372-110 | For GPS or Combined antenna                |
| 2   | Antenna cable set           | CP20-01710(50m) | 004-372-120 | For GPS or Combined antenna                |
| 3   | Flush mount kit A           | OP24-1          | 005-950-740 |                                            |
| 4   | Flush mount kit B           | OP24-2          | 005-950-750 |                                            |
| 5   | Mast mount fixture          | CP20-01111      | 004-365-780 | For GSC-001                                |
| 6   | Right-angle antenna base    | No.13-QA330     | 000-803-239 | For GSC-001                                |
| 7   | L-angle antenna base        | No.13-QA310     | 000-803-240 | For GSC-001                                |
| 8   | Antenna base for rail mount | No.13-RC5160    | 000-806-114 | For GSC-001                                |
| 9   | Whip antenna                | FAB-151D        | 000-572-029 | For Japan only                             |
| 10  | Antenna fixing bracket      | 4-310071        | 000-572-184 | For FAB-151D                               |
| 11  | Whip antenna                | 150M-W2VN       | 000-113-498 | For outside Japan                          |
| 12  | Power supply                | PR-240-CE       | -           | Include installation materials CP24-00151* |

\*: Refer to packing list at the back of this manual.

# 1. MOUNTING

## 1.1 Antenna Unit

### 1.1.1 GPS antenna unit

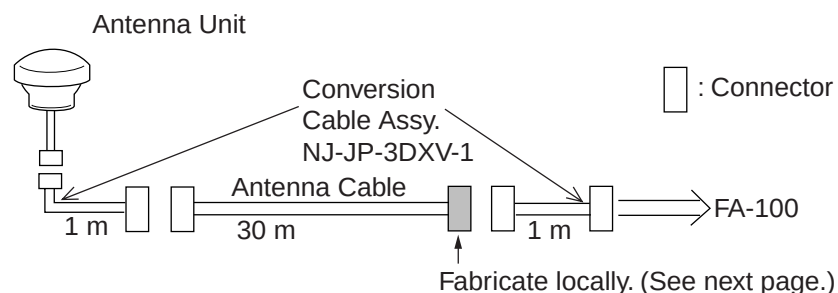
Install the GPS antenna unit referring to the drawing at the back of this manual D-1. When selecting a mounting location for the antenna, keep in mind the following points.

- Select a location out of the radar beam. The radar beam will obstruct or prevent reception of the GPS satellite signal.
- There should be no interfering object within the line-of-sight to the satellites. Objects within line-of-sight to a satellite, for example, a mast, may block reception or prolong acquisition time.
- Mount the antenna unit as high as possible to keep it free of interfering objects and water spray, which can interrupt reception of GPS satellite signal if the water freezes.

#### Extending antenna cable

Three types of antenna cable extensions are optionally available.

a) Antenna cable set CP20-01700



#### ◆ Waterproofing connector

Wrap connector with vulcanizing tape and then vinyl tape. Bind the tape end with a cable-tie.



*Waterproofing connector*

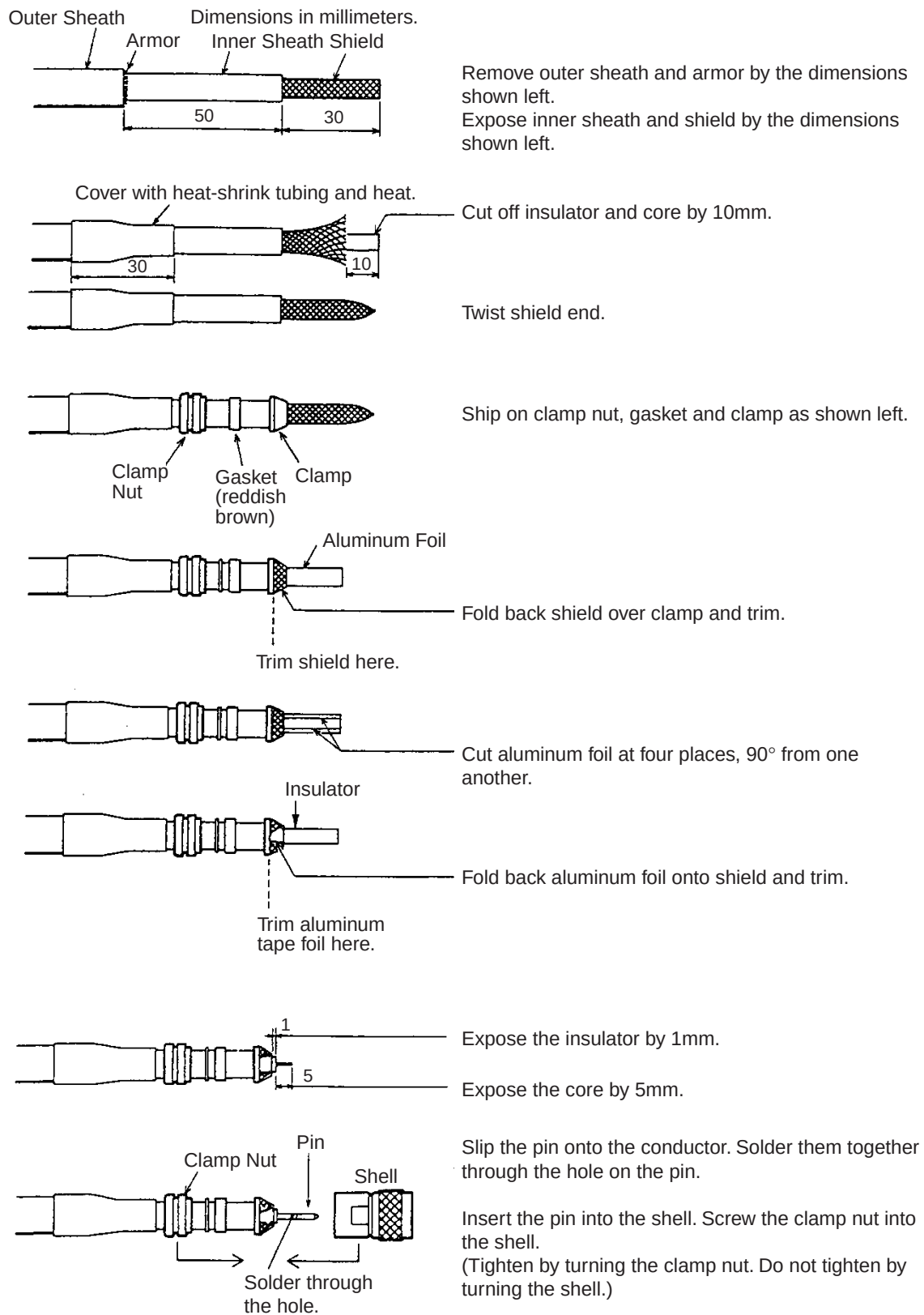
b) Antenna cable set CP20-01710 (8D-FB-CV, 50m)

Connect the cable the same as a) above.

c) Cable type RG-10U/Y (shipyard supply)

**Note:** The length of this cable should be less than 20 m to prevent signal loss. The coax. coupling cable assy.(type: NJ-TP+3DXV-1, code no. 000-123-809), coaxial connector(N-P-8DFB; supplied), vulcanizing tape and vinyl tape are required. Fabricate both ends of the cable as shown in the figure on the next page.

## How to attach the connector N-P-8DFB for cable 8D-FB-CV



### How to attach connector N-P-8DFB



## **1.1.2 VHF antenna**

### **Location**

Location of the mandatory AIS VHF-antenna should be carefully considered. Digital communication is more sensitive than analog/voice communication to interference created by reflections in obstructions like masts and booms. It may be necessary to relocate the VHF radiotelephone antenna to minimize interference effects.

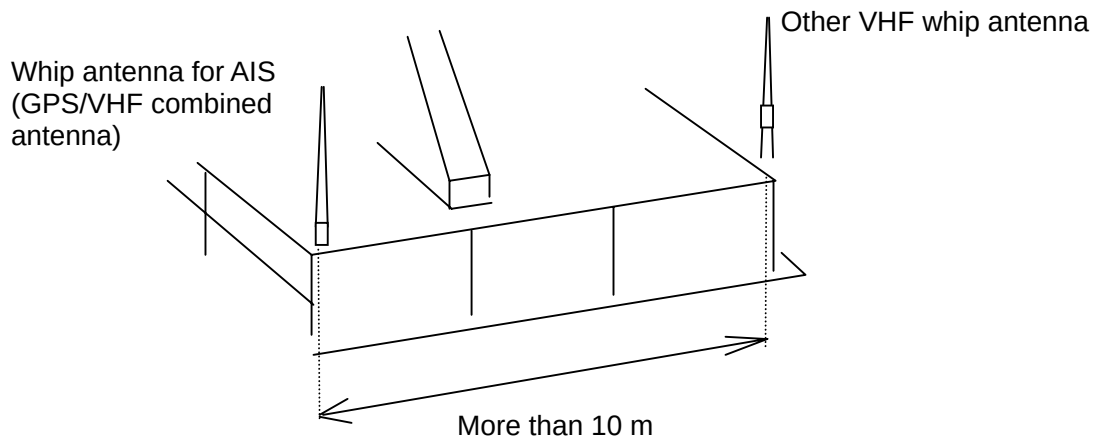
To minimise interference effects, the following guidelines apply:

- The AIS VHF antenna should be placed in an elevated position that is as free as possible with a minimum of 0.5 meters in the horizontal direction from constructions made of conductive materials. The antenna should not be installed close to any large vertical obstruction. The objective for the AIS VHF antenna is to see the horizon freely through 360 degrees.
- The AIS VHF antenna should be installed safely away from interfering high-power energy sources like radar and other transmitting radio antennas, preferably at least 3 meters away from and out of the transmitting beam.
- There should not be more than one antenna on the same plane. The AIS VHF antenna should be mounted directly above or below the ship's primary VHF radiotelephone antenna, with no horizontal separation and with a minimum of 2.8 meters vertical separation. If it is located on the same plane as other antennas, the distance apart should be at least 10 meters.

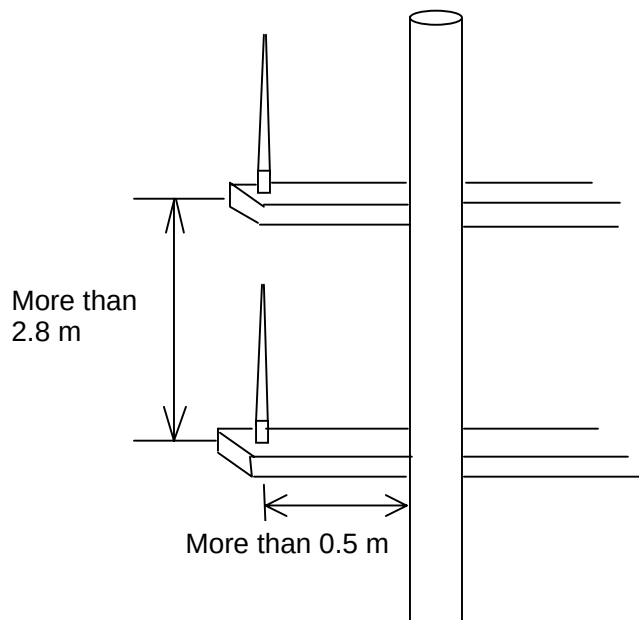
### **Cabling**

- The cable should be kept as short as possible to minimize signal attenuation. Coaxial cables equal to or better than RG10U/Y are recommended.
- All outdoor installed connectors on coaxial cables should be fitted with preventive isolation such as vulcanizing tape to protect against water penetration into the antenna cable.
- Coaxial cables should be installed in separate signal cable channels/tubes and at least 10 cm away from power supply cables. Crossing of cables should be done at right angles (90°). The minimum bend radius of the coaxial cable should be 5 times the cable's outer diameter.
- Install the VHF whip antenna referring to the outline drawing at the back of this manual. Separate this antenna from other VHF radiotelephone antennas as shown on the next page to prevent interference to the FA-100.

### Horizontal separation distance



### Vertical separation distance

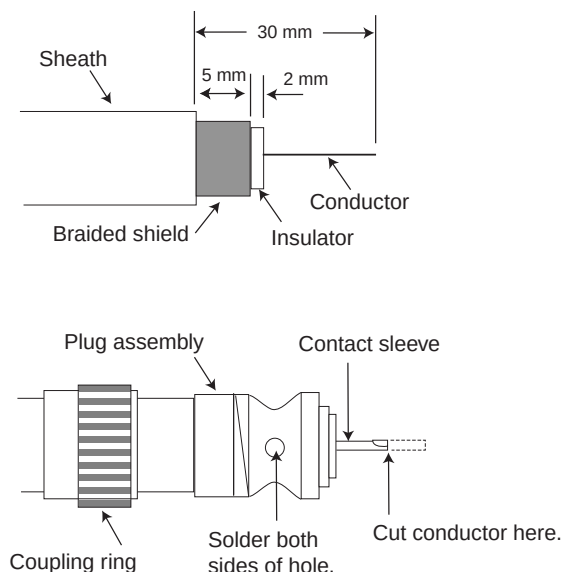


- When coaxial cable RG-10U/Y (shipyard supply) is used, attach the coaxial plug M-P-7 (dockyard supply) as shown on the next page.

### How to attach the plug M-P-7

Lay the coaxial cable and attach an M-type plug (if necessary) to the cable as follows.

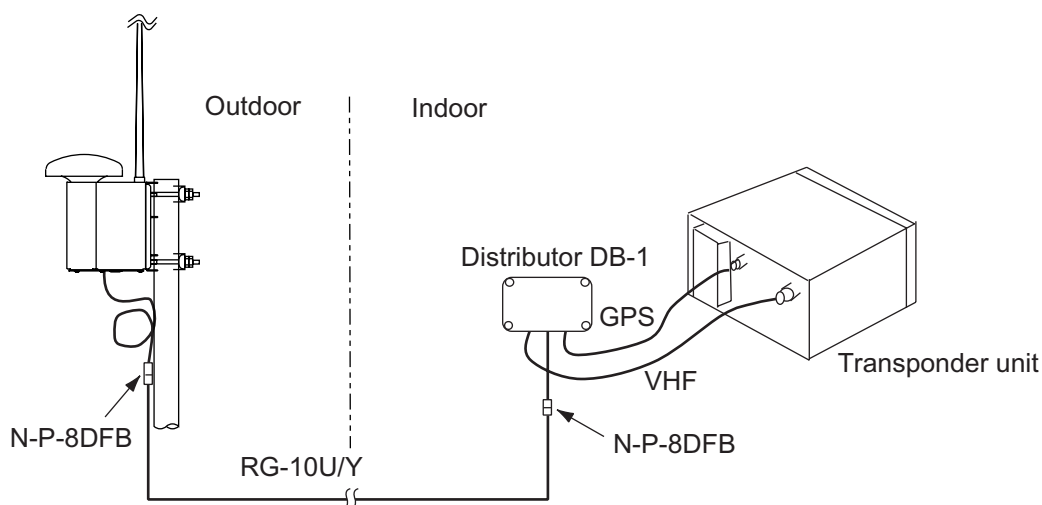
1. Remove the sheath by 30 mm.
2. Bare 23 mm of the center conductor. Trim braided shield by 5 mm and tin.
3. Slide coupling ring onto cable.
4. Screw the plug assembly on the cable.
5. Solder plug assembly to braided shield through solder holes. Solder contact sleeve to conductor.
6. Screw coupling ring into plug assembly.



### **1.1.3 GPS/VHF combined antenna**

Install the combined antenna unit referring to the outline drawing. When selecting a mounting location for the antenna, keep in mind the following points.

- Select a location out of the radar beam. The radar beam will obstruct or prevent reception of the GPS satellite signal.
- There should be no interfering object within the line-of-sight to the satellites. Objects within line-of-sight to a satellite, for example, a mast, may block reception or prolong acquisition time.
- Mount the antenna unit as high as possible. Mounting it this way keeps it free of interfering objects and water spray, which can interrupt reception of GPS satellite signal if the water freezes.
- Also, refer to the antenna installation guidelines page 3.

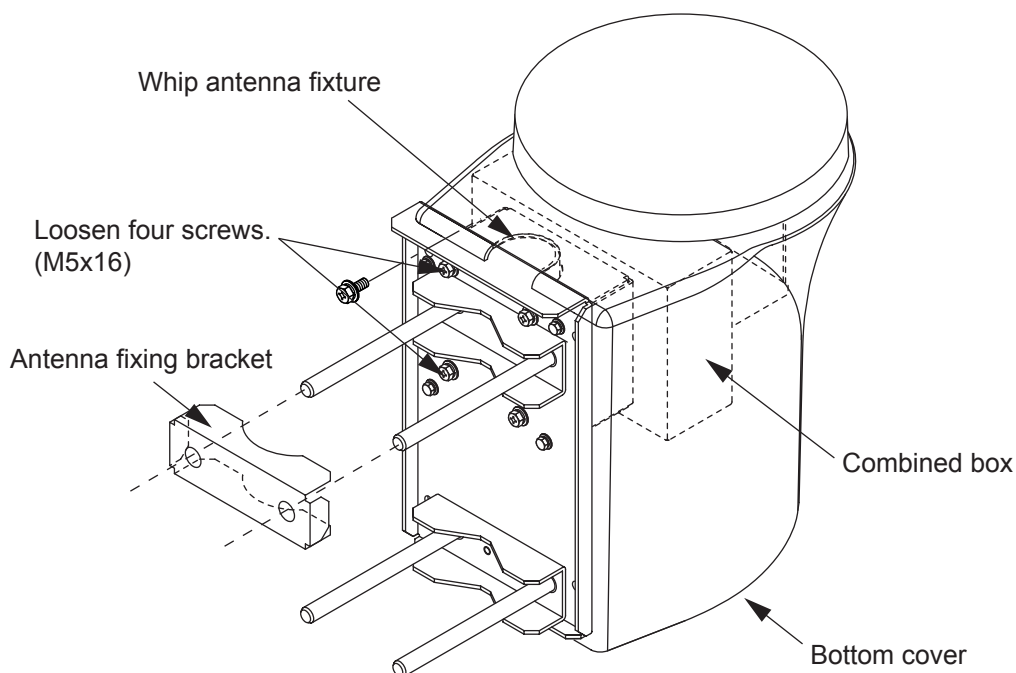


*Installation overview of GPS/VHF combined antenna*

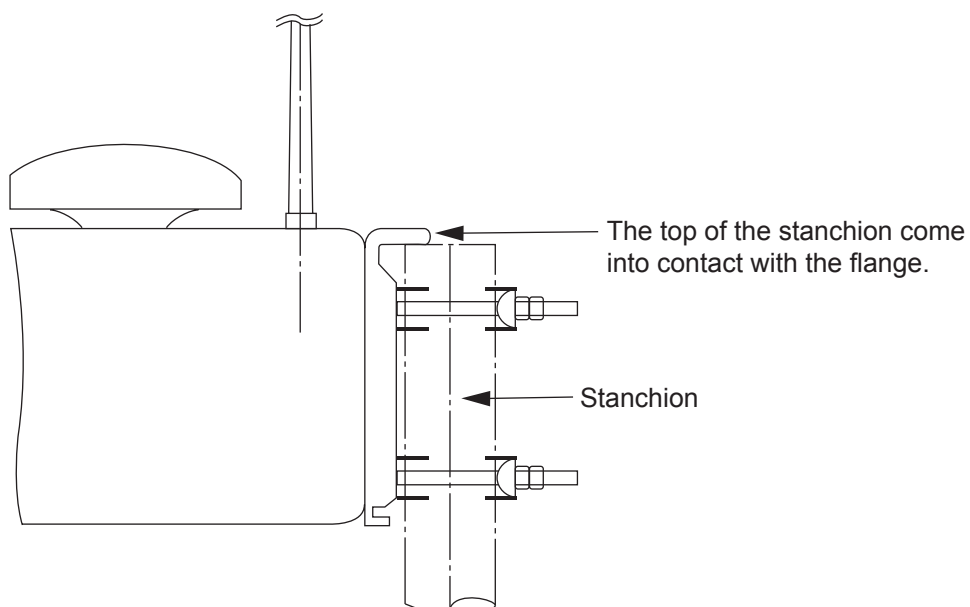
## **Mounting procedures**

1. Dismount the bottom cover, cut the cable-tie inside the unit and take out the coaxial connector attached to the combined box.
2. Loosen four screws to loosen whip antenna fixture and pull out the coaxial connector coming from the combined box through the hole in the whip antenna fixture.
3. Connect the coaxial connector to the whip antenna base and wrap the junction part of the whip antenna with vulcanizing tape and then vinyl tape for waterproofing.
4. Insert the whip antenna from the top of the combined antenna.
5. Secure the whip antenna with whip antenna fixture.
6. Using a new plastic band (supplied), secure the cables and coaxial connector inside the antenna case.
7. Mount the bottom cover.
8. Fix the GPS/VHF combined antenna to the ship's stanchion (40 to 50 mm diameter) with antenna fixing brackets, flat washers and hex. nuts.

**Note:** Coat the exposed parts of bolts and nuts with silicon sealant.

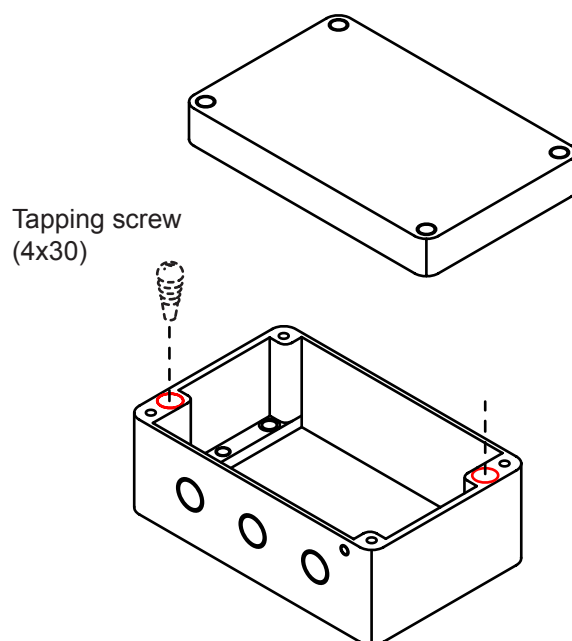


*GPS/VHF Combined antenna*



### **Installing distributor unit DB-1**

The length of the cable between the distributor unit and transponder unit is 1 m so locate the distributor unit within 1 m from the transponder unit. Fix the distributor unit on the bulkhead, facing the cable entrance downward. Remove the lid of the distributor unit and secure the unit with two tapping screws.



**Note:** Be sure no foreign material or water enters the distributor unit.

## 1.2 Transponder Unit

The transponder unit can be installed on a desktop or flush mounted in a panel. Install it on the chart table or near the steering place, referring to the outline drawing.

When selecting a mounting location for the transponder, keep the following in mind:

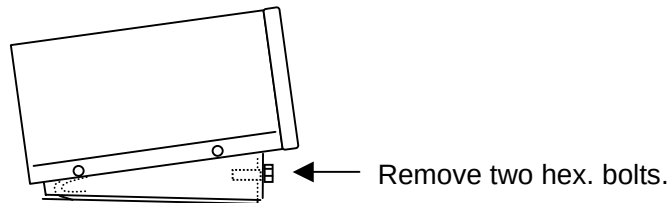
- Keep the transponder out of direct sunlight.
- The temperature and humidity should be moderate and stable.  
(Operating temperature range: -15°C to +55°C)
- Locate the unit away from exhaust pipes and vents.
- The mounting location should be well ventilated.
- Mount the unit where shock and vibration are minimal.
- Keep the unit away from electromagnetic field generating equipment such as motor, generator.
- For maintenance and checking purposes, leave sufficient space at the sides and rear of the unit and leave slack in cables. Refer to the outline drawing.
- A magnetic compass will be affected if the unit is placed too close to it. Observe the following compass safe distances to prevent disturbance to the magnetic compass:

Standard compass: 1.0 meters

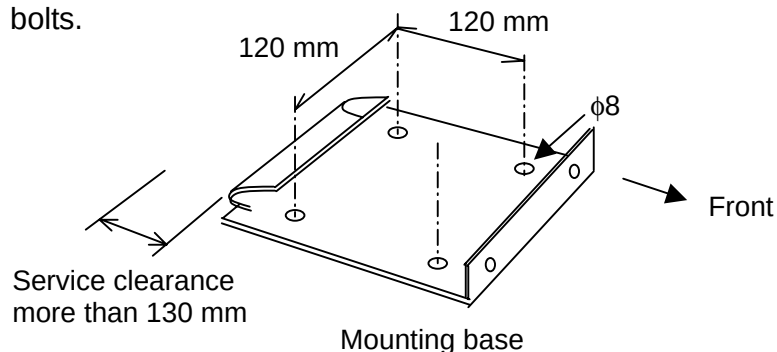
Steering compass: 0.4 meters

### Desktop mounting

1. Remove two hex. bolts from the lower part of the transponder unit and dismount the mounting base.



2. Fix the mounting base to the desktop with four tapping screws (6x20: supplied) or hex. bolts.



3. Place the transponder unit on the mounting base and secure it with two hex. bolts.

## **Flush mounting**

Optional flush mount kit A or B is required for flush mounting. For mounting dimensions, refer to the outline drawing at the back of this manual.

### **Flush mount kit A:      Type OP24-1      Code no. 005-950-740**

|   | Name           | Type        | Code no.    | Qty |
|---|----------------|-------------|-------------|-----|
| 1 | Cosmetic panel | 24-003-2811 | 100-299-540 | 1   |
| 2 | +Tapping screw | 5x25        | 000-802-082 | 4   |

1. Cut out a hole in the mounting location, referring to the outline drawing.
2. Remove two hex bolts to dismount the mounting base.
3. Remove six hex bolts from the bottom of the transponder unit to dismount the mounting pedestal.
4. Set the transponder unit to the cosmetic panel and fix them with six hex bolts.
5. Set the assembly (transponder unit and cosmetic panel) to the hole and fix it with four tapping screws (5x25).

### **Flush mount kit B:      Type OP24-2      Code no. 005-950-750**

|   | Name             | Type        | Code no.    | Qty |
|---|------------------|-------------|-------------|-----|
| 1 | Mounting bracket | 24-003-2821 | 100-299-550 | 1   |
| 2 | Hex bolt         | M5x25       | 000-862-125 | 6   |
| 3 | Hex nut          | M5          | 000-863-108 | 6   |
| 4 | Flat washer      | M5          | 000-864-128 | 6   |
| 5 | Spring washer    | M5          | 000-864-258 | 6   |

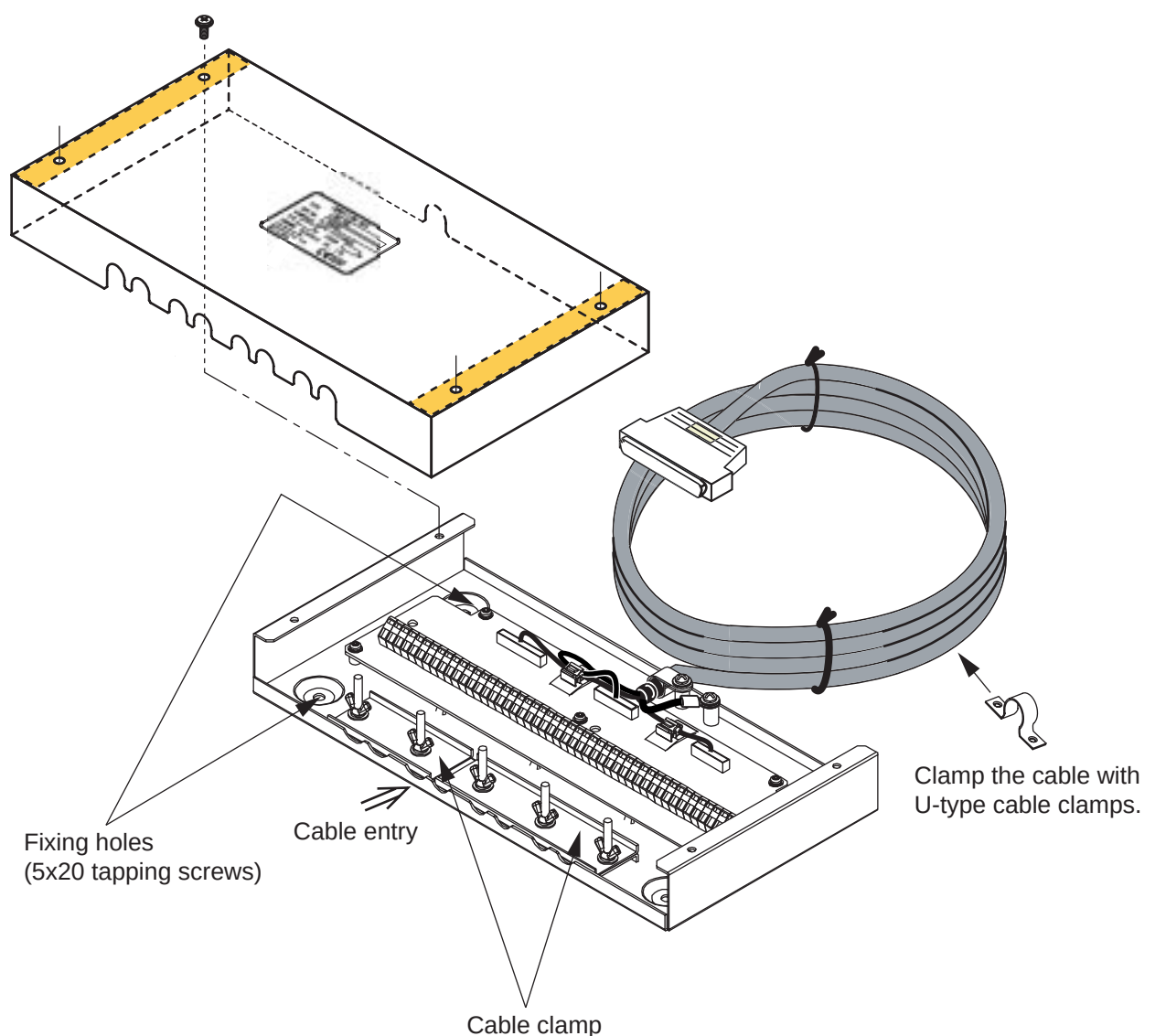
1. Cut out a hole in the mounting location, referring to the outline drawing.
2. Dismount the mounting base and mounting pedestal from the transponder unit.
3. Set the transponder unit to the hole. Using six hex bolts, attach the mounting bracket at the bottom of the transponder unit from the rear of the flush mounting panel.
4. Fix with six sets of hex bolt, nut, flat washers and spring washers from the rear of the flush mounting panel.

## 1.3 Junction Box

Mount the junction box where the junction box is protected from rain and water splash.

### Mounting

1. Open the lid of the junction box and fix the junction box with four tapping screws (5x20). Avoid bundling the 3.3 m cable of the junction box together with any power cable. This causes malfunction.
2. Connect cables to the terminal board, referring to Chapter 2 and 3.
3. Fix the lid after connecting external equipment.
4. Clamp the cable with several U-type cable clamps (local supply) at suitable intervals.





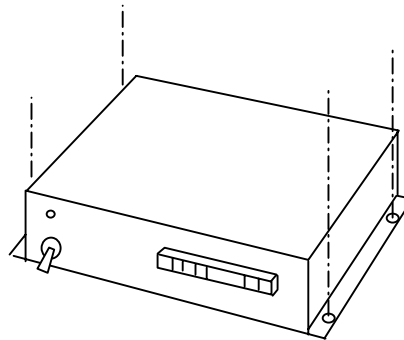
## 1.4 Power Supply (option)

The length of the power cable between the power supply and the transponder unit is 3.5 m. Keep this length in mind when selecting a mounting location. A longer cable should not be used – voltage drop will result, affecting performance.

When selecting a mounting location for the unit, keep the following in mind:

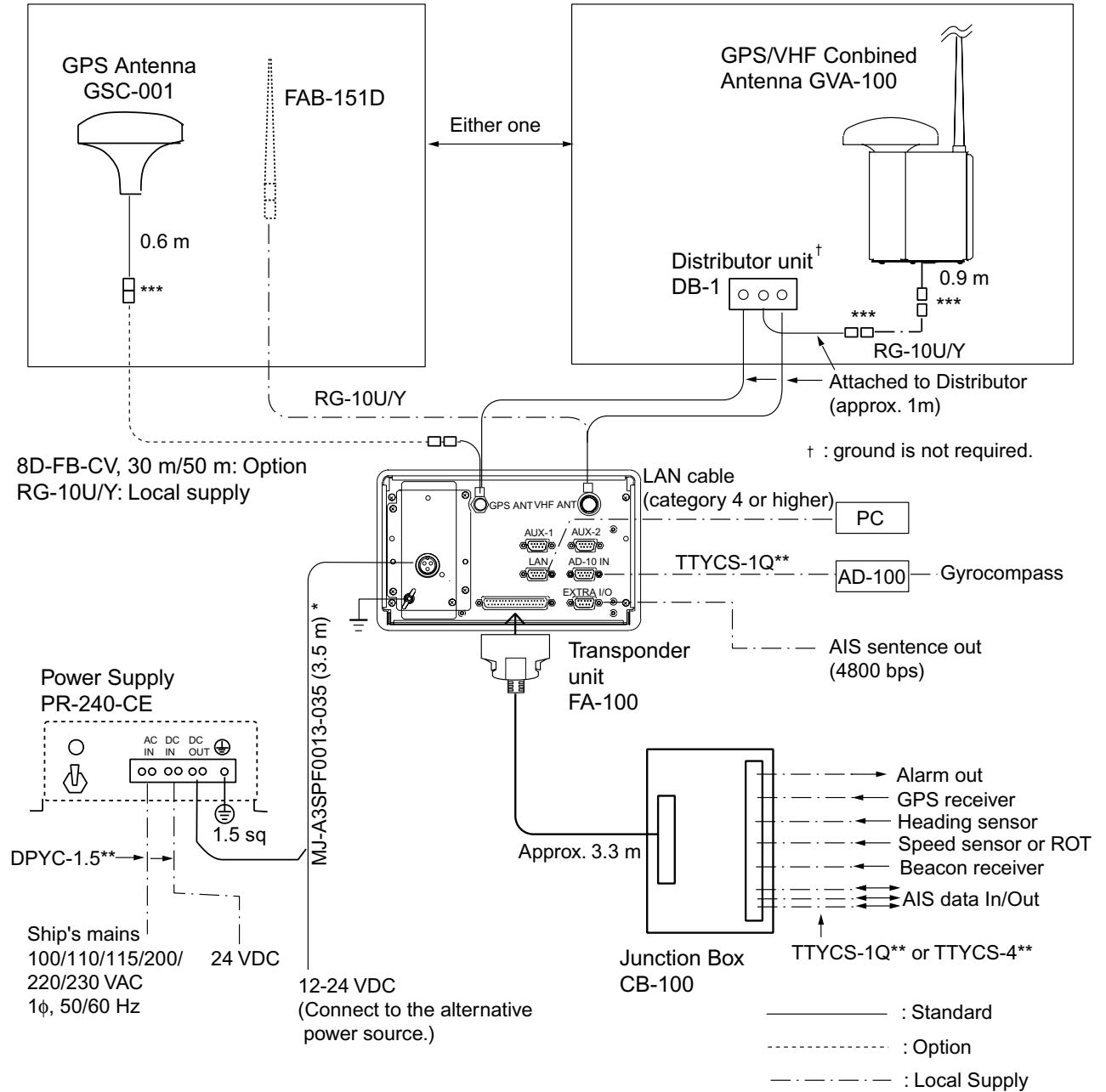
- Keep the unit out away from areas subject to water splash.
- Locate the unit away from exhaust pipes and vents.
- The mounting location should be well ventilated.
- Mount the unit where shock and vibration are minimal.
- A magnetic compass will be affected if the unit is placed too close to it. Observe the following compass safe distances to prevent disturbance to the magnetic compass:
  - Steering compass: 0.6 m
  - Standard compass: 0.9 m

Fix the unit with four tapping screws (4x16) to a desktop or the deck as shown in the figure below. It is not necessary to open the cover.



## 2. WIRING

Connect the equipment, referring to the interconnection diagram at the back this manual.

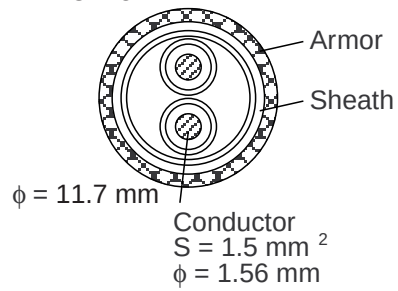


EXTRA IO port: Outputs AIS sentence (4800 bps).

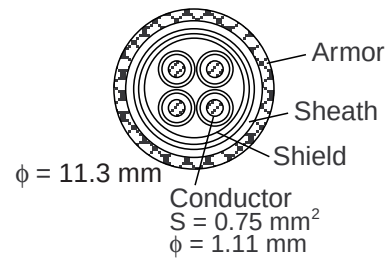
AUX-1, AUX-2 port: Not used.

\*\* : DPYC-1.5, TTYCS-1Q and TTYCS-4 are Japan Industry Standard cable.  
Use them or the equivalents.

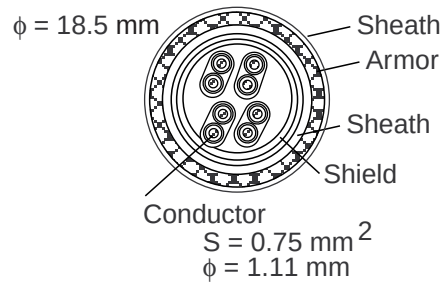
DPYC-1.5



TTYCS-1Q (Four core twisted)



TTYCS-4 (Four twisted pairs)



\*\*\* : Waterproofing connectors

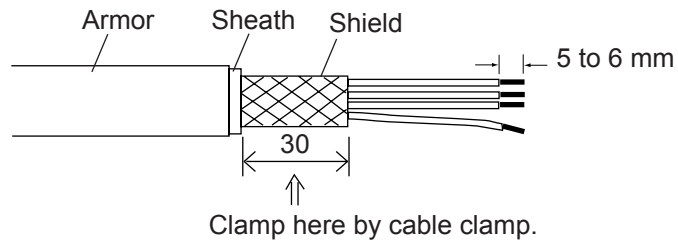
Wrap connector with vulcanizing tape and then vinyl tape. Bind the tape end with a cable-tie.



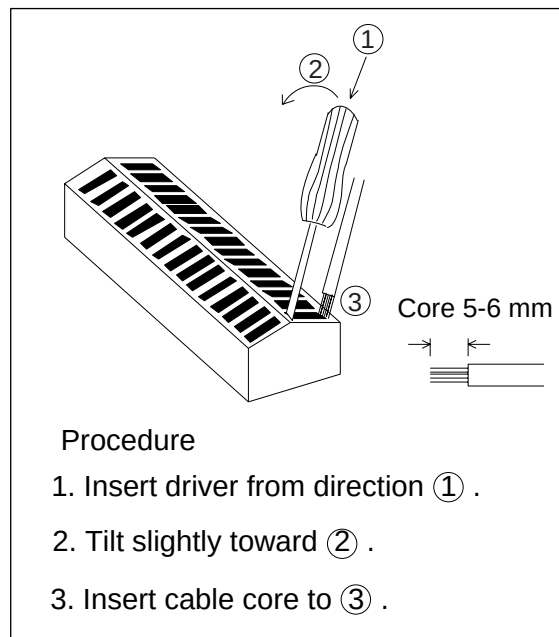
Waterproofing connector

## Cable Connection at Junction Box

### Cable fabrication



### Connection

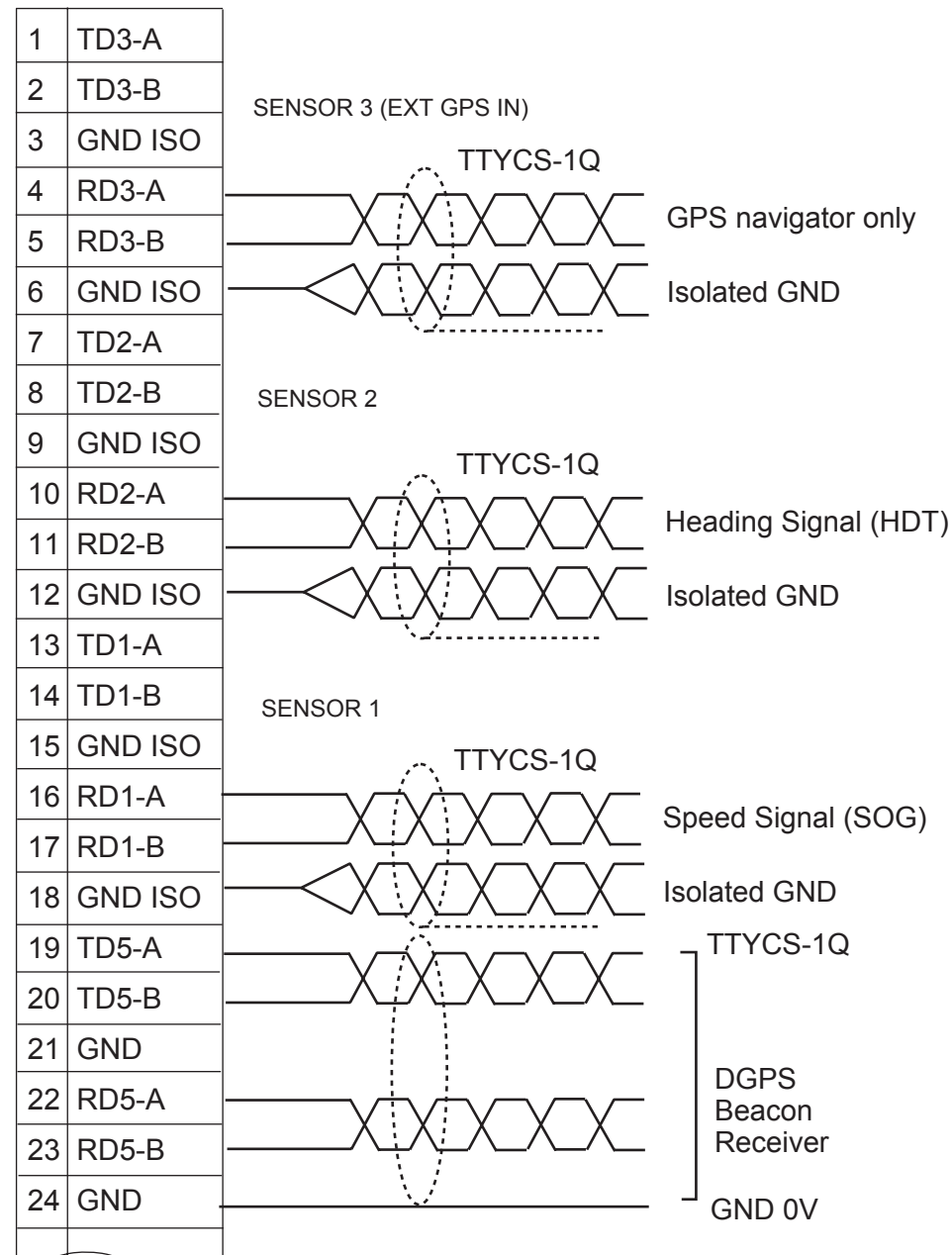


# 3. INPUT/OUTPUT SIGNAL

## 3.1 Inputs from Sensors

There are three input ports (SENSOR 1, 2 and 3) which are based on the IEC 61162-1/2. The protocol is RS422. If there is no HDT signal from a gyrocompass, connect the gyrocompass signal (Synchro or step signal) to the "AD-10 IN" port (D-sub 9 pins) of the transponder unit via the FURUNO A/D Converter AD-100 (See page 16).

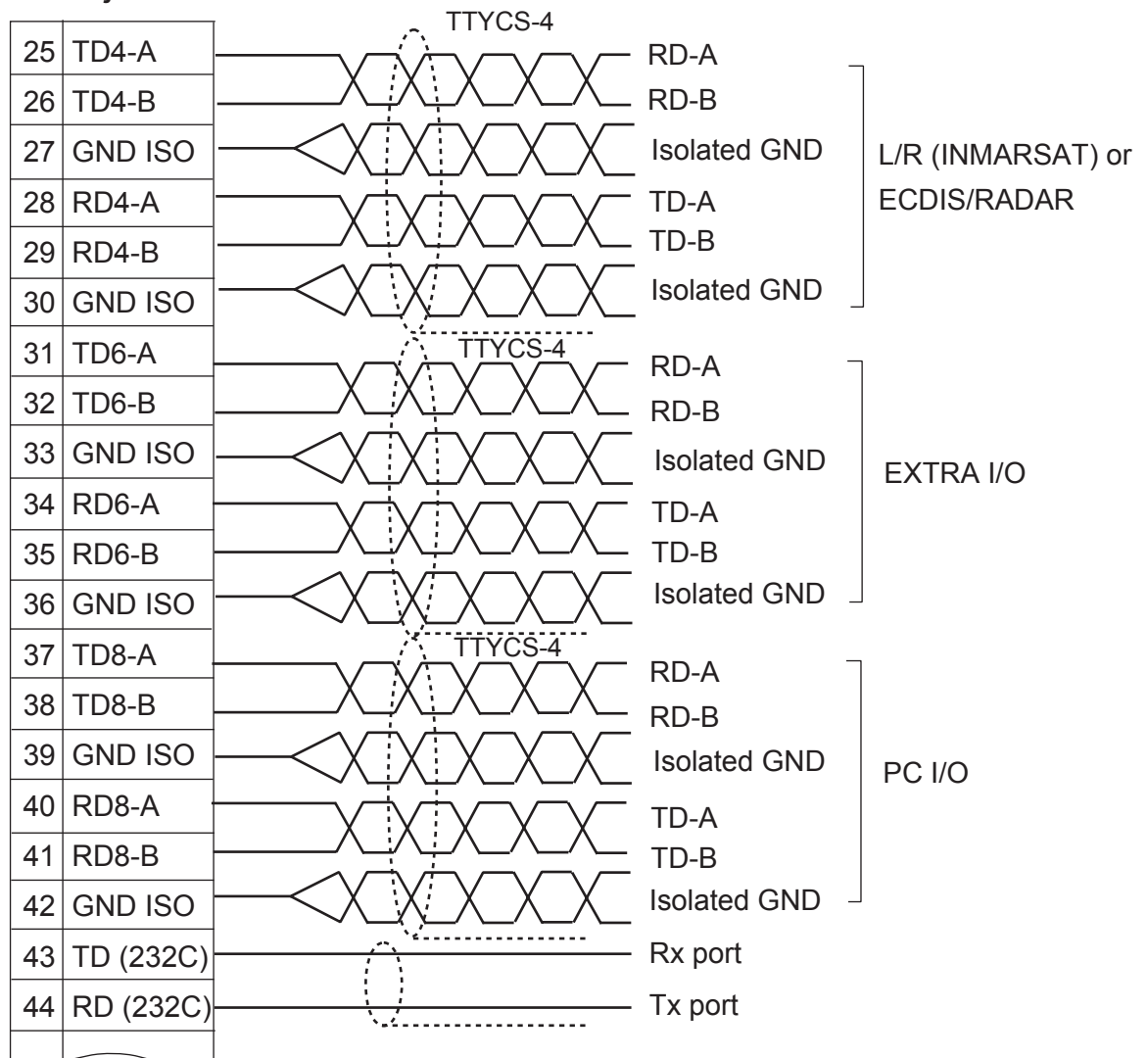
TB1 in the junction box



## 3.2 Input/Output of AIS Signal

Three input/output ports are provided for RS-422 protocol, based on the IEC 61162-1/2. Data transmission rate is selectable from 4800 bps and 38.4 kbps. Normally, Radar/ECDIS/PC, etc. are connected to these ports to exchange data with the AIS. PC standard protocol RS-232C is also provided in the D-sub port of the transponder unit.

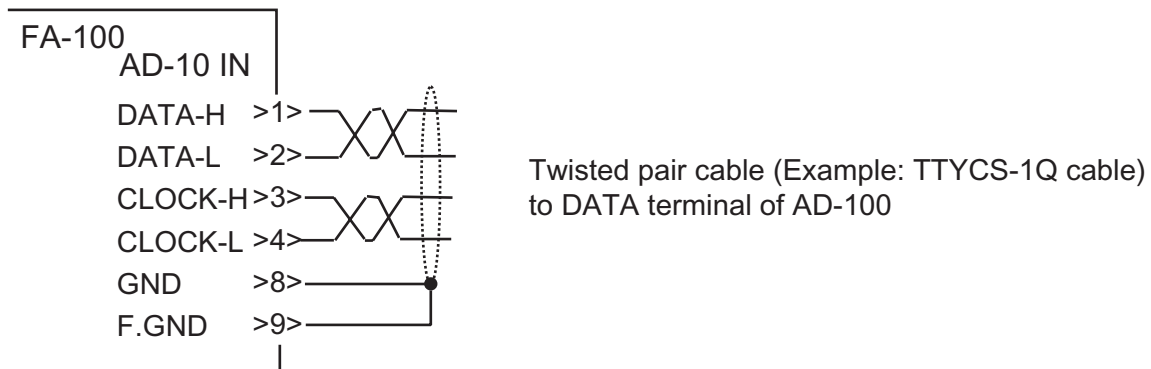
TB1 in the junctionbox



**Note:** For TD (232C) and RD (232C), use one twisted pair for TD and one twisted pair for RD, separately.

### 3.3 Input of Gyrocompass Signal

If the gyrocompass has no HDT signal, the AD-10 format (FURUNO format) signal can be input via the FURUNO A/D Converter AD-100. Connect the AD-100 to the "AD-10 IN" port (D-sub 9 pin) on the rear panel of the transponder unit.



**Note:** Set data output interval for 200 ms (instead of 25 ms) by internal jumper inside the AD-100.

### 3.4 Alarm Signal Output

The FA-100 generates an alarm signal (relay contact signal) for hardware failure such as transmitter block or sensor abnormality. For details of alarm type, see the operator's manual.

Two kinds of contact signals, on (normal closure) or off (normal open), are output, and are selected at the junction box CB-100 according to the alarm generator connected. The maximum current and voltage of the contact are 1 A, 125 VAC and 60 VDC. Normally connect to the NC (normal close) between #46 and #47.

TB-1 in the junction box

|    |     |
|----|-----|
| 45 | AOL |
| 46 | AOH |
| 47 | AOC |

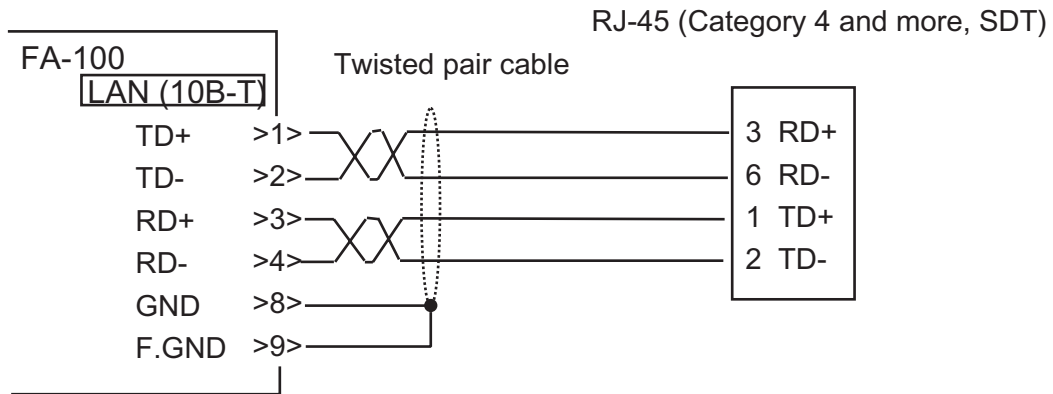
#45-#47: Normal Open

#46-#47: Normal Close

47: common line

### 3.5 LAN Input/Output

The FA-100 supports Ethernet based on LAN. Its protocol is 10BASE-T and the transmission rate is 10 Mbps. To connect the FA-100 with other equipment (such as a PC), use a LAN cable category 4 or higher with shield (SDT). Connect it to the PC with an RJ-45 connector, and connect to the FA-100 with a D-sub 9 pin connector, to avoid noise leakage. To use a commercial LAN cable, remove one connector and solder a D-sub 9 pin connector, supplied in the installation materials.



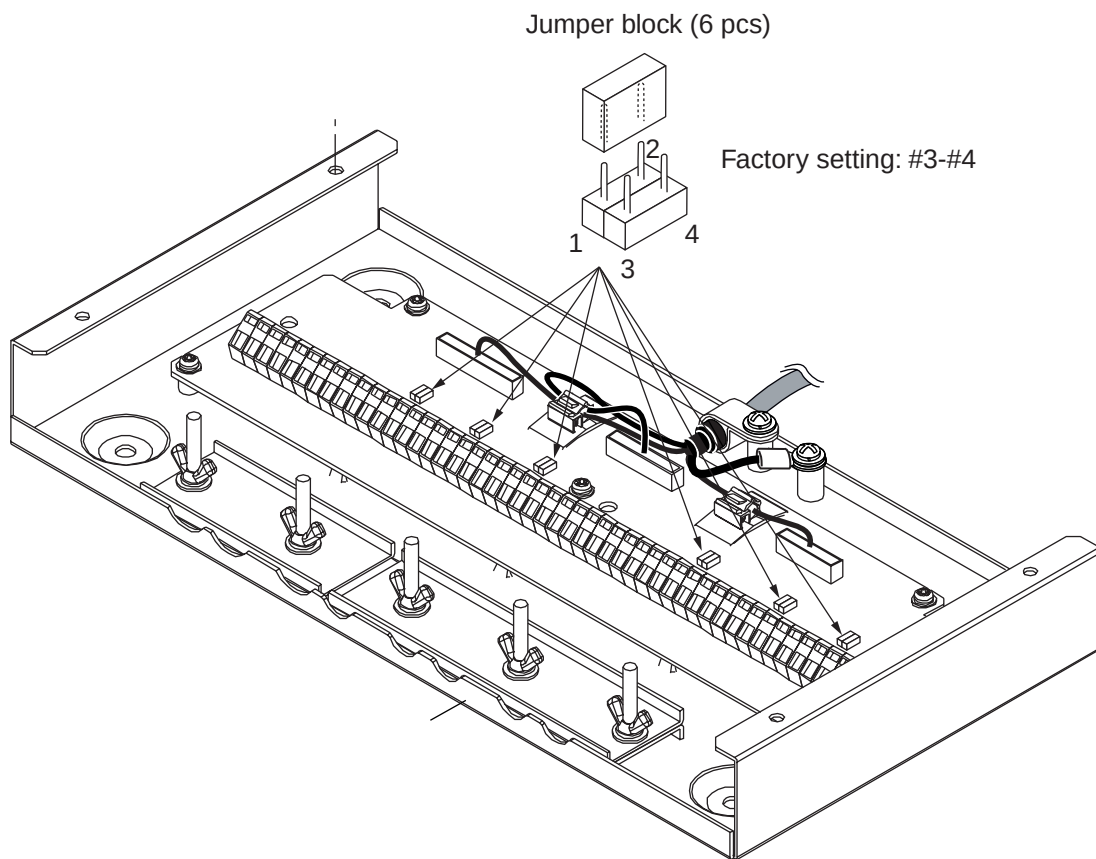


### 3.6 Jumper Setting in the Junction Box

Each RS-422 RX line (on the PCB 24P0031 in the junction box) has a jumper block with 240 ohms termination resistor. The junction box is shipped with all jumper blocks connected between the #3 and #4 terminals pins, terminating RX lines with 240 ohms. Assuming that an external equipment has the output voltage of  $\pm 5$  V, more than 21 mA of output current is required.

If multiple equipment are connected to an output port of an external equipment, change to jumper block setting to between the #1 and #2 pins to reduce the load on the FA-100. Then, the input impedance of the RS-422 RX lines in the FA-100 becomes more than 2.4 k ohms.

We recommend that you leave the connection of the jumper block between #3 and #4 pins if only the FA-100 is connected to an external equipment.



## 3.7 Input/Output Sentences

### 1) SENSOR 1, SENSOR2, and SENSOR3 ports

These ports can receive IEC61162-1/2 standard data. The transmission rate of sensor 1, 2, and 3 is selectable from 4800 bps and 38.4 kbps through the menu.

Input sentences are as follows:

\$xxDTM, \$xxGBS, \$xxGGA, \$xxGLL, \$xxGNS, \$xxHDT  
\$xxOSD, \$xxRMC, \$xxROT, \$xxVBW, \$xxVTG

**Note:** The talker of the underlined sentences has priority as follows:

GN>GP>GL>LC>IN

Other sentences disregard talker.

### 2) PC I/O, LR or ECDIS/RADAR, EXTRA I/O and EXTRA 1 I/O ports

These ports can receive or output IEC61162-1/2 standard data. The transmission rate of signals is selectable from 4800 bps and 38.4 kbps through the menu. The transmission rate of the EXTRA IO port signal is fixed to 4800 bps.

Input sentences are as follows:

\$xxABM, \$xxACA, \$xxACK, \$xxAIR  
\$xxBBM, \$xxDTM, \$xxGBS, \$xxGGA  
\$xxGLL, \$xxGNS, \$xxHDT, \$xxLRF  
\$xxLRI, \$xxOSD, \$xxRMC, \$xxROT  
\$xxSSD, \$xxVBW, \$xxVSD, \$xxVTG

**Note:** The talker of the underlined sentences has priority as follows:

GN>GP>GL>LC>IN

Other sentences disregard talker.

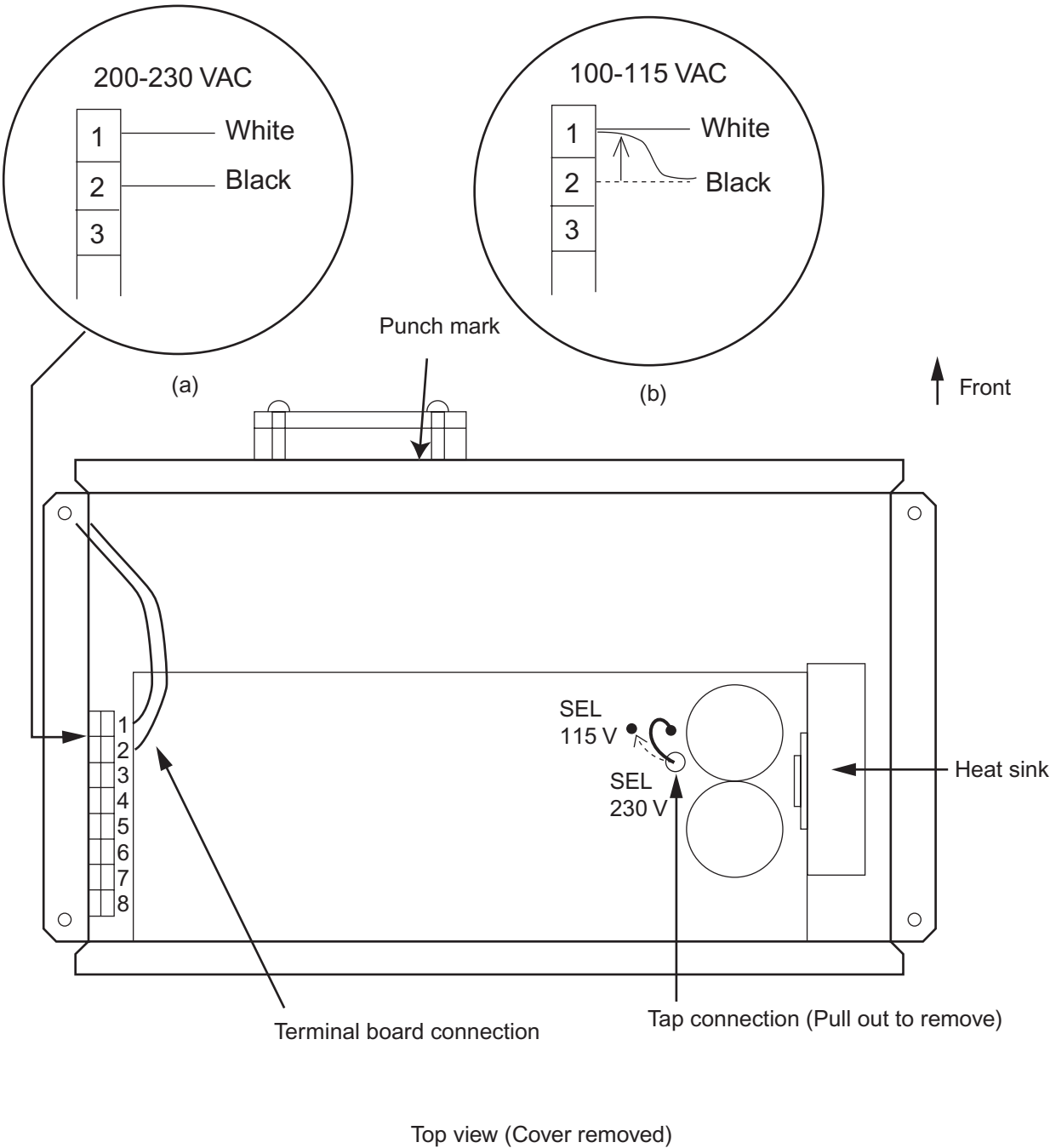
Output sentences are as follows:

\$AIABK, \$AIACA, \$AIALR, \$AILRF,  
\$AILR1, \$AILR2, \$AILR3, \$AITXT,  
\$AIVDM, \$AIVDO

### 3.8 Changing Ship's Mains Specifications

The 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 – 115 VAC, change the tap connection and terminal board connection as below. Attach label supplied as accessories to the punch mark in the front panel according to the ship's mains.

| Ship's mains | Tap connection | Terminal board connection #1 & #2 |
|--------------|----------------|-----------------------------------|
| 100-115 VAC  | SEL 115 V      | b                                 |
| 200-230 VAC  | SEL 230 V      | a                                 |



## 4. SETTING AND ADJUSTMENT

After installing the equipment, set up the own ship's static information (MMSI, IMO number, ship's name, call sign, type of ship and GPS antenna position). Also, set up the system settings, and measure the output power and frequency.

### 4.1 Setting MMSI and IMO Number

1. While holding down the [0] key, press the [POWER] key.
2. After the following message appears, release the [0] key. (It takes several seconds before the message appears.)

NOW STARTING  
CHECKING MEMORY

3. After the following window appears, enter the password. Note that the password is known by only the FURUNO dealer.

[ENTER PASSWORD]

PASSWORD:



4. Press the [ENT] key to display the SET MMSI & IMO# window.

Asterisk marks  
current selection.

[SET MMSI & IMO#]  
\* MMSI    x x x x x x x x  
IMO#    x x x x x x x x

SET: [ENT]

5. Enter ship's MMSI (Maritime Mobile Service Identity) in nine digits.
6. Press the [NEXT] key to select IMO#.
7. Enter ship's IMO number in nine digits. If the IMO number has 7 digits, enter "0" twice followed by IMO#. If the ship has no IMO number, enter all zeroes.
8. Press the [ENT] key to register data.

## 4.2 Setting Ship Name and Call Sign

1. Press the [MENU] key to open the main menu.

```
[MENU]
* 1 TARGET DATA
  2 PLOTTER
  3 OWN DATA
  4 SET MSG
  5 INIT SETTINGS
  6 SYSTEM SETTINGS
  7 DIAGNOSTICS
```

### *Main menu*

3. Press the [5] key to open the INIT SETTINGS sub-menu.

```
[INIT SETTINGS]
* 1 SET SHIP DATA
  2 SET DESTINATION
  3 SET NAV STATUS
  4 SET TYPE&CREW
  5 SET CPA/TCPA
  6 SET ANTENNA POS
```

### *INIT SETTINGS sub-menu*

4. Press the [1] key to display the SET SHIP DATA window.

```
[SET SHIP DATA]
* NAME: _____
  C. SIGN: _____

DRUGHT: 08.0 m
DTE: KEY & DISP + /- ← Do not change from KEY & DISP

123
```

Input mode

123: Numeric mode

ABC: Alphabet mode

To switch between them, press the [SFT] key.

### *SET SHIP DATA window*

5. Enter ship's name, using up to 20 alphanumeric characters. To switch between alphabet and numerical character, press the [SFT] key. To enter an alphabet, press corresponding key several times until desired letter is displayed. For example, if you press the [2] key continuously, the character A, B and C appear cyclically. If you want to enter the same letter or an other letter with the same key (for example, AA or AC), press the [6] key while pressing the [SFT] key, to send the cursor to the next position.

6. Press the [NEXT] key to select C.SIGN.
7. Enter call sign, using up to seven alphanumeric characters.
8. Press the [ENT] key to register data. The INIT SETTINGS sub-menu appears.

## 4.3 Setting GPS Antenna Position and Ship's Type

1. In the INIT SETTING sub-menu, press the [6] key to open the SET ANTENNA POS window.

SET ANTENNA POS

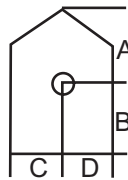
\* 1 INTERNAL ANT POS

2 EXTERNAL ANT POS

*SET ANTENNA POS window*

2. With 1 selected, press the [ENT] key. The 1 is for entering internal GPS antenna position and 2 is for external GPS which is connected to the AIS.

[INTERNAL ANT POS]



\* A: 000 m

B: 000 m

C: 00 m

D: 00 m

*INTERNAL ANT POS window*

3. Enter locations of GPS antenna, by using the numeric keys and the [NEXT] key, and finally press the [ENT] key.
  - A: Distance from bow to GPS antenna position
  - B: Distance from stern to GPS antenna position
  - C: Distance from port to GPS antenna position
  - D: Distance from starboard to GPS antenna position
4. Enter external GPS antenna position similar to how you entered internal GPS antenna position.
5. Press the [MENU] key to return to the INIT SETTINGS sub-menu.
6. Press the [4] key to display the SET TYPE&CREW window.

[SET TYPE&CREW]

\* CREW : 0012

TYPE CLASS : A

TYPE NO. : 6

TYPE NAME

← Do not change from A.  
(A = IMO type)

*SET TYPE&CREW window*

7. Press the [NEXT] key to select TYPE NO.

Confirm type of ship with ship's captain before setting it.

8. Press the [2], [4], [6] or [8] key as appropriate to select your ship's type, referring to the list on below.

Table: Type name

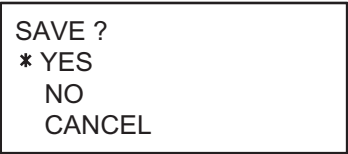
|    |                                                       |                            |    |                    |                            |
|----|-------------------------------------------------------|----------------------------|----|--------------------|----------------------------|
| 10 | FUTURE USE                                            | ALL SHIPS OF THIS TYPE     | 60 | PASSENGER SHIPS    | ALL SHIPS OF THIS TYPE     |
| 11 | FUTURE USE                                            | CARRYING DG, HS, OR, MP(A) | 61 | PASSENGER SHIPS    | CARRYING DG, HS, OR, MP(A) |
| 12 | FUTURE USE                                            | CARRYING DG, HS, OR, MP(B) | 62 | PASSENGER SHIPS    | CARRYING DG, HS, OR, MP(B) |
| 13 | FUTURE USE                                            | CARRYING DG, HS, OR MP(C)  | 63 | PASSENGER SHIPS    | CARRYING DG, HS, OR MP(C)  |
| 14 | FUTURE USE                                            | CARRYING DG, HS, OR, MP(D) | 64 | PASSENGER SHIPS    | CARRYING DG, HS, OR, MP(D) |
| 15 | FUTURE USE                                            | FUTURE USE                 | 65 | PASSENGER SHIPS    | FUTURE USE                 |
| 16 | FUTURE USE                                            | FUTURE USE                 | 66 | PASSENGER SHIPS    | FUTURE USE                 |
| 17 | FUTURE USE                                            | FUTURE USE                 | 67 | PASSENGER SHIPS    | FUTURE USE                 |
| 18 | FUTURE USE                                            | FUTURE USE                 | 68 | PASSENGER SHIPS    | FUTURE USE                 |
| 19 | FUTURE USE                                            | NONE                       | 69 | PASSENGER SHIPS    | NONE                       |
| 20 | WIG                                                   | ALL SHIPS OF THIS TYPE     | 70 | CARGO SHIP         | ALL SHIPS OF THIS TYPE     |
| 21 | WIG                                                   | CARRYING DG, HS, OR, MP(A) | 71 | CARGO SHIP         | CARRYING DG, HS, OR, MP(A) |
| 22 | WIG                                                   | CARRYING DG, HS, OR, MP(B) | 72 | CARGO SHIP         | CARRYING DG, HS, OR, MP(B) |
| 23 | WIG                                                   | CARRYING DG, HS, OR MP(C)  | 73 | CARGO SHIP         | CARRYING DG, HS, OR MP(C)  |
| 24 | WIG                                                   | CARRYING DG, HS, OR, MP(D) | 74 | CARGO SHIP         | CARRYING DG, HS, OR, MP(D) |
| 25 | WIG                                                   | FUTURE USE                 | 75 | CARGO SHIP         | FUTURE USE                 |
| 26 | WIG                                                   | FUTURE USE                 | 76 | CARGO SHIP         | FUTURE USE                 |
| 27 | WIG                                                   | FUTURE USE                 | 77 | CARGO SHIP         | FUTURE USE                 |
| 28 | WIG                                                   | FUTURE USE                 | 78 | CARGO SHIP         | FUTURE USE                 |
| 29 | WIG                                                   | NONE                       | 79 | CARGO SHIP         | NONE                       |
| 30 | FISHING                                               |                            | 80 | TANKER             | ALL SHIPS OF THIS TYPE     |
| 31 | TOWING                                                |                            | 81 | TANKER             | CARRYING DG, HS, OR, MP(A) |
| 32 | LENGTH OF THE TOW EXCEEDS 200M OR BREADTH EXCEEDS 25M |                            | 82 | TANKER             | CARRYING DG, HS, OR, MP(B) |
| 33 | ENGAGED IN DREDGING OR UNDERWATER OPERATIONS          |                            | 83 | TANKER             | CARRYING DG, HS, OR MP(C)  |
| 34 | ENGAGED IN DIVING OPERATIONS                          |                            | 84 | TANKER             | CARRYING DG, HS, OR, MP(D) |
| 35 | ENGAGED IN MILITARY OPERATIONS                        |                            | 85 | TANKER             | FUTURE USE                 |
| 36 | SAILING                                               |                            | 86 | TANKER             | FUTURE USE                 |
| 37 | PLEASURE CRAFT                                        |                            | 87 | TANKER             | FUTURE USE                 |
| 38 | FUTURE USE                                            |                            | 88 | TANKER             | FUTURE USE                 |
| 39 | FUTURE USE                                            |                            | 89 | TANKER             | NONE                       |
| 40 | HSC                                                   | ALL SHIPS OF THIS TYPE     | 90 | OTHER TYPE OF SHIP | ALL SHIPS OF THIS TYPE     |
| 41 | HSC                                                   | CARRYING DG, HS, OR, MP(A) | 91 | OTHER TYPE OF SHIP | CARRYING DG, HS, OR, MP(A) |
| 42 | HSC                                                   | CARRYING DG, HS, OR, MP(B) | 92 | OTHER TYPE OF SHIP | CARRYING DG, HS, OR, MP(B) |
| 43 | HSC                                                   | CARRYING DG, HS, OR MP(C)  | 93 | OTHER TYPE OF SHIP | CARRYING DG, HS, OR MP(C)  |
| 44 | HSC                                                   | CARRYING DG, HS, OR, MP(D) | 94 | OTHER TYPE OF SHIP | CARRYING DG, HS, OR, MP(D) |
| 45 | HSC                                                   | FUTURE USE                 | 95 | OTHER TYPE OF SHIP | FUTURE USE                 |
| 46 | HSC                                                   | FUTURE USE                 | 96 | OTHER TYPE OF SHIP | FUTURE USE                 |
| 47 | HSC                                                   | FUTURE USE                 | 97 | OTHER TYPE OF SHIP | FUTURE USE                 |
| 48 | HSC                                                   | FUTURE USE                 | 98 | OTHER TYPE OF SHIP | FUTURE USE                 |
| 49 | HSC                                                   | NONE                       | 99 | OTHER TYPE OF SHIP | NONE                       |
| 50 | PILOT                                                 |                            |    |                    |                            |
| 51 | SEARCH AND RESCUE VESSELS                             |                            |    |                    |                            |
| 52 | TUGS                                                  |                            |    |                    |                            |
| 53 | PORT TENDERS                                          |                            |    |                    |                            |
| 54 | VESSELS WITH ANTI-POLLUTION FACILITIES OR EQUIPMENT   |                            |    |                    |                            |
| 55 | LAW ENFORCEMENT VESSELS                               |                            |    |                    |                            |
| 56 | SPARE-FOR ASSIGNMENTS TO LOCAL VESSELS                |                            |    |                    |                            |
| 57 | SPARE-FOR ASSIGNMENTS TO LOCAL VESSELS                |                            |    |                    |                            |
| 58 | MEDICAL TRANSPORTS                                    |                            |    |                    |                            |
| 59 | SHIPS ACCORDING TO RESOLUTION NO 18                   |                            |    |                    |                            |

WIG :Wing-in-Ground  
HSC :High speed craft  
DG :Dangerous goods  
HS :Harmful substances  
MP :Marine pollutants  
For category A, B, C or D, consult it with ship's captain

0-9: not defined

9. Press the [ENT] key to return to the INIT SETTING sub-menu.

10. Press the [MENU] key. The SAVE confirmation window appears.

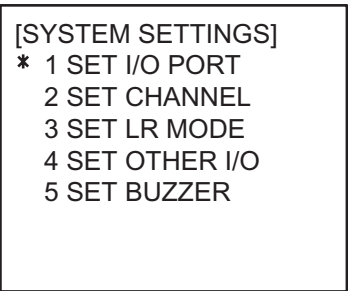


*SAVE confirmation window*

11. With YES selected, press the [ENT] key to save the data.

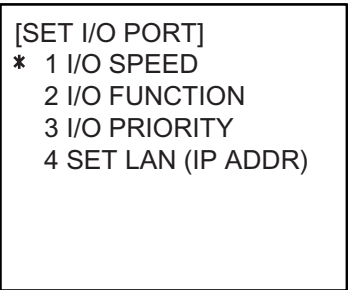
## 4.4 System Settings

1. Press the [MENU] key to open the main menu.
2. Press the [6] key to open the SYSTEM SETTINGS sub-menu.



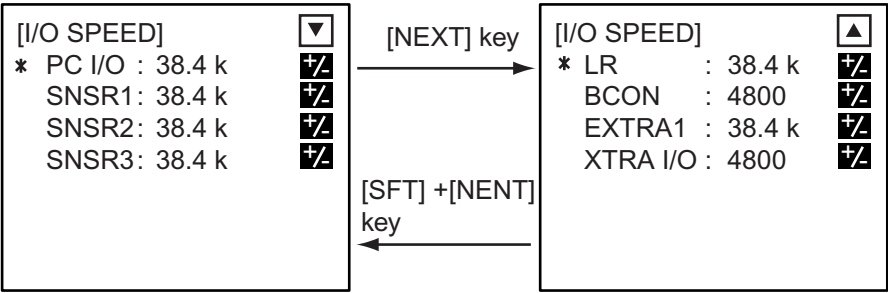
*SYSTEM SETTINGS sub-menu*

3. Press the [1] key to display the SET I/O PORT sub-menu.



*SET I/O PORT sub-menu*

4. Press the [1] key to display the I/O SPEED window.



*I/O SPEED window*



5. Select the appropriate data transmission rate from 4800 bps and 38.4 kbps for PC I/O, SNSR 1, SNSR 2, SNSR 3, LR, BCON (beacon receiver), EXTRA1 and EXTRA2, by pressing the [SFT] key. To select each item, press the [NEXT] key. To go backward, press the [NEXT] key while pressing the [SFT] key.
6. Press the [ENT] key to return to the SET I/O PORT sub-menu.
7. Press the [2] key to display the I/O FUNCTION window.

```

[I/O FUNCTION]
PORT LR: EXT DISP +/-

```

*I/O FUNCTION window*

8. Press the [SFT+/-] key to select EXT DISP or LR, depending on equipment connected.  
EXT DISP: External display, such as radar, ECDIS  
LR: Long range communication, such as INMARSAT communication equipment
9. Press the [ENT] key to return to the SET I/O PORT sub-menu.
10. Press the [3] key to display the I/O PRIORITY window.

```

[I/O PRIORITY]
* 1 L/L   COG   SOG
  2 HDG
  3 ROT
  4 AIS

```

*I/O PRIORITY window*

11. Press the [1] key to display the L/L COG SOG window.

```

[L/L COG SOG]
* SN1: 1   SN2: 2
  SN3: 3
  EX1: 4   LR : 5
  PC : 6   LAN: 7

  DEFAULT: [CLR]

```

*L/L/COG/SOG PRIORITY window*

12. Set L/L position, COG and SOG data priority with the numeric keys according to sensors connected.

COG: Course over ground

SOG: Speed over ground

13. Press the [ENT] key to return to the I/O PRIORITY window.

**Note:** If you have entered 8, 9 or the same value for more than one item at step 12, the following error message appears. In this case, press the [ENT] key and set the priority correctly.

|                                                            |                                                              |
|------------------------------------------------------------|--------------------------------------------------------------|
| [ERROR]<br>CAN NOT INPUT<br>SAME VALUE !<br><br>ESC: [ENT] | [ERROR]<br>OUT OF RANGE !<br>PRIORITY: 1-7<br><br>ESC: [ENT] |
|------------------------------------------------------------|--------------------------------------------------------------|

*ERROR message*

14. Set the priority for HDG and ROT similar to how you did for "L/L COG SOG".

The priority of heading data entered from the AD-10 IN port is the lowest.

15. To set the priority of AIS, press the [4] key to choose AIS.

|               |     |
|---------------|-----|
| [AIS]         |     |
| * RESPONSE:PC | +/- |
| -----         |     |
| EX1: ENBL     | +/- |
| LR : ENBL     | +/- |
| PC : ENBL     | +/- |
| LAN: ENBL     | +/- |
| DEFAULT:[CLR] |     |

*AIS PRIORITY setting window*

16. With RESPONSE selected, press the [SFT] key to select PC, NONE, LAN, EX1 or LR as appropriate.

Set an output port for response from other party after you transmit messages or interrogation from the PC, ECDIS, LR, or LAN.

NONE : No output for response

PC : Output to PC I/O port

LR : Output to LR or ECDIS/RADAR port

EX1 : Output to EXTRA1 port

The PC I/O port provides RS-422 and RS-232C terminals. For example, to connect a PC for pilot, connect it to the RS-422 terminal and set 34.8 Kbps for bit rate on the PC I/O option in the I/O SPEED window.

17. Press the [NEXT] key to select EX1, LR, PC or LAN.

18. Press the [SFT] key to select ENBL (enable) or DSBL (disable) as appropriate.

This setting is for communication between FA-100 and each external equipment.

"DSBL" disables communication with selected item.

19. Press the [ENT] key and then [MENU] key to return to the SET I/O PORT sub-menu.

20. Press [4] key to display the SET LAN (IP ADRS) window.

[SET LAN (IP ADRS)]

\* IP ADDRESS:  
000-000-000-000

SUB NET MASK:  
000-000-000-000

PORT NO. 10000

*SET LAN (IP ADDR) window*

21. If the FA-100 is connected to a network, enter IP address, sub net mask and port number with the numeric keys and the [NEXT] key.

22. Press the [ENT] key and then the [MENU] key to return to the SYSTEM SETTINGS sub-menu.

23. Press the [4] key to display the SET OTHER I/O window.

[SET OTHER I/O]

\* AD-10: DSBL +L

ROT : 01 SEC

*SET OTHER I/O window*

24. Select or set other I/O as follows.

- 1) AD-10: Select ENBL to use AD-10 format gyrocompass signal.
- 2) ROT: Set smoothing time (1 to 10 seconds) of the ship's rate of turn if you are using a ROT meter. This time is used to smooth the variations of data from the AD-100 for calculation of ROT.
- 3) Press the [ENT] key to register setting. The display returns to the SYSTEM SETTINGS sub-menu.

25. Press the [MENU] key. The following confirmation window appears.

SAVE ?

\* YES

NO

CANCEL

*SAVE confirmation window*

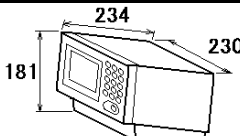
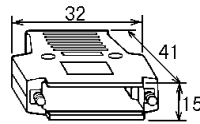
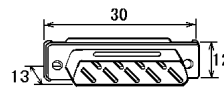
26. Select YES and press the [ENT] key. The main menu appears.

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## P A C K I N G L I S T

24AA-X-9854 -0 1/1

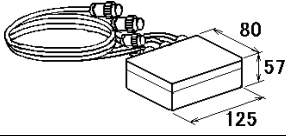
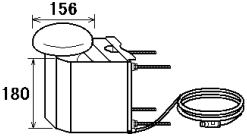
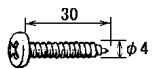
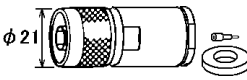
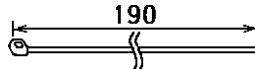
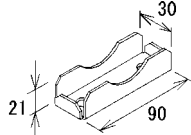
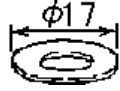
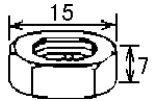
FA-100E/J

| N A M E                       |  | O U T L I N E                                                                     |  | DESCRIPTION/CODE No. |  | Q' TY |  |
|-------------------------------|--|-----------------------------------------------------------------------------------|--|----------------------|--|-------|--|
| ユニット                          |  | UNIT                                                                              |  |                      |  |       |  |
| トランスポンダ部<br>TRANSPONDER UNIT  |  |  |  | FA-100               |  | 1     |  |
|                               |  |                                                                                   |  | 000-053-889          |  |       |  |
| 工事材料                          |  | INSTALLATION MATERIALS                                                            |  | CP24-00102           |  |       |  |
| コネクタフート (XM2)<br>HOUSING CASE |  |  |  | XM2S-0912            |  | 1     |  |
|                               |  |                                                                                   |  | 000-145-422          |  |       |  |
| ケーブル組品MJ<br>CABLE ASSY.       |  |  |  | MJ-A3SPF0015-035     |  | 1     |  |
|                               |  |                                                                                   |  | 000-137-340          |  |       |  |
| コネクタ (XM2)<br>CONNECTOR (XM2) |  |  |  | XM2A-0901            |  | 1     |  |
|                               |  |                                                                                   |  | 000-111-785          |  |       |  |

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

## P A C K I N G L I S T

GVA-100

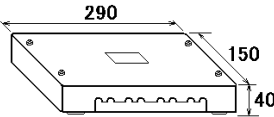
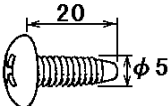
| N A M E                            | O U T L I N E                                                                       | DESCRIPTION/CODE No.           | Q' TY |
|------------------------------------|-------------------------------------------------------------------------------------|--------------------------------|-------|
| <b>ユニット</b>                        | <b>UNIT</b>                                                                         |                                |       |
| 分配器<br>DISTRIBUTER UNIT            |    | DB-1<br>000-053-854            | 1     |
| 複合空中線部<br>GPS/VHF COMBINED ANTENNA |    | GVA-100<br>000-053-810         | 1     |
| <b>工事材料</b>                        | <b>INSTALLATION MATERIALS</b>                                                       | <b>CP24-00101</b>              |       |
| +ナベ タッピンネジ<br>+TAPPING SCREW       |    | 4X30 SUS304 1シュ<br>000-809-321 | 2     |
| <b>工事材料</b>                        | <b>INSTALLATION MATERIALS</b>                                                       | <b>CP24-00141</b>              |       |
| コネクタ (N)<br>CONNECTOR              |   | N-P-8DFB 座金付き<br>000-140-463   | 2     |
| コンベックス<br>PLASTIC BAND             |  | CV-200HT<br>000-809-226        | 2     |
| アンテナ取付金具<br>ANTENNA FIXING BRACKET |  | 24-003-3005<br>100-299-600     | 2     |
| ミガキ平座金<br>FLAT WASHER              |  | M8 SUS304<br>000-864-130       | 4     |
| 六角ナット 1種<br>HEX. NUT               |  | M8 SUS304<br>000-863-110       | 8     |

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

## P A C K I N G L I S T

24AA-X-9851 -3 1/1

CB-100

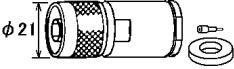
| N A M E                           |  | O U T L I N E                                                                     |  | DESCRIPTION/CODE No. |  | Q' TY |  |
|-----------------------------------|--|-----------------------------------------------------------------------------------|--|----------------------|--|-------|--|
| ユニット                              |  | UNIT                                                                              |  |                      |  |       |  |
| 接続箱<br><br>JUNCTION BOX           |  |  |  | CB-100               |  | 1     |  |
|                                   |  |                                                                                   |  | 000-053-907 **       |  |       |  |
| 工事材料                              |  | INSTALLATION MATERIALS                                                            |  | CP05-08701           |  |       |  |
| +トラスタビ°ンネジ°<br><br>+TAPPING SCREW |  |  |  | 5X20 SUS304 1ｼｬ      |  | 4     |  |
|                                   |  |                                                                                   |  | 000-802-081          |  |       |  |

4.コード末尾に[\*\*]の付いたユニットは代表の型式/コードを表示しています。  
DOUBLE ASTERISK DENOTES COMMONLY USED EQUIPMENT.

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

**FURUNO**

|          |             |                       |
|----------|-------------|-----------------------|
| CODE NO. | 005-952-350 | 24AA-X-9403 -0<br>1/1 |
| TYPE     | CP24-00121  |                       |

| 工事材料表<br>INSTALLATION MATERIALS |                      |                                                                                   |                         |            |                  |
|---------------------------------|----------------------|-----------------------------------------------------------------------------------|-------------------------|------------|------------------|
| 番 号<br>NO.                      | 名 称<br>NAME          | 略 図<br>OUTLINE                                                                    | 型名／規格<br>DESCRIPTIONS   | 数量<br>Q'TY | 用途／備考<br>REMARKS |
| 1                               | コネクタ(N)<br>CONNECTOR |  | N-P-8DFB<br>座金付き        | 2          |                  |
|                                 |                      |                                                                                   | CODE NO.    000-140-463 |            |                  |

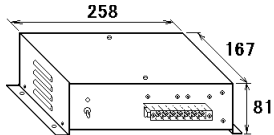
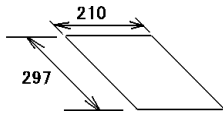
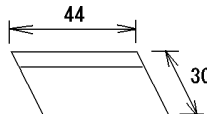
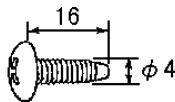
FURUNO ELECTRIC CO., LTD.  
(略図の寸法は、参考値です。    DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)



# PACKING LIST

24AA-X-9852 -4 1/1

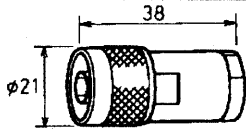
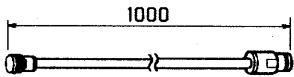
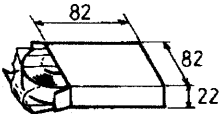
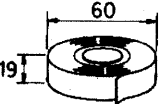
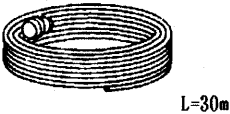
## PR-240-CE

| N A M E                                           | O U T L I N E                                                                     | DESCRIPTION/CODE №            | Q'TY |
|---------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------|------|
| <b>ユニット</b>                                       | <b>UNIT</b>                                                                       |                               |      |
| AC-DC電源<br>POWER SUPPLY UNIT                      |  | PR-240-CE<br>000-053-879      | 1    |
| <b>工事材料</b>                                       | <b>INSTALLATION MATERIALS</b>                                                     | <b>CP24-00151</b>             |      |
| PR-240-CE電源変更手順書<br>POWER MODIFICATION PROCEDURES |  | C52-00205-A<br>000-147-013    | 1    |
| デモンストレーションハリマーク<br>POWER LABEL                    |  | 24-003-4101-2<br>100-299-772  | 1    |
| +トラスタッド・ネジ<br>+TAPPING SCREW                      |  | 4X16 SUS304 1ヶ<br>000-802-080 | 4    |

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

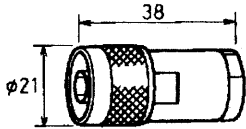
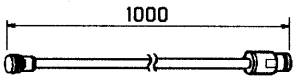
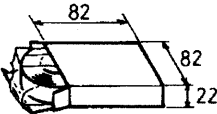
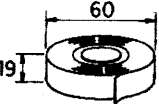
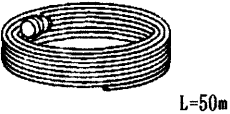
**FURUNO**

|          |             |               |
|----------|-------------|---------------|
| CODE NO. | 004-372-110 | 20AG-X-9404-0 |
| TYPE     | CP20-01700  |               |

| 工事材料表<br>INSTALLATION MATERIALS                                                                                                                                     |                                          | アンテナケーブルセット<br>ANTENNA CABLE SET                                                    |                                                                |                                   |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------|--------------------------|
| 番号<br>No.                                                                                                                                                           | 名 称<br>N A M E                           | 略 図<br>O U T L I N E                                                                | 型 名 / 規 格<br>D E S C R I P T I O N S                           | 数量<br>Q'TY                        | 用途 / 備考<br>R E M A R K S |
| 004-372-420<br>CP20-01701                                                                                                                                           | 1 同軸コネクタ<br>COAX. CONNECTOR              |    | N-P-8DFB<br>CODE NO. 000-111-549                               | 1                                 |                          |
|                                                                                                                                                                     | 2 変換ケーブル組品<br>COAX. COUPLING CABLE ASSY. |    | NJ-TP-3DXV-1<br>CODE NO. 000-123-809                           | 2                                 |                          |
|                                                                                                                                                                     | 3 絶縁テープ<br>SELF-BONDING TAPE             |    | U-TAPE<br>0.5X19X5M<br>CODE NO. 000-800-985                    | 1                                 |                          |
|                                                                                                                                                                     | 4 ビニールテープ NO.360<br>VINYL TAPE           |   | 0.2X19X10000<br>20/BLK<br>IASON/ETHLON<br>CODE NO. 000-835-215 | 1                                 |                          |
|                                                                                                                                                                     | 5 アンテナケーブル組品<br>ANTENNA CABLE ASSY.      |  | 8D-FB-CV<br>*30M*<br>CODE NO. 000-111-547                      | 1                                 |                          |
|                                                                                                                                                                     |                                          |                                                                                     | CODE NO.                                                       |                                   |                          |
|                                                                                                                                                                     |                                          |                                                                                     | CODE NO.                                                       |                                   |                          |
|                                                                                                                                                                     |                                          |                                                                                     | CODE NO.                                                       |                                   |                          |
|                                                                                                                                                                     |                                          |                                                                                     | CODE NO.                                                       |                                   |                          |
|                                                                                                                                                                     |                                          |                                                                                     | CODE NO.                                                       |                                   |                          |
|                                                                                                                                                                     |                                          |                                                                                     | CODE NO.                                                       |                                   |                          |
|                                                                                                                                                                     |                                          |                                                                                     | CODE NO.                                                       |                                   |                          |
| GP-50MARK-2, GP-50MARK-3, GP-70MARK-2, GP-80<br>GP-1600/1600F, GP-1800/1800F, GP-1810/1810F<br>GP-1800MARK-2, GP-8000/8000MARK-2/8000MARK-2SH<br>PS-8000/8000MARK-2 |                                          |                                                                                     |                                                                |                                   |                          |
| (略図の寸法は、参考値です。)                                                                                                                                                     |                                          |                                                                                     |                                                                | 図 番 (1/1)<br>DWG. NO. C0014-M19-D |                          |

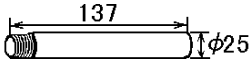
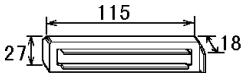
**FURUNO**

|          |             |               |
|----------|-------------|---------------|
| CODE NO. | 004-372-120 | 20AG-X-9405-0 |
| TYPE     | CP20-01710  |               |

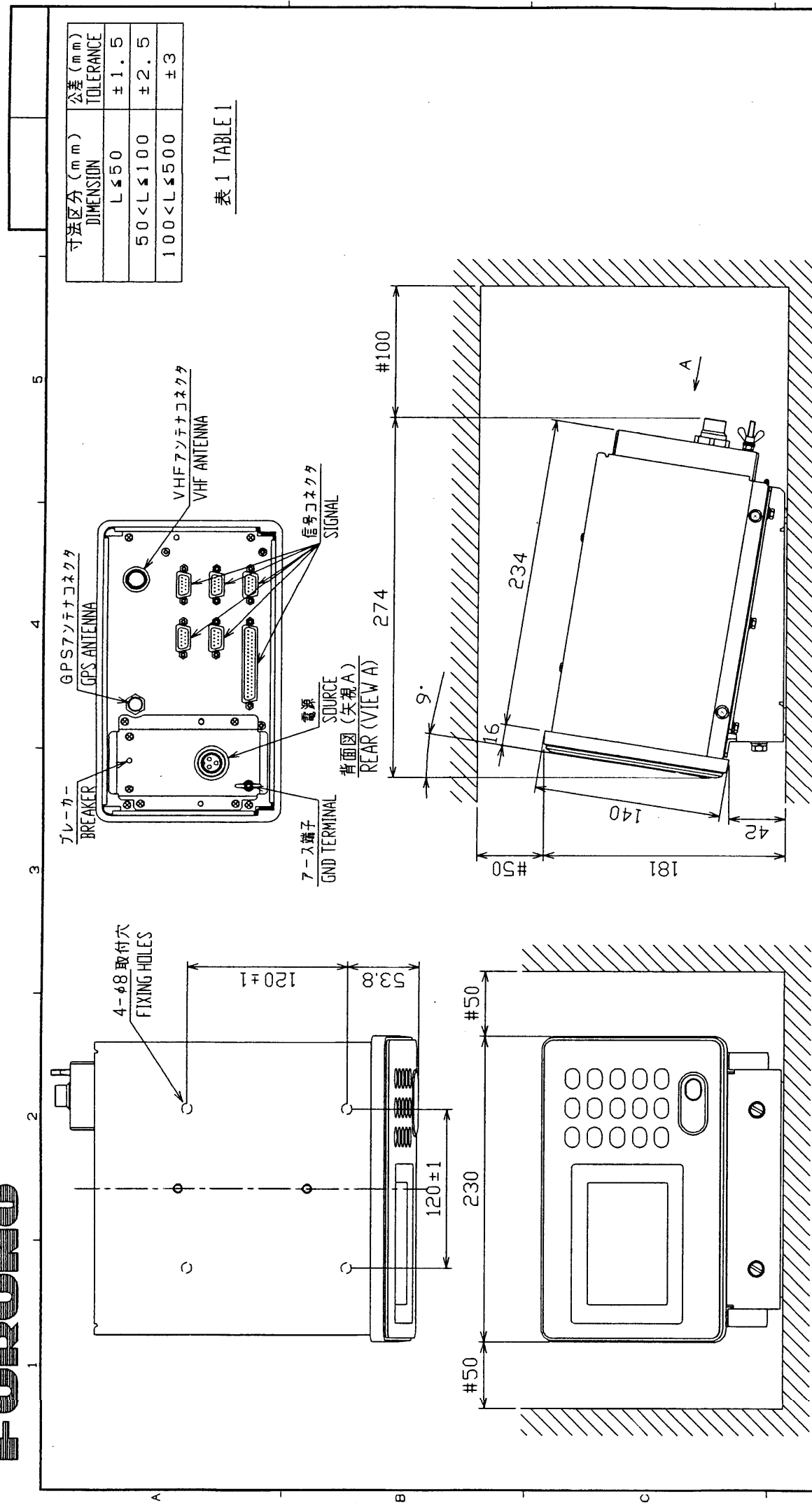
| 工事材料表<br>INSTALLATION MATERIALS                                                                                                                                     |                                          | アンテナケーブルセット<br>ANTENNA CABLE SET                                                    |                                                                |                            |                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------|--------------------|
| 番号<br>No.                                                                                                                                                           | 名称<br>NAME                               | 略図<br>OUTLINE                                                                       | 型名 / 規格<br>DESCRIPTIONS                                        | 数量<br>Q'TY                 | 用途 / 備考<br>REMARKS |
| 004-372-420<br>CP20-01701                                                                                                                                           | 1 同軸コネクタ<br>COAX. CONNECTOR              |    | N-P-8DFB<br>CODE NO. 000-111-549                               | 1                          |                    |
|                                                                                                                                                                     | 2 変換ケーブル組品<br>COAX. COUPLING CABLE ASSY. |    | NJ-TP-3DXV-1<br>CODE NO. 000-123-809                           | 2                          |                    |
|                                                                                                                                                                     | 3 絶縁テープ<br>SELF-BONDING TAPE             |    | U-TAPE<br>0.5X19X5M<br>CODE NO. 000-800-985                    | 1                          |                    |
|                                                                                                                                                                     | 4 ビニールテープ NO.360<br>VINYL TAPE           |   | 0.2X19X10000<br>20/BLK<br>IASON/ETHLON<br>CODE NO. 000-835-215 | 1                          |                    |
|                                                                                                                                                                     | 5 アンテナケーブル組品<br>ANTENNA CABLE ASSY.      |  | 8D-FB-CV<br>*50M*<br>CODE NO. 000-117-599                      | 1                          |                    |
|                                                                                                                                                                     |                                          |                                                                                     | CODE NO.                                                       |                            |                    |
|                                                                                                                                                                     |                                          |                                                                                     | CODE NO.                                                       |                            |                    |
|                                                                                                                                                                     |                                          |                                                                                     | CODE NO.                                                       |                            |                    |
|                                                                                                                                                                     |                                          |                                                                                     | CODE NO.                                                       |                            |                    |
|                                                                                                                                                                     |                                          |                                                                                     | CODE NO.                                                       |                            |                    |
|                                                                                                                                                                     |                                          |                                                                                     | CODE NO.                                                       |                            |                    |
|                                                                                                                                                                     |                                          |                                                                                     | CODE NO.                                                       |                            |                    |
| GP-50MARK-2, GP-50MARK-3, GP-70MARK-2, GP-80<br>GP-1600/1600F, GP-1800/1800F, GP-1810/1810F<br>GP-1800MARK-2, GP-8000/8000MARK-2/8000MARK-2SH<br>PS-8000/8000MARK-2 |                                          |                                                                                     |                                                                |                            |                    |
| (略図の寸法は、参考値です。)                                                                                                                                                     |                                          |                                                                                     |                                                                |                            |                    |
|                                                                                                                                                                     |                                          |                                                                                     |                                                                | 図番<br>DWG. NO. C0014-M20-D | (1/1)              |

**FURUNO**

|          |             |                       |
|----------|-------------|-----------------------|
| CODE NO. | 004-365-780 | 20AG-X-9403 -1<br>1/1 |
| TYPE     | CP20-01111  |                       |

| <b>工事材料表</b><br>INSTALLATION MATERIALS |                             | <b>マスト取付金具</b><br>MAST FIXTURE                                                    |                       |            |                  |
|----------------------------------------|-----------------------------|-----------------------------------------------------------------------------------|-----------------------|------------|------------------|
| 番号<br>NO.                              | 名称<br>NAME                  | 略図<br>OUTLINE                                                                     | 型名／規格<br>DESCRIPTIONS | 数量<br>Q'TY | 用途／備考<br>REMARKS |
| 1                                      | ハ°イ°<br>PIPE                |  | 20-007-3011-2         | 1          |                  |
|                                        |                             |                                                                                   | CODE NO. 100-183-262  |            |                  |
| 2                                      | 取付補助金具<br>INSTALLING SPACER |  | 20-007-3012-1         | 1          |                  |
|                                        |                             |                                                                                   | CODE NO. 100-183-271  |            |                  |
| 3                                      | ハ°-カークランプ°<br>HOSE CLAMP    |  | NO.6348 SUS303        | 2          |                  |
|                                        |                             |                                                                                   | CODE NO. 000-805-906  |            |                  |

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

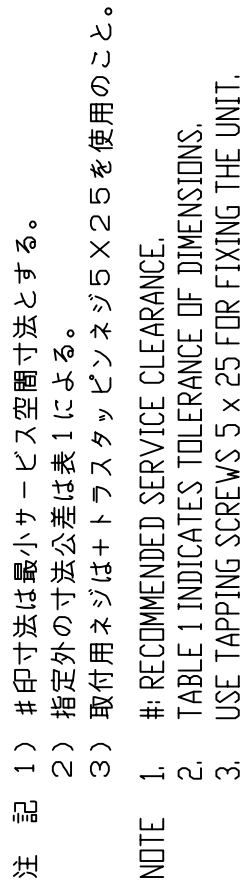


注 記 1) # 印寸法は最小サービス空間寸法とする。  
 2) 指定外の寸法公差は表 1 による。  
 3) 取付用ネジは六角ボルト M6、又はコーチャボルト呼び径 6 を使用。

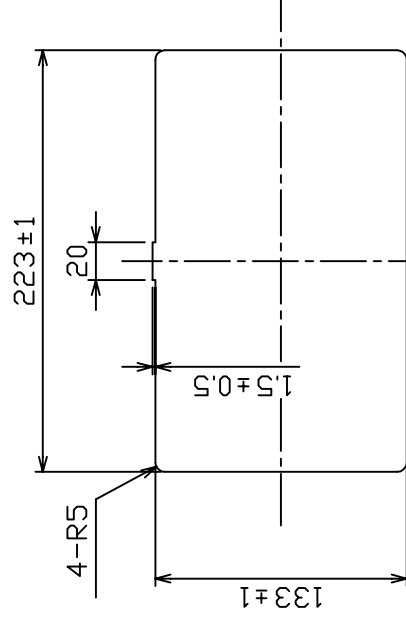
NOTE 1. # RECOMMENDED SERVICE CLEARANCE.  
 2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.  
 3. USE M6 BOLTS OR COACH SCREWS φ6 FOR FIXING THE UNIT.

|          |                  |               |                                  |
|----------|------------------|---------------|----------------------------------|
| DRAWN    | 23.02 I.YAMASAKI | TITLE         | FA-100                           |
| CHECKED  | 23.02 Y.K.       | 名称            | トランスポンダ部 (卓上装備)                  |
| APPROVED | 23.02 Y.K.       | 外寸図           |                                  |
| SCALE    | 1/4 MASS 7.3 ±0% | NAME          | TRANSPONDER UNIT (DESKTOP MOUNT) |
| DWG No.  | C4417-G01-C      | 24-003-200G-4 | OUTLINE DRAWING                  |

表 1 TABLE 1



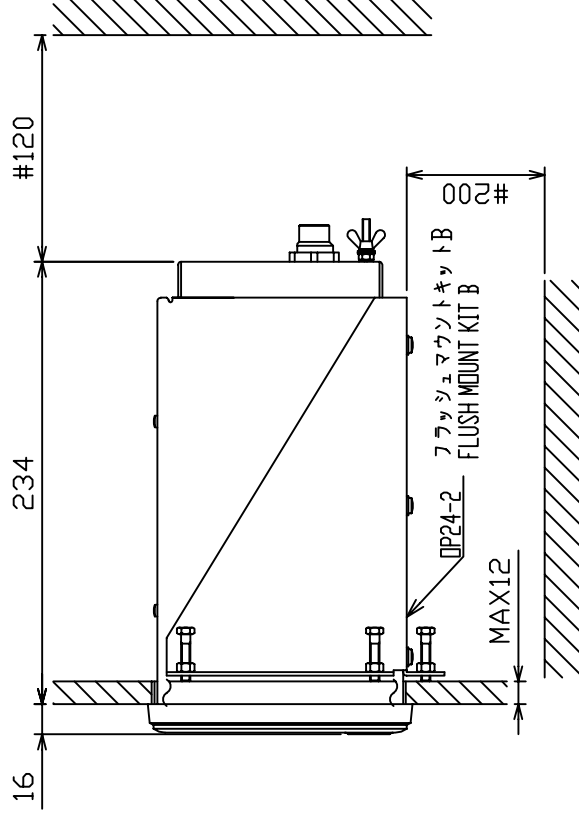
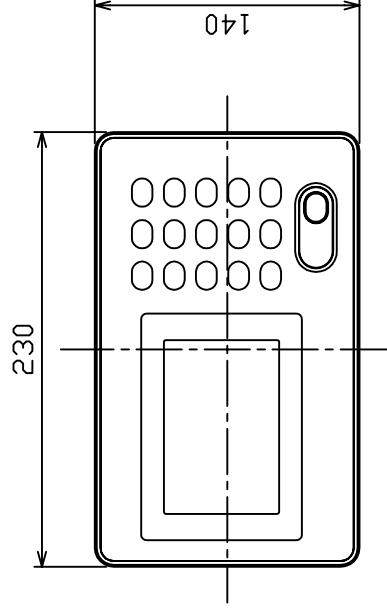
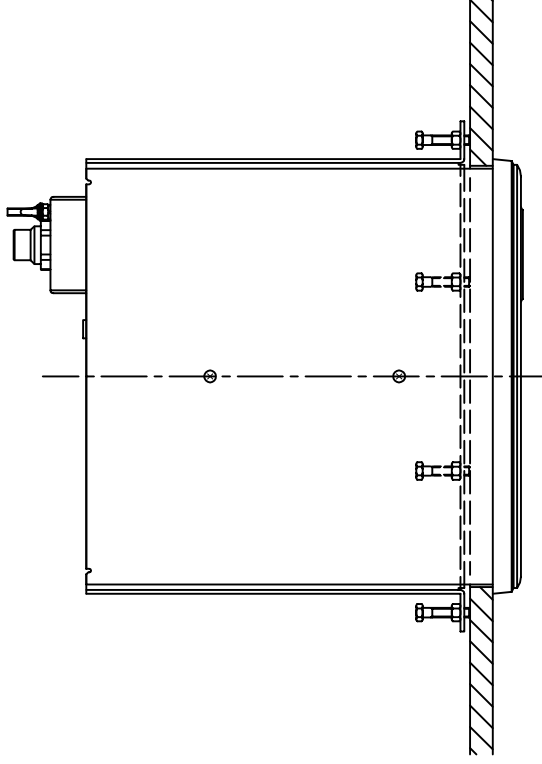
**FURUNO ELECTRIC CO., LTD.**



取付穴寸法図 (参考図)  
CUTOUT DIMENSIONS

表 1 TABLE 1

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



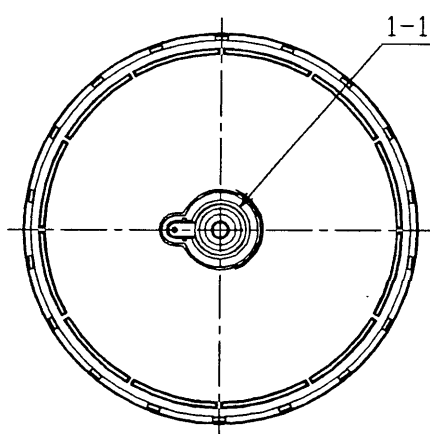
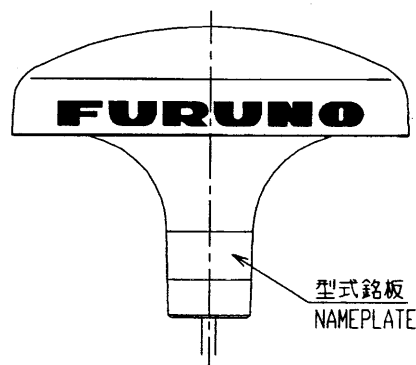
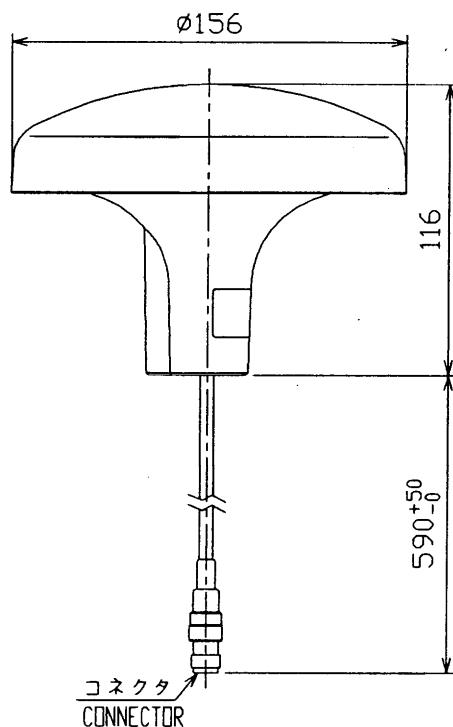
注 記 1) #印寸法は最小サービス空間寸法とする。  
2) 指定外の寸法公差は表 1 による。

NOTE 1. #: RECOMMENDED SERVICE CLEARANCE.  
2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.

|          |             |             |               |       |                                  |
|----------|-------------|-------------|---------------|-------|----------------------------------|
| DRAWN    | Oct. 21 '02 | T. YAMASAKI |               | TITLE | FA-100                           |
| CHECKED  | Oct. 21 '02 | Y. KITMURA  |               | 名称    | トランスポンダ部 (埋込装備 B)                |
| APPROVED | Oct. 21 '02 | Y. Kamezono | FA-100        |       | 外寸図                              |
| SCALE    | 1 / 4       | MASS        | 7.2 kg        | NAME  | TRANSPONDER UNIT (FLUSH MOUNT B) |
| DWG No.  | C4417-G06-D |             | 24-003-282G-2 |       | OUTLINE DRAWING                  |

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

表 1 TABLE 1



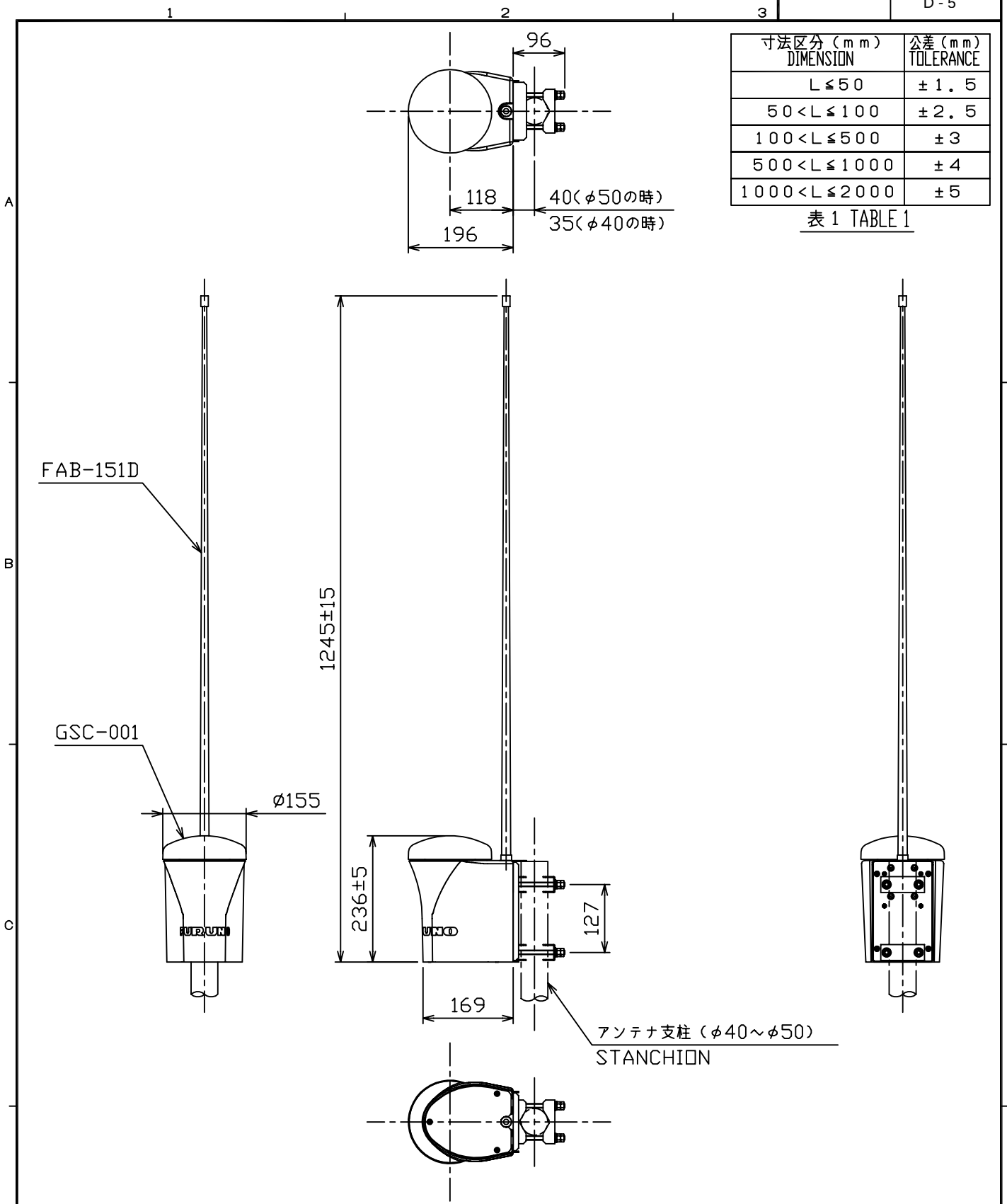
ねじ山数(25.4mmにつき): 14  
 ピッチ: 1.8143 mm  
 オネジ有効長さ: 15.17 mm  
 オネジ有効径: 24.17 mm  
 THREAD PER 25.4mm (1 INCH): 14  
 PITCH: 1.8143 mm  
 THREAD LENGTH: 15.17 mm  
 PITCH DIAMETER: 24.17 mm

注 記 1) 指定外の寸法公差は表 1 による。

NOTE 1. TABLE 1 INDICATES TOLERANCE OF DIMENDIONS.

|                                  |                               |                                  |
|----------------------------------|-------------------------------|----------------------------------|
| DRAWN<br>July 23 '02 T. YAMASAKI |                               | TITLE<br>GSC-001                 |
| CHECKED<br>July 21 '02 Y. K.     |                               | 名称<br>GPS アンテナ部                  |
| APPROVED<br>July 27 '02 Y. K.    | FA-100                        | 外寸図                              |
| SCALE<br>1/3                     | MASS $\pm 10\%$<br>0.47 kg    | NAME<br>GPS ANTENNA UNIT         |
| DWG.No.<br>C4417-G07-A           | 質量はケーブルを含む。<br>MASS W/ CABLE. | 24-003-330G-0<br>OUTLINE DRAWING |





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.

|          |                               |               |                               |
|----------|-------------------------------|---------------|-------------------------------|
| DRAWN    | Jan. 15 '03 T. YAMASAKI       | TITLE         | GVA-100                       |
| CHECKED  | Jan. 15 '03 Y. KIMURA         | 名称            | GPS/VHF 複合空中線部                |
| APPROVED | Jan. 15, '03 <i>Y. Kimura</i> | FA-100        | 外寸図                           |
| SCALE    | 1/10                          | MASS          | 3.3 ±10% kg                   |
| DWG.No.  | C4417-G02-D                   | 24-003-301G-1 | NAME GPS/VHF COMBINED ANTENNA |
|          |                               |               | OUTLINE DRAWING               |

ケーブル導入口 CABLE ENTRY

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

表 1 TABLE 1

4-φ6 取付穴  
FIXING HOLES

型式銘板  
NAMEPLATE

ケーブル長  $L=3280^{+150}_0$

CABLE LENGTH

$100 \pm 0.5$

$240 \pm 0.5$

290

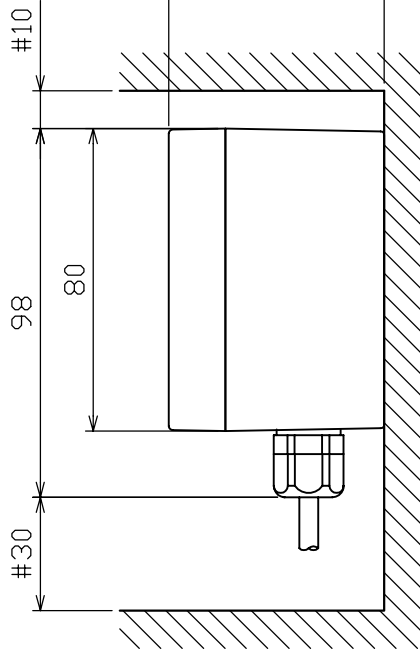
ケーブル導入口 CABLE ENTRY

- 注 記
- 1) # 印寸法は最小サービス空間寸法とする。
  - 2) 指定外の寸法公差は表 1 による。
  - 3) 取付用ネジは +トラスタッピンネジ呼び径 5 × 2.0 を使用のこと。
- NOTE
1. # RECOMMENDED SERVICE CLEARANCE.
  2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.
  3. USE TAPPING SCREWS 5x2.0 FOR FIXING THE UNIT.

|          |             |                          |                 |              |
|----------|-------------|--------------------------|-----------------|--------------|
| DRAWN    | Jan. 9 '03  | T. YAMASAKI              | TITLE           | CB-100       |
| CHECKED  | Jan. 9 '03  | Y. KIMURA                | 名称              | 接続箱          |
| APPROVED | Jan. 9 '03  | Y. Kimura                | 外寸図             | FA-100       |
| SCALE    | 1/2         | MAX $\pm 10\%$<br>2.0 kg | NAME            | JUNCTION BOX |
| DWG No.  | C4417-G03-B | 24-003-400G-5            | OUTLINE DRAWING |              |

表 1 TABLE 1

表 1 TABLE 1



3. USE TAPPING SCREWS 4x30 FOR FIXING THE UNIT.

|               |                 |
|---------------|-----------------|
| 24-003-320G-4 | OUTLINE DRAWING |
|---------------|-----------------|

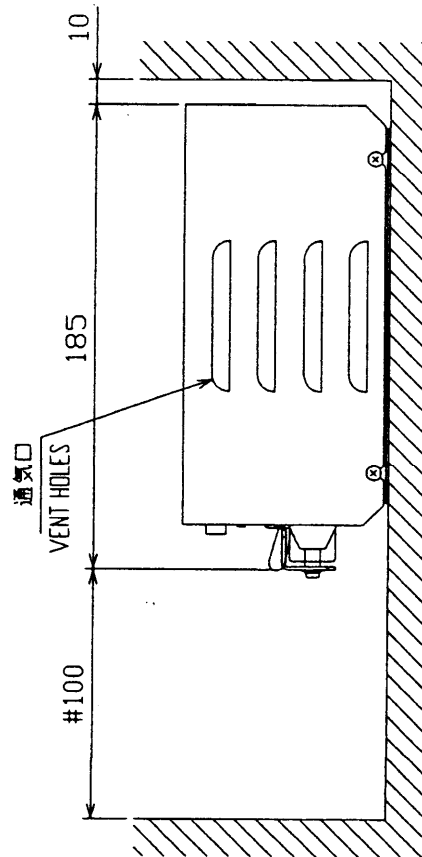
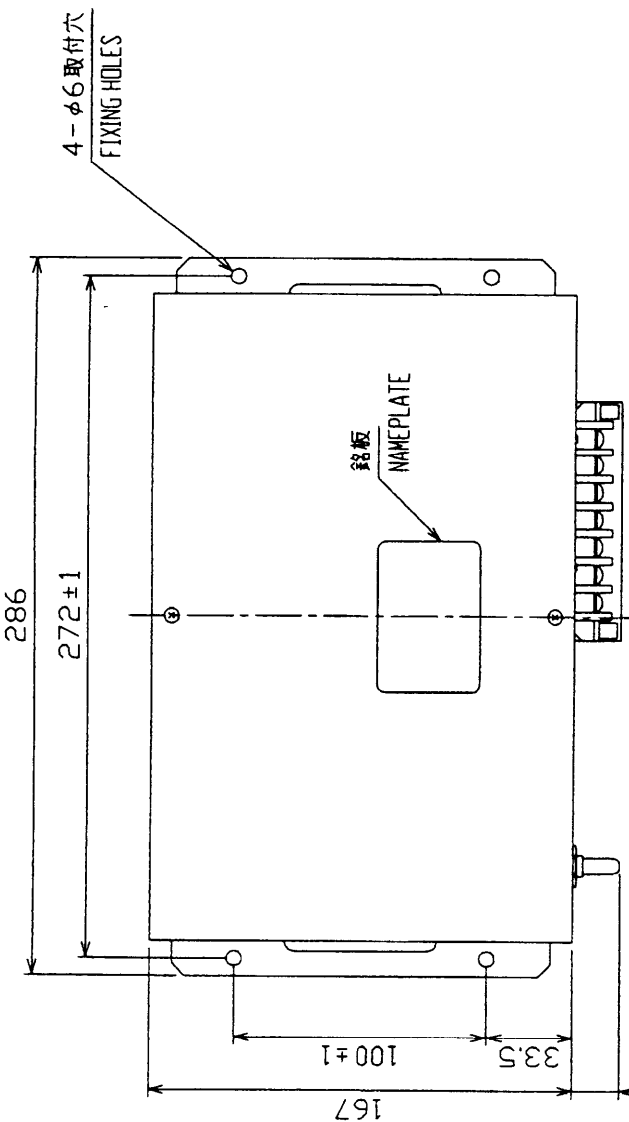
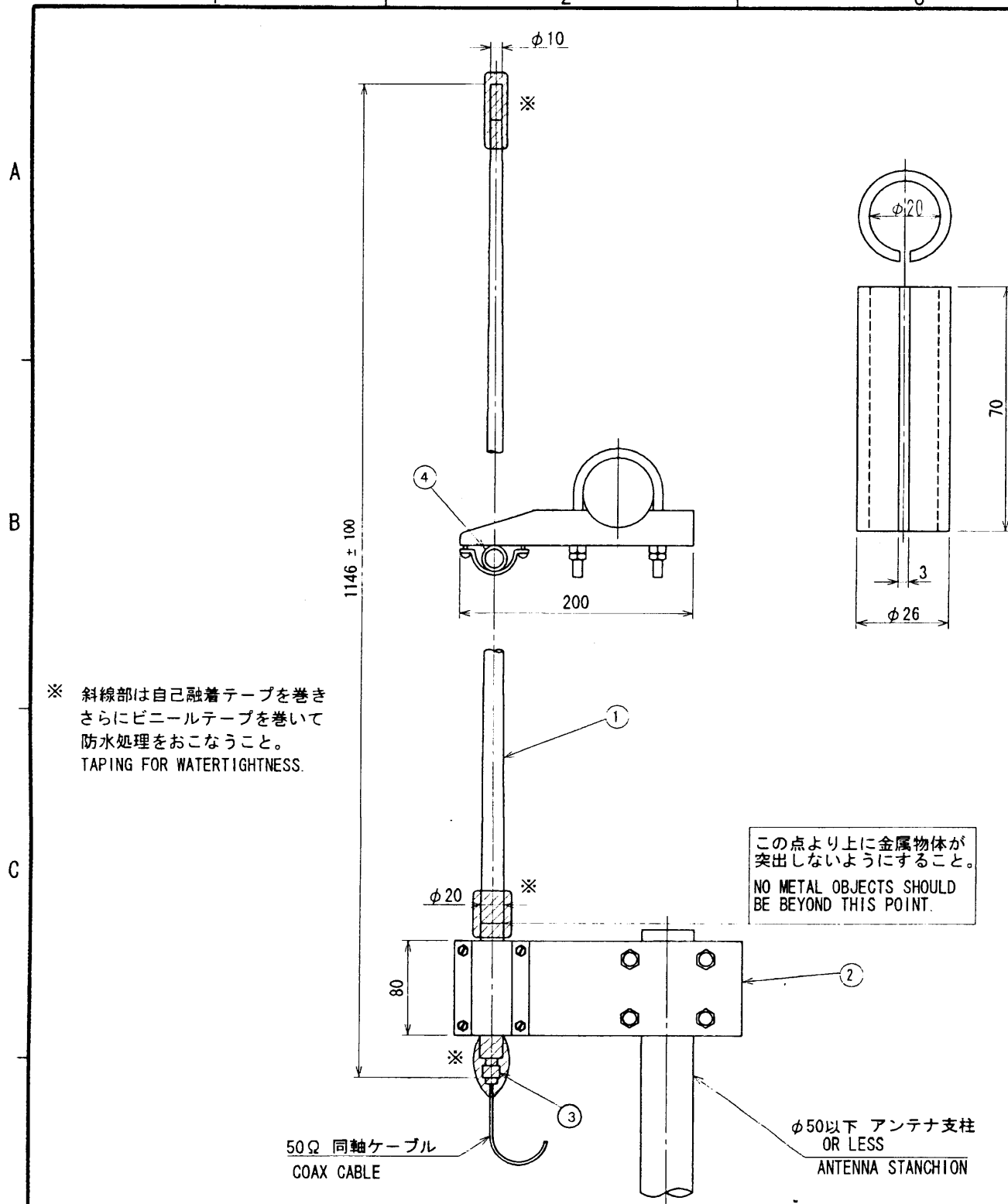


表 1 TABLE 1

| 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) # 印寸法は推奨する最小サービス空間寸法とする。  
 3) 取付用ネジは + トラスチックピンネジ 呼び径 4 x 1.6 を使用のこと。
- NOTE 1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.  
 2. #: RECOMMENDED SERVICE CLEARANCE.  
 3. USE TAPPING SCREWS 4x1.6 FOR FIXING THE UNIT.

|          |             |               |       |                         |
|----------|-------------|---------------|-------|-------------------------|
| DRAWN    | NO. 8 102   | I. YAMASAKI   | TITLE | PR-240                  |
| CHECKED  | Y. K. 102   | Y. K. 102     | 名称    | AC/DC 電源ユニット            |
| APPROVED | Y. K. 102   | Y. K. 102     | 外寸図   |                         |
| SCALE    | 1/3         | WSS 2.8 kg    | NAME  | AC/DC POWER SUPPLY UNIT |
| DWG No.  | C5003-003-D | 24-003-5000-2 |       | OUTLINE DRAWING         |

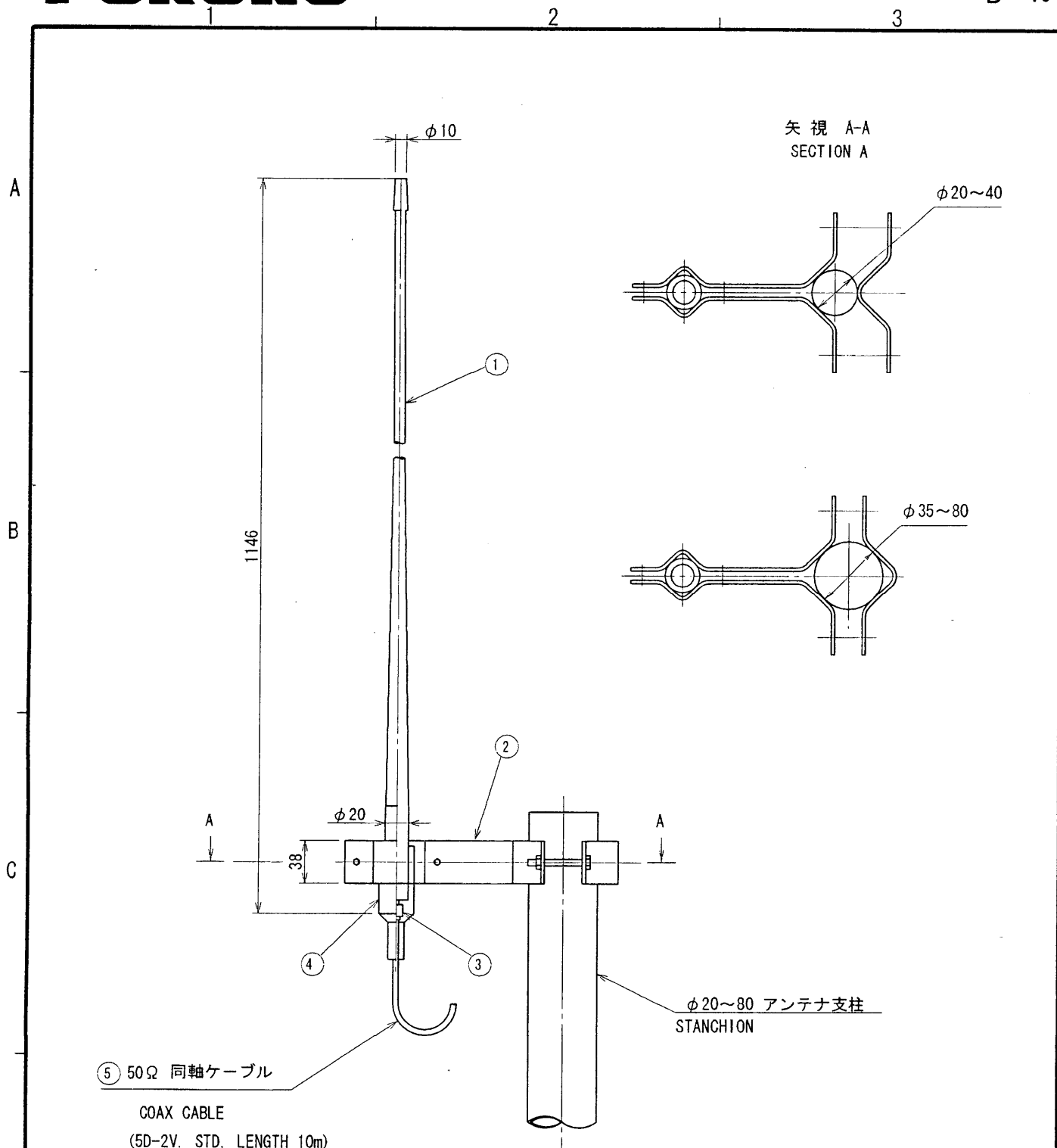


| 4          | 固定用パイプ<br>LINER PIPE        | 硬質塩ビ<br>VINYL CHLORIDE | 1          |               |               |
|------------|-----------------------------|------------------------|------------|---------------|---------------|
| 3          | 同軸コネクタ<br>COAX. CONNECTOR   |                        | 1          |               | M-R           |
| 2          | アンテナ取付金具<br>ANTENNA BRACKET | SUS                    | 1 式<br>SET | 4-310071      | 0.6 kg        |
| 1          | アンテナ棒<br>ANTENNA ELEMENT    | FRP                    | 1          |               | 0.25 kg       |
| 品番<br>ITEM | 品名<br>NAME                  | 材質<br>MATERIAL         | 数量<br>Q'TY | 図番<br>DWG No. | 備考<br>REMARKS |

DRAWN  
Oct 16 '00 T. YAMASAKI  
CHECKED  
Oct 19 '00 Y. K.  
APPROVED  
Oct 19 '00 Y. K.  
SCALE  
1/5  
MASS  $\pm 10\%$   
0.85 kg  
DWG. No.  
C5013-019- G

4-110718

TITLE  
FAB-151D  
名称  
150MHz アンテナ  
外寸図  
NAME  
VHF MARINE ANTENNA  
OUTLINE DRAWING



| 5          | 同軸ケーブル<br>50Ω COAX. CABLE   |                | 10m        | 5D-2V          |                |
|------------|-----------------------------|----------------|------------|----------------|----------------|
| 4          | 塩ビキャップ<br>CONNECTOR CAP     |                | 1          |                |                |
| 3          | 同軸コネクタ<br>COAX. CONNECTOR   |                | 2          | M-P-5          |                |
| 2          | アンテナ取付金具<br>ANTENNA BRACKET |                | 1 式<br>SET |                | t2             |
| 1          | アンテナ棒<br>ANTENNA ELEMENT    | FRP            | 1          | 150M-W2VN      | 0.25kg         |
| 品番<br>ITEM | 品名<br>NAME                  | 材質<br>MATERIAL | 数量<br>Q'TY | 図番<br>DWG. No. | 備 考<br>REMARKS |

DRAWN  
2002/00 T.YAMASAKI

CHECKED  
2002/00 Y.K.

APPROVED  
2002/00 Y.K.

SCALE  
1/5

DWG. No.  
C5011-042- B

TITLE  
150M-W2VN

名称  
150MHzアンテナ

外寸図

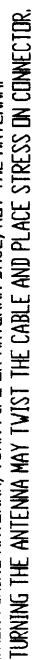
NAME  
VHF MARINE ANTENNA

OUTLINE DRAWING

THIS FIGURE SHOWS THE SEPARATION DISTANCES FROM OTHER ANTENNAS TO AVOID MUTUAL INTERFERENCE.



FROM  $\phi 19\text{mm}$  TO  $\phi 32\text{mm}$ .



4-M5 サラ穴  
COUNTERSUNK

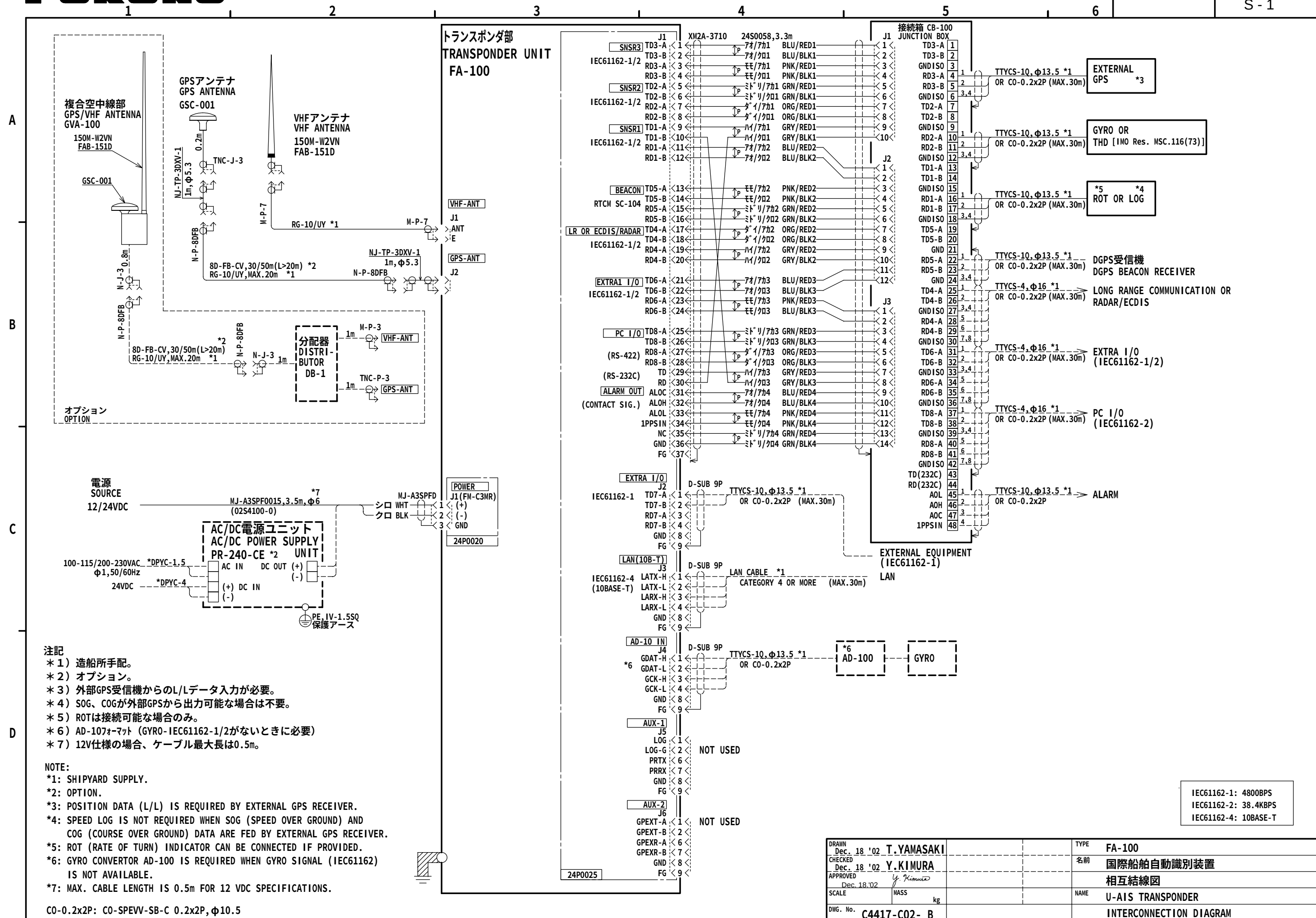
$\phi 61$

$\phi 76$

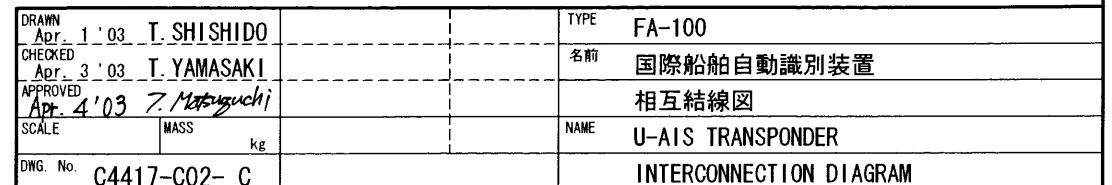
90°

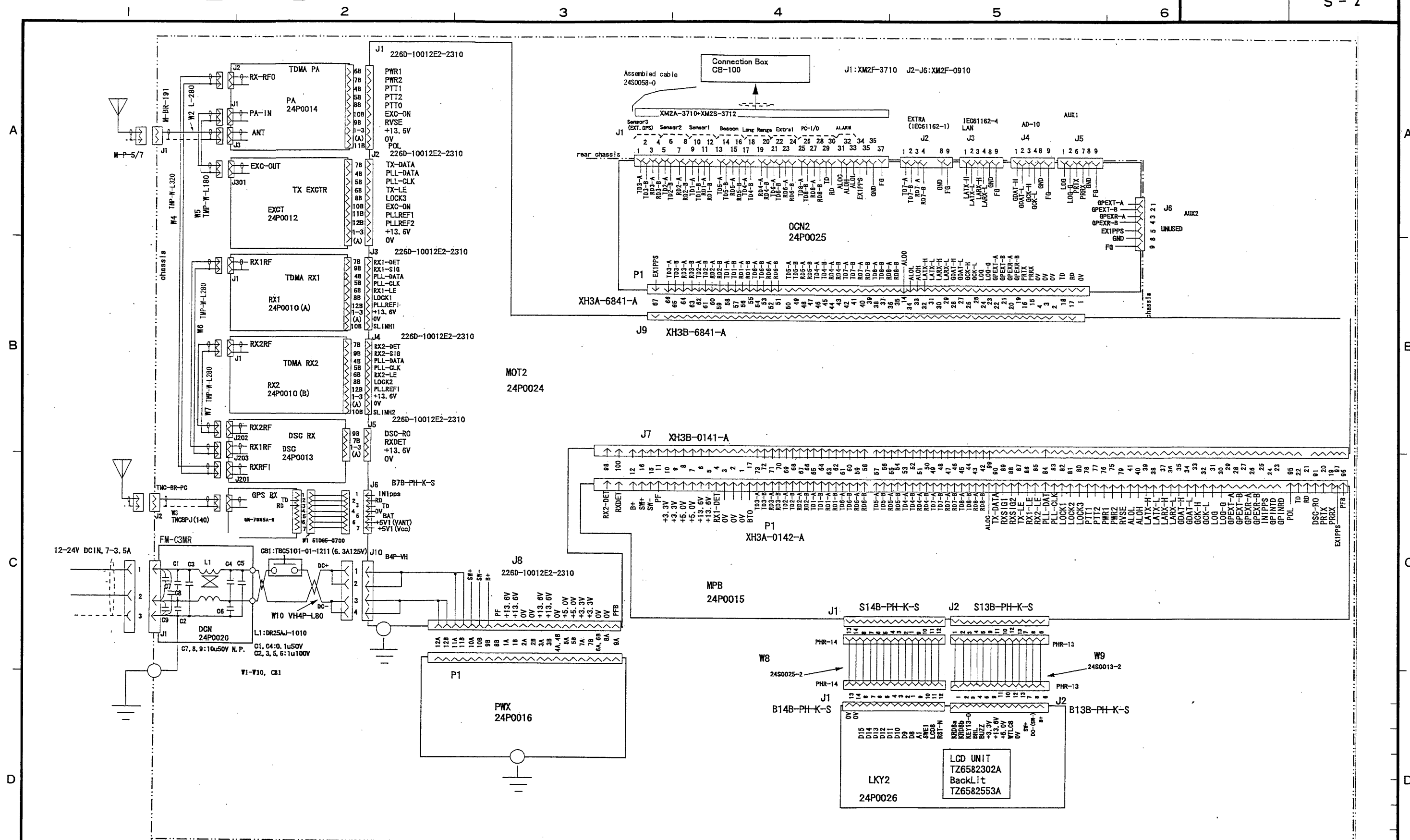
45°

|          |             |             |  |  |       |                        |
|----------|-------------|-------------|--|--|-------|------------------------|
| DRAWN    | July 22 '02 | T. YAMASAKI |  |  | TITLE | GPA series             |
| CHECKED  | July 22 '02 | Y. K. WONG  |  |  | 名称    | 空中線部                   |
| APPROVED | July 22 '02 | Y. K. WONG  |  |  |       | 装備要領図                  |
| SCALE    |             | 1/25        |  |  | NAME  | ANTENNA UNIT           |
| DWG. No. | C4384-Y01-  | A           |  |  |       | INSTALLATION PROCEDURE |









|                               |                                    |
|-------------------------------|------------------------------------|
| DRAWN<br>02/12/09 T. YAMASAKI | TYPE<br>FA-100                     |
| CHECKED<br>02/12/13 Y. K.     | 名称<br>トランスポンダーユニット(総合)             |
| APPROVED<br>02/12/13 Y. K.    | 回路図                                |
| SCALE<br>MASS                 | MODEL<br>FA-100                    |
| Dwg No.<br>C4417-K01- B       | BLOCK No.<br>24-003-5023-4         |
|                               | NAME<br>TRANSPONDER UNIT (GENERAL) |
|                               | SCHEMATIC DIAGRAM                  |

# Appendix 6) Connection to FEA-2105

## AP6.1 Connection

To connect FA-100 to FEA-2105;

1. Install high speed SIF card to the corresponding port in FEA-2105 A-adapter. The card is identified by the label "IEC 61162" from other cards.

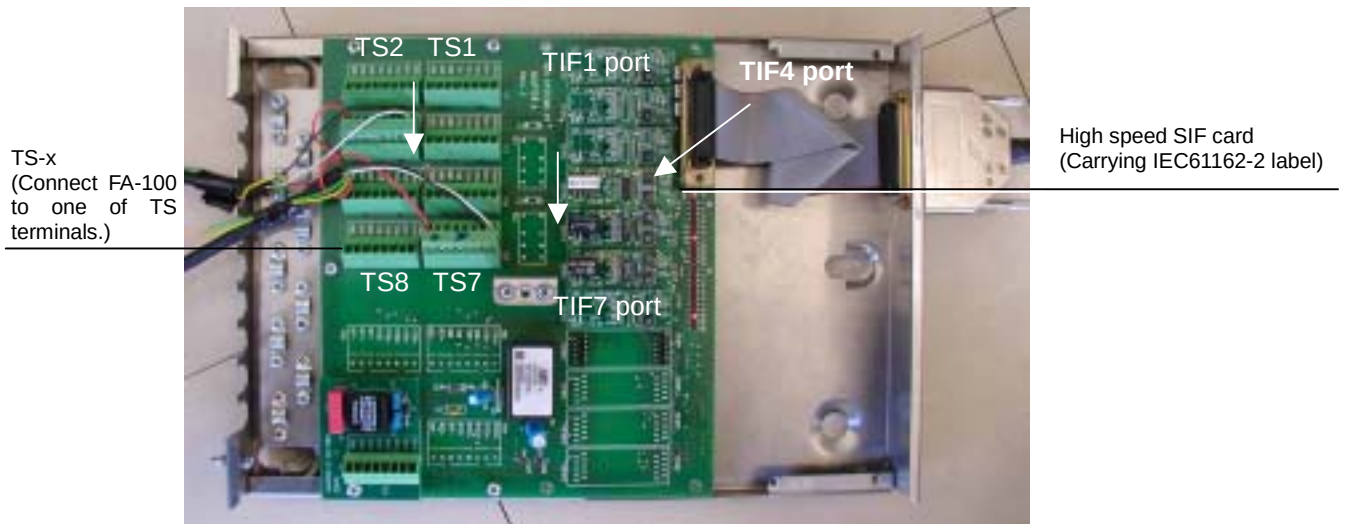
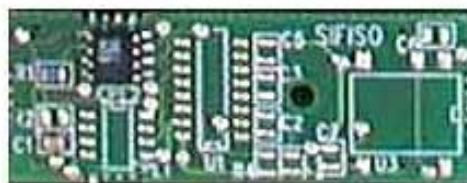


Fig. AP6.1.1 FEA-2105 A-adapter



a) High speed SIF card  
(Carrying IEC61162-2 label)



b) RIF module (RX only)



c) Normal SIF card

Fig. AP6.1.2 I/F cards for A-adapter

2. Connect CB-100 of FA-100 to A adapter of FA-100 as shown in Fig.AP6.1.3.

The AIS port, “L/R ECDIS/RADAR”, “EXTRA I/O” or “PC I/O” is used on FA-100.

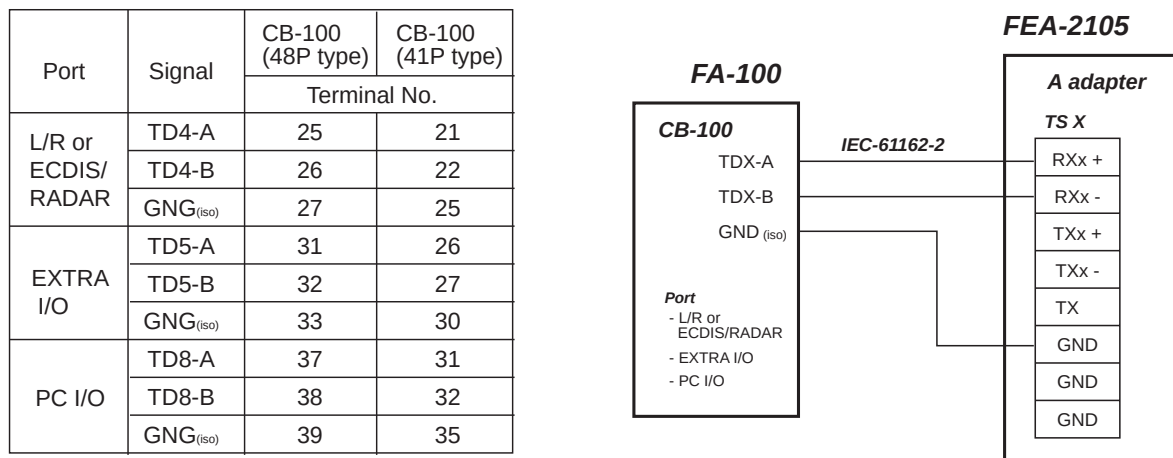
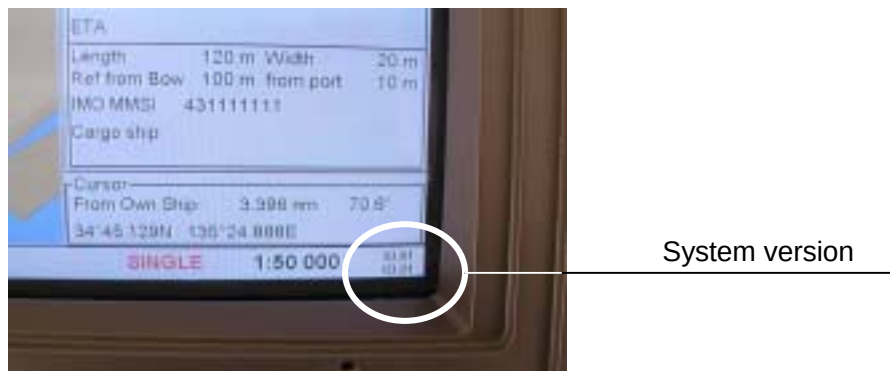


Fig.AP6.1 3

## AP6.2 Updating FEA-2105 system program

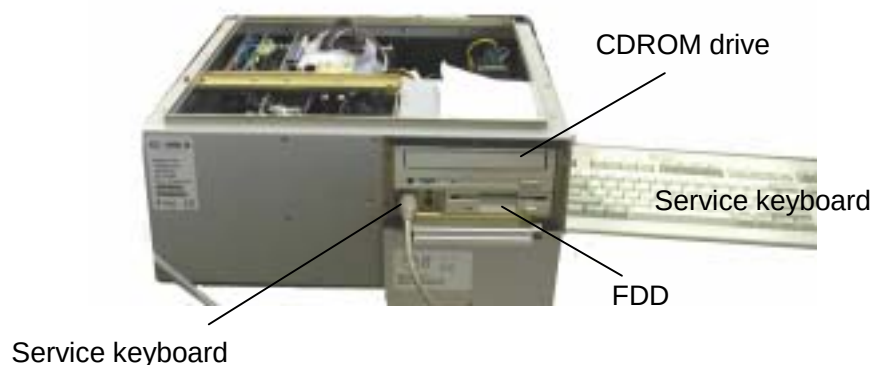
The FEA-2105 system program which supports AIS function is version 3.01 and above. Program version of FEA-2105 is displayed at the lower right corner.



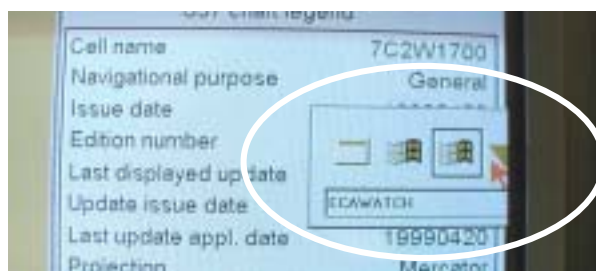
If the program is lower than version 3.01, follow the procedure below.

### Closing ECDIS program

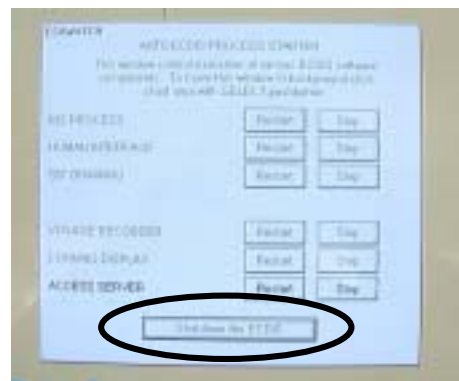
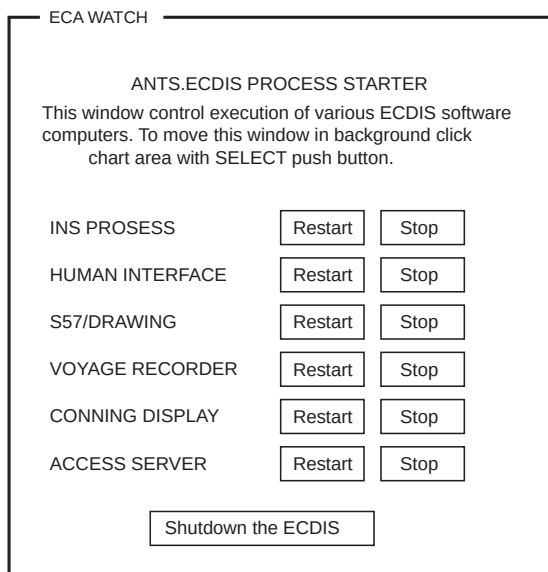
1. Connect the service keyboard to EC-1000 (EC-1000B).



2. Press [TAB] while holding [ALT]. The pop-up window as shown in the following picture appears.



- Press [TAB] while pressing [ALT] until “ECA WATCH” appears in the list box.  
“ECA WATC” window appears.

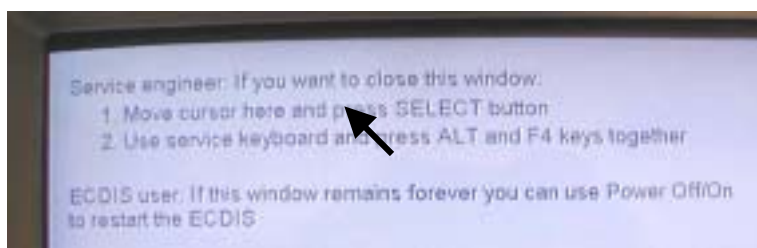
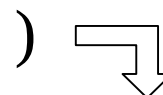


- Move the pointer onto “Shutdown the ECDIS” in “ECA WATCH” window and press [SELECT]. The following message appears.

Service engineer: If you want to close this window

1. Move cursor here and press SELECT button.
2. Use service keyboard and press ALT and F4 key together.

ECDIS user: If this window remains forever you can use Power Off/On to restart the ECDIS



When system Program is Ver: 3.01 or more, this message appears.

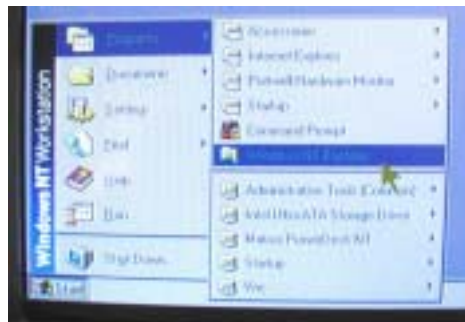
- Move the pointer onto the sentence, “1. Move cursor here and press SELECT button.” and press [SELECT].

6. Press [F4] while pressing [ALT]. The display changes to “Windows NT”.

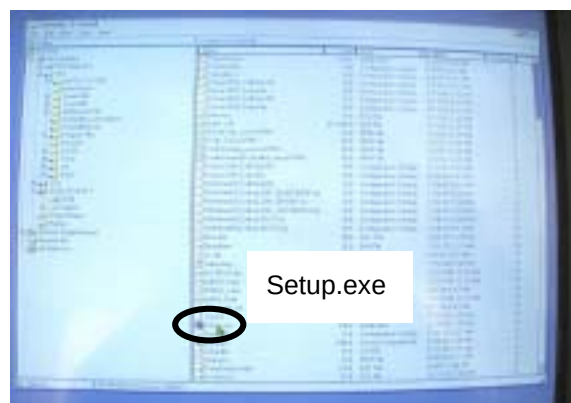


**Updating ECDIS program (Ver3.01 and above)**

7. Insert the program CD-ROM (ver.3.01 and above) to CDROM drive in EC-1000 (EC-1000B).
8. Run “Windows NT explorer” in “PROGRAM” holder in “START” menu.



9. Select E drive (CDROM) to open the file on the CDROM.
10. Move the pointer onto “install” holder icon and then press [SELECT] twice to open the holder.





11. Move the pointer onto “Setup. exe” file icon and then press [SELECT] twice to open the file. The following window appears.



**Warning**

Installation can't shutdown ECDIS software automatically

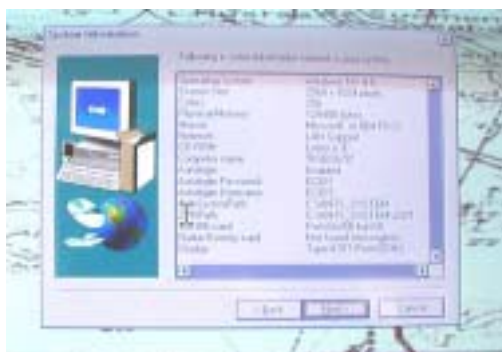
Shutdown ECDIS software before continuing

1. Use shutdown the ECDIS from EACWATCH

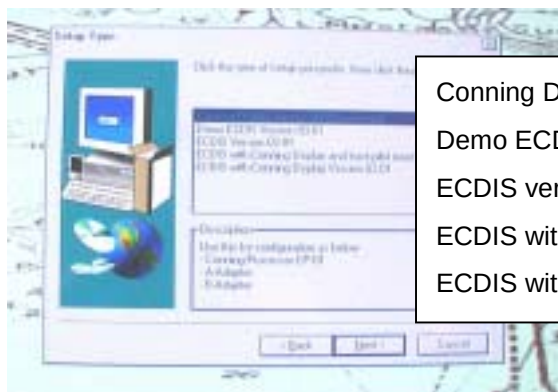
2. Use Alt+F4 to close background window with text press ALT and F4 if you want to close the window

OK

12. Move the pointer onto “OK” and press [SELECT]. The “System information” window appears. Move the pointer onto [NEXT] and press [SELECT]. The “Setup Type” window appears.



13. Select “installation type” and then move the pointer onto [NEXT] and press [SELECT]. The “Select Optional Components” window appears.



Conning Display version 00.0x (untested)

Demo ECDIS version 0x.0x

ECDIS version 0x.0x **(Select, usually)**

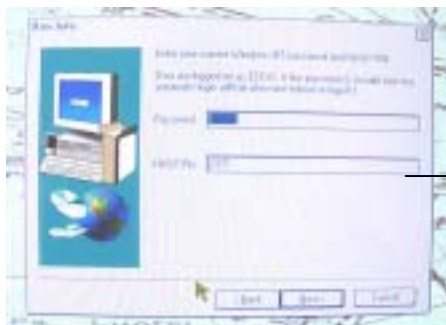
ECDIS with Conning Display and trackpilot interf. Version 0x.0x

ECDIS with Conning Display version 0x.0x



14. Move the pointer onto [NEXT] and press [SELECT]. The “User info” window appears.

15. Move the pointer onto [NEXT] and press [SELECT].



Re-enter the Password and HASP.pin number as below.

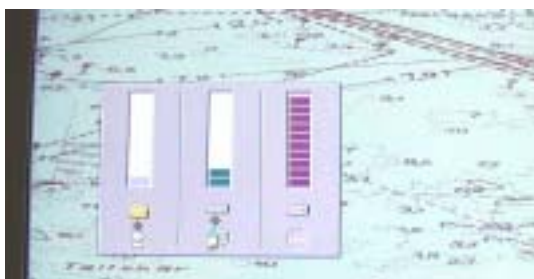
- Password: ECDIS
- HASP.pin: 2371

16. Following windows appear in order; “Share info”, “SIO386 Settings”, “Radar overlay settings”, “Select default color caribration”, “COM-port settings” and “Start copying Files”. Move the pointer onto [NEXT] in each window and press [SELECT]. The “System Cleanup” window appears.

17. Remove the tick in “S57 Senc files” line and press [SELECT]. The program updating starts automatically.

|                                     |                    |
|-------------------------------------|--------------------|
| <input checked="" type="checkbox"/> | INS Sav files      |
| <input checked="" type="checkbox"/> | ECAHI Detail files |
| <input type="checkbox"/>            | S57 Group files    |
| <input type="checkbox"/>            | S57 Senc files     |
| <input type="checkbox"/>            | S57 Catalog files  |
| <input type="checkbox"/>            | Voyage Log files   |

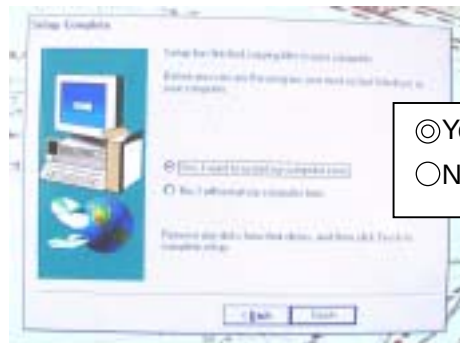
**Remove the mark.**



18. When the window below appears, move the pointer onto [OK] and press [SELECT].  
The “Setup complete window appears.



19. Select [Yes] and move the pointer onto [Finish] and press [SELECT]. The ECDIS starts automatically.



- ☒ Yes, I want to restart my computer now
- ☐ No, I will restart my computer later

## AP6.3 Setting

### AP6.3.1 Setting on FA-100

Press [MENU][6][1][1] and set “I/O SPEED” to 38.4 k.

| Port   | I/O SPEED | Port     | I/O SPEED |
|--------|-----------|----------|-----------|
| PC I/O | 38.4 k    | LR*      | 38.4 k    |
| SNSR 1 | 4800      | BCON     | 4800      |
| SNSR 2 | 4800      | EXTRA 1  | 38.4 k    |
| SNSR 3 | 4800      | XTRA I/O | 4800      |

Note: When FEA-2105 is connected to L/R port, “I/O FUNCTION” of LR port is set to “PORT LR: EXT DISP”. Keystroke: [MENU][6][1][2]

### AP6.3.2 Setting on FEA-2105

1. Insert the “KEY disk” to the floppy drive.
2. Press “INITIAL SETTING” twice and “INITIAL SETTING” window appears.

|                                |
|--------------------------------|
| Set time                       |
| Parameter Backup               |
| Digitizer                      |
| Backup and Restore             |
| Installation Parameter         |
| Navigation Parameter ▶         |
| Chart Alarm Parameter          |
| Optimization Parameter ▶       |
| Print Navigation Parameter ▶   |
| Print Optimization Parameter ▶ |
| Selftest                       |
| Presentation library           |
| Access server and Diagnostic ▶ |

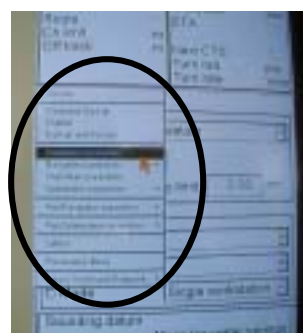
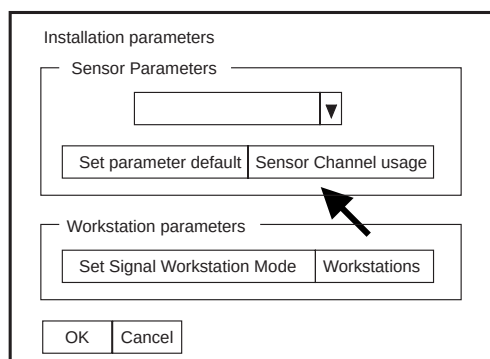
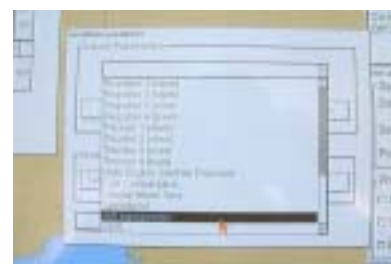
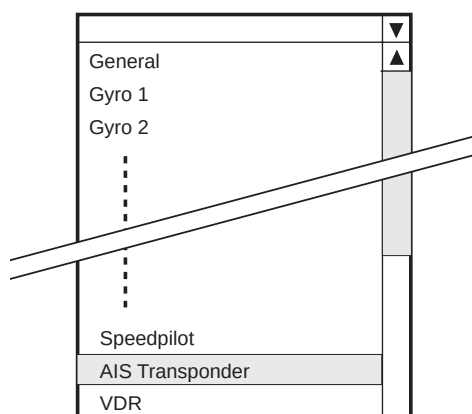


Fig.3.4

3. Move the cursor onto “Installation Parameter” and press [SELECT] to open “Installation Parameter”.



4. Move the pointer onto ▼ in “Sensor Parameter” list box and press [SELECT] to show “SENSOR” list.



5. Move the cursor onto “AIS Transponder” and press [SELECT] to show “Edit parameters-AIS transponder”.

Edit parameters-AIS transponder

|                              |                                          |        |
|------------------------------|------------------------------------------|--------|
| Connected                    | YES ▼                                    | OK     |
| A- Adapter CH                | 4 ▲▼                                     | Cancel |
| Device interface             | IEC61162-2(38400 bit/s) ▼                |        |
| Device mode                  | Allow illegal values ▼                   |        |
| IEC61162-1 Transmit checksum | Used ▼                                   |        |
| Checksum                     | \$ Char not included (IEC61162-1 or 2) ▼ |        |

6. Set items in AIS parameter setting menu as shown in the table below. (Select screened parameters.)

| Item                         | Setting                              | Remarks                                        |
|------------------------------|--------------------------------------|------------------------------------------------|
| Connected                    | NO                                   |                                                |
|                              | YES                                  |                                                |
| A-Adapter                    | 1 to 16                              | Set the port number to which AIS is connected. |
| Device interface             | IEC61162-2 (38400 bit/s)             |                                                |
|                              | IEC61162-1 (4800 bit/s)              |                                                |
| Device mode                  | Normal IEC61993-2                    |                                                |
|                              | Allow illegal values                 |                                                |
| IEC61162-1 Transmit Checksum | Not used                             |                                                |
|                              | Used                                 |                                                |
| Checksum                     | \$Char not included (IEC61162-1 or2) |                                                |
|                              | \$Char included (Some old NMEA)      |                                                |

7. Move the cursor onto [OK] and press [SELECT] to return to “Installation parameters” window.
8. Move the cursor onto [OK] and press [SELECT] to show “SIO Booting”.
9. Remove the “Key disk” from the floppy disk drive.

### AP6.3.3 Displaying AIS target

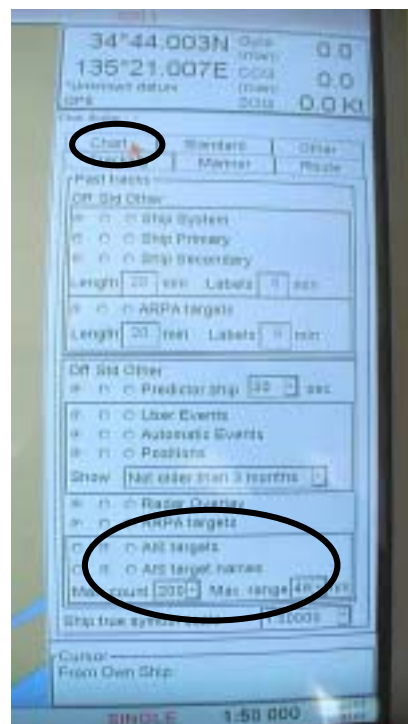
1. Press [CHART DISPLAY] on FEA-2105. The following “Chart display” window appears. If not, move the pointer onto the “Tracking” and press [SELECT].

Chart display

|          |          |       |
|----------|----------|-------|
| Chart    | Standard | Other |
| Tracking | Mariner  | Route |

Past tracks

|                                  |                                  |                       |                       |
|----------------------------------|----------------------------------|-----------------------|-----------------------|
| Off                              | Std                              | Other                 |                       |
| <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/> | Ship System           |
| <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/> | Ship Primary          |
| <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/> | Ship Secondary        |
| Length                           | 20 min                           | Labels                | 5 min                 |
| <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/> | ARPA target           |
| Length                           | 20 min                           | Labels                | 5 min                 |
| Off                              | Std                              | Other                 |                       |
| <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/> | Predictor ship 30 sec |
| <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/> | User Events           |
| <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/> | Automatic Events      |
| <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/> | Positions             |
| Show                             | Not older than 3 month           |                       |                       |
| <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/> | Radar Overlay         |
| <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/> | ARPA target           |
| <input type="radio"/>            | <input checked="" type="radio"/> | <input type="radio"/> | AIS targets           |
| <input type="radio"/>            | <input checked="" type="radio"/> | <input type="radio"/> | AIS target names      |
| Max. count                       | 200                              | Max. range            | 48 nm                 |
| Ship true symbol scale 1:50000   |                                  |                       |                       |



2. Set “AIS target” and “AIS target names” lines, Max. count and Max. range.

#### AIS target

Move the pointer onto “Std” on AIS target line and press [SELECT] to turn on AIS target display.

- Off : AIS target display is off
- Std : AIS target display is on
- Other: AIS target is on until [STANDARD] is pressed. when [STANDARD] is pressed, AIS target is off.

#### AIS target name

Move the pointer onto “Std” on AIS target names line and press [SELECT] to turn on AIS target name.

- Off : AIS target has no ship's name.
- Std : AIS target has ship's name.
- Other : AIS target has ship's name until [STANDARD] is pressed. When [STANDARD] is pressed, ship's name disappears.

### Max. count

To set the maximum number of the nearest AIS target from the own ship, move the pointer onto ▼ in “Max. count” box and press [SELECT]. Select 20, 40, 100 or 200 and press [SELECT].

### Max. range

Move the pointer onto ▼ in “Max. range” box and press [SELECT]. Select 6, 12, 24 or 48 and press [SELECT]. The AIS target within the setting range is displayed on FEA-2105.

| Off                   | Std                              | Other                 |                                                 |
|-----------------------|----------------------------------|-----------------------|-------------------------------------------------|
| <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | AIS targets                                     |
| <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | AIS target names                                |
| Max. count            | <input type="text" value="200"/> | ▼                     | Max. range <input type="text" value="48"/> ▼ nm |

## AP6.4 Checking AIS signal to FEA-2105

When RX LED in FEA-2105 A-adapter blinks, FEA-2105 receives the signal normally.  
LED number corresponds to the T.B. number.

