

## *Installation Manual*

# Multi Function Display

## Model MFDBB

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# SAFETY INSTRUCTIONS

The user and installer must read the appropriate safety instructions before attempting to install or operate the equipment.



## WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



## CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



Warning, Caution



Prohibitive Action



Mandatory Action



## WARNING



**ELECTRICAL SHOCK HAZARD**  
Do not open the equipment unless totally familiar with electrical circuits.

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.



**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.



## CAUTION



**Ground the equipment to prevent electrical shock and mutual interference.**

**Use the proper fuse.**

Use of an incorrect fuse may damage the equipment.

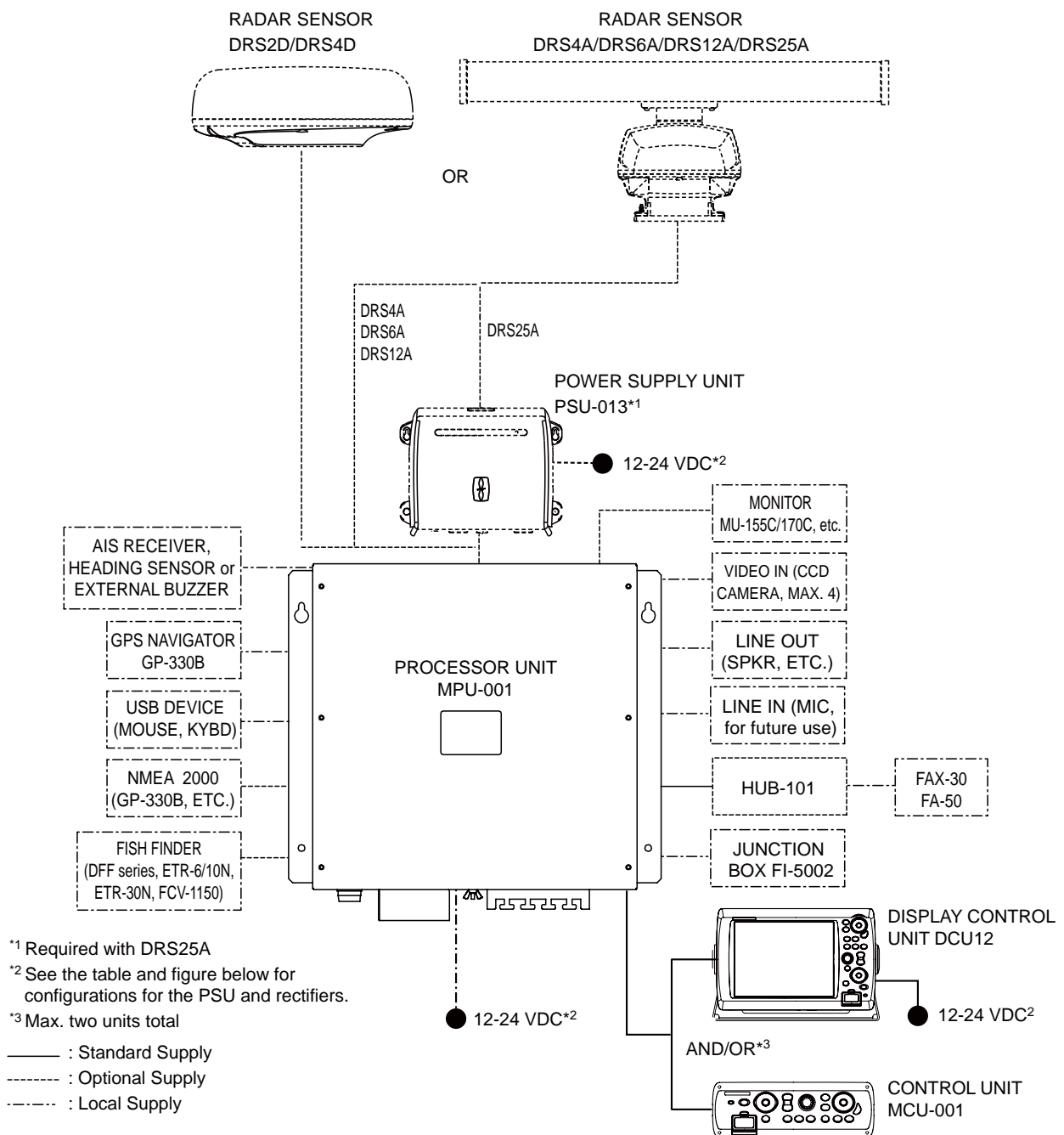
**Observe the following compass safe distances to prevent interference to a magnetic compass:**

	Standard compass	Steering compass
MPU-001	1.45 m	0.90 m
MCU-001	0.55 m	0.40 m
DCU12	0.70 m	0.45 m

## NOTICE

**This unit cannot be used as an input signal to equipment that requires interval input and accuracy such as an autopilot.**

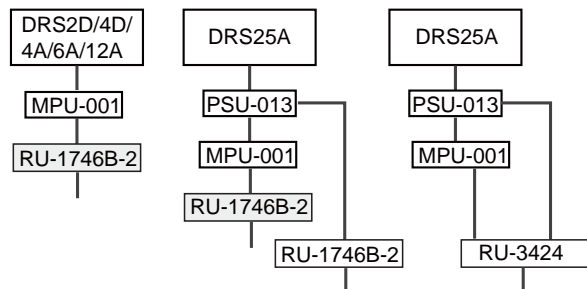
# SYSTEM CONFIGURATION



*Matrix for radar model, PSU and rectifiers*

Radar Model	PSU	Rectifier for MFDBB	Rectifier for PSU	Rectifier for MFDBB+PSU
DRS2D	Not required	RU-1746B-2		
DRS4D				
DRS4A				
DRS6A				
DRS12A				
DRS25A	PSU-013*		RU-1746B-2	RU-3424

\* Standard supply with DRS25A.



# EQUIPMENT LISTS

## Standard supply

Name	Type	Code No.	Qty	Remarks	
Processor Unit	MPU-001	-	1		
Control Unit	MCU-001	-	1	Choose one.	
Display Control Unit	DCU12	-	1		
Installation Materials	CP19-00600	000-011-664	1 set	For MPU-001, Cable, CP19-00601*	
	CP19-00700	000-011-663	1 set	For MCU-001, cable, CP19-00701*	Choose one.
	CP19-00800	000-011-662		For DCU12, cables, CP19-00801*	
Spare Parts	SP19-00501	001-023-090	1 set	For MPU-001, fuses	
	SP19-00601	001-023-040	1 set	For DCU-001, fuses	
Accessories	FP19-01201	001-033-760	1	For MCU-001, panel remover	
	FP19-01101	001-023-060		For DCU12, panel remover	

\*See the lists at the back of this manual.

## Optional supply

Name	Types	Code No.	Remarks
DVI-D Cable	DVI-D/D SINGLELINK	000-149-054-10	5 m
	DVI-D/D S-LINK	000-150-200-10	10 m
External Buzzer	OP03-136	000-086-443	
Rectifier	RU-1746B-2	-	
Network Hub	HUB-101	-	
Joint Box	TL-CAT-012	000-167-140-10	For LAN cable extension
Junction Box	FI-5002	000-010-765	For NMEA 2000
Control Unit	MCU-001	-	
Display Control Unit	DCU12	-	

Name	Types	Code No.	Remarks
Cable Assy	MJ-A7SPF0007-050C	000-154-028-10	5 m, NMEA0183, w/7P connector
	MJ-A6SPF0016-005C	000-159-689-11	For FAX-30, ETR6N/10N connection
	MOD-Z072-020+	000-167-175-10	2 m, LAN
	MOD-Z072-050+	000-167-176-10	5 m, LAN
	MOD-Z072-100+	000-167-177-10	10 m, LAN
	MOD-Z073-030+	000-167-171-10	3 m, for PC connection
	M12-05BM+05BF-010	000-167-962-10	φ6, 1 m, NMEA 2000
	M12-05BM+05BF-020	000-167-963-10	φ6, 2 m, NMEA 2000
	M12-05BM+05BF-060	000-167-964-10	φ6, 6 m, NMEA 2000
	M12-05BFFM-010	000-167-965-10	φ6, 1 m, NMEA 2000
	M12-05BFFM-020	000-167-966-10	φ6, 2 m, NMEA 2000
	M12-05BFFM-060	000-167-967-10	φ6, 6 m, NMEA 2000
	CB-05PM+05BF-010	000-167-968-10	φ10, 1 m, NMEA 2000
	CB-05PM+05BF-020	000-167-969-10	φ10, 2 m, NMEA 2000
	CB-05PM+05BF-060	000-167-970-10	φ10, 6 m, NMEA 2000
	CB-05BFFM-010	000-167-971-10	φ10, 1 m, NMEA 2000
	CB-05BFFM-020	000-167-972-10	φ10, 2 m, NMEA 2000
	CB-05BFFM-060	000-167-973-10	φ10, 6 m, NMEA 2000
NMEA connector	LTWSS-050505-FMF-TS001	000-168-603-10	NMEA 2000 distributor (micro style)
	LTWMC-05BMMT-SL8001	000-168-604-10	NMEA 2000 terminator, male (micro style)
	LTWMC-05BFFT-SL8001	000-168-605-10	NMEA 2000 terminator, female (micro style)
	LTWNC050505FMF-TS001	000-160-507-10	NMEA 2000 distributor (mini style)
	LTWMN-05AMMT-SL8001	000-160-508-10	NMEA 2000 terminator, male (mini style)
	LTWMN-05AFFT-SL8001	000-160-509-10	NMEA 2000 terminator, female (mini style)
In-line Terminator	FRU-0505-FF-IS	000-172-037-10	NMEA 2000 connector w/terminator, micro style
Operator's Manual	OME-44460	000-167-217	
NMEA 2000 Inter-face Unit	IF-NMEA2K1	-	



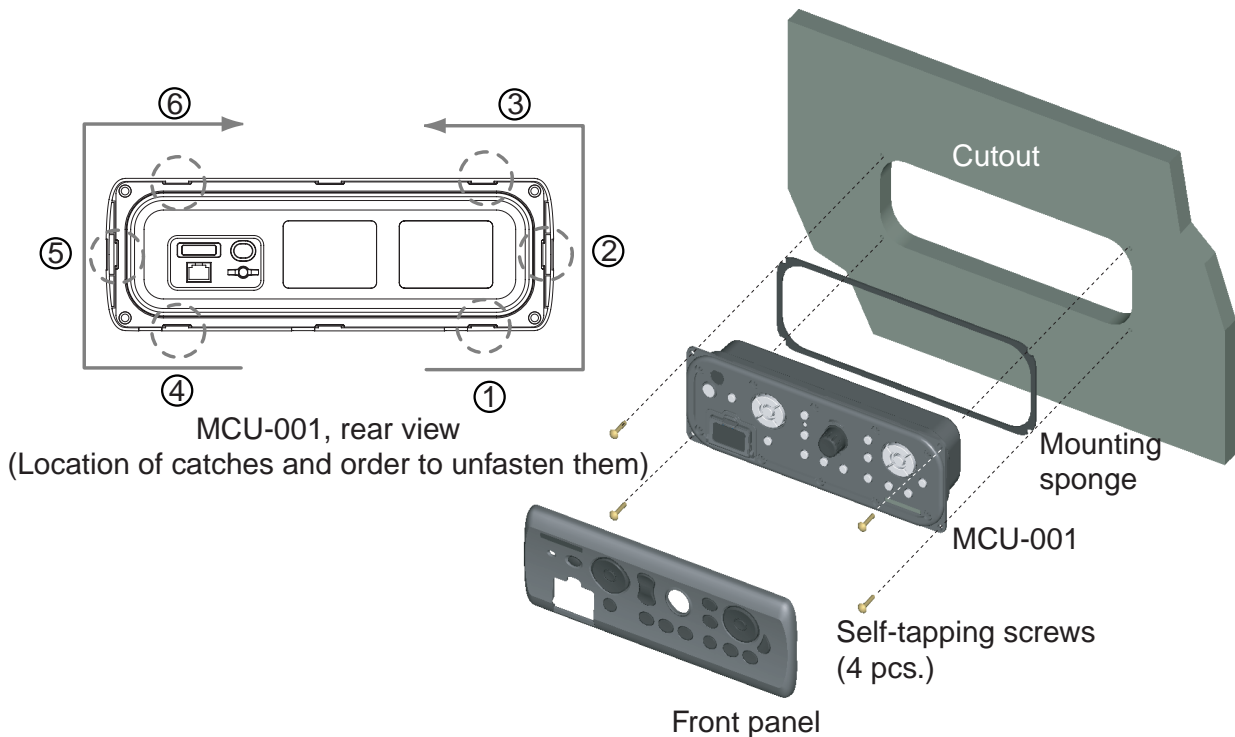
### 1.1.1 Mounting procedure for control unit MCU-001

The control unit MCU-001 is designed to be flush mounted in a console or panel.

1. Prepare a cutout in the mounting location using the template sheet (supplied) for the MCU-001.
2. Remove the front panel from the MCU-001 by unfastening the catches at the rear of the panel, in the order as shown in the figure below.

**Note:** Detach the panel carefully to prevent breakage of the panel.

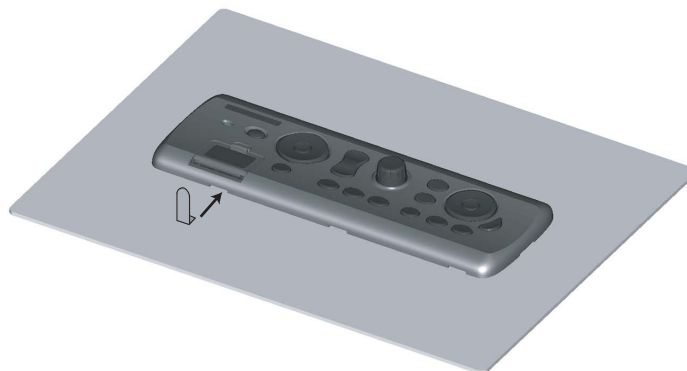
3. Attach the mounting sponge to the MCU-001.
4. Fix the MCU-001 by using four self-tapping screws (supplied).
5. Attach the front panel to the MCU-001.



#### How to detach the front panel from the mounting place

To detach the front panel after mounting the unit, use the remover (supplied) as below. Do not attempt to remove it by any other method, to prevent damage to the unit.

1. Set the remover to the left-side notch at the bottom of the unit.





2. Pull the remover to raise the panel slightly.



3. Similarly use the remover to raise the panel at the right-side notch.
4. Insert the remover to the space at the one end of the unit, and pull it to raise the panel slightly. Repeat this procedure for the opposite side.



5. Use the remover to raise the panel at the two notches on the upper side of the unit.
6. Use your hands to detach the front panel at both sides of it.



### 1.1.2 Mounting procedure for display control unit DCU12

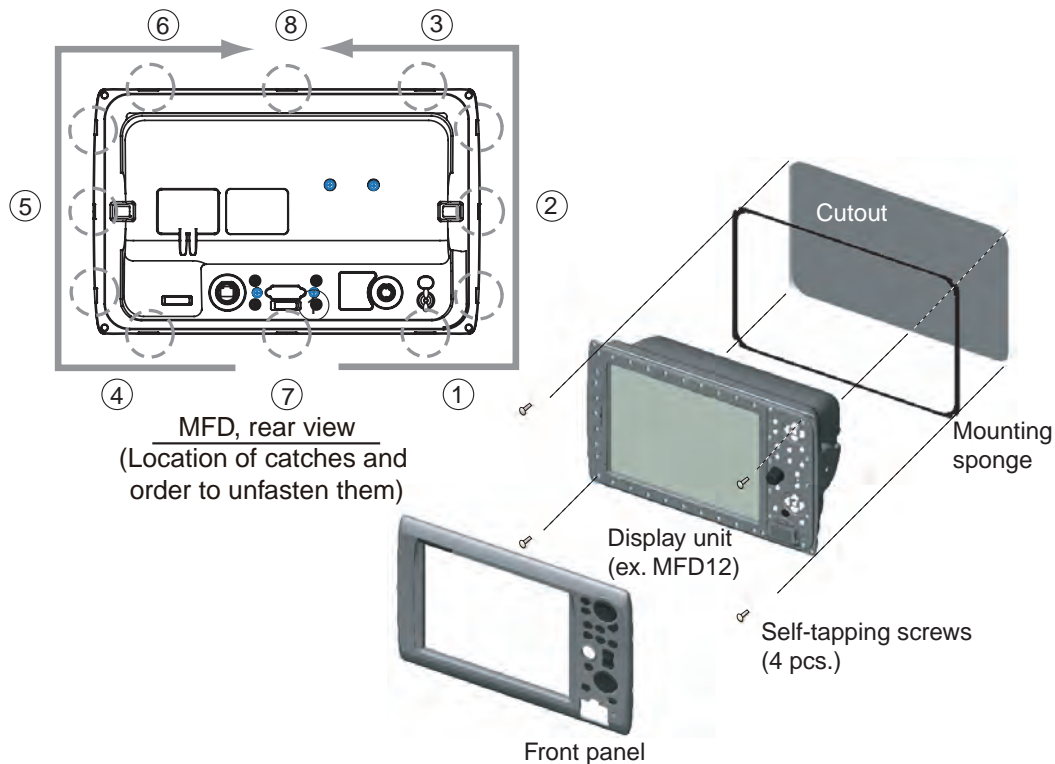
The Display Control Unit DCU12 can be flush mounted in a console or panel, or mounted on a desktop or the overhead.

#### **Flush mounting**

1. Prepare a cutout in the mounting location using the template sheet (supplied) for the DCU12.
2. Remove the front panel from the DCU12 by unfastening the catches at the rear of the panel, in the order as shown in the figure below.

**Note:** Detach the panel carefully to prevent breakage of the panel.

3. Attach the mounting sponge to the DCU12.
4. Fix the DCU12 by using four self-tapping screws (supplied).
5. Attach the front panel to the DCU12.



#### **How to detach the front panel from the mounting place**

To detach the front panel after mounting the unit, use the remover (supplied) as below. Note that the front cover may be damaged if you do not follow the methods below.

1. Set the remover to a notch on the lower side of the unit.



2. Pull the remover to raise the panel slightly. Do this for all notches on the lower side of the unit.



3. Insert the remover to the space at the one side of the unit, and pull the remover to raise the panel slightly. Do the same for the opposite side.



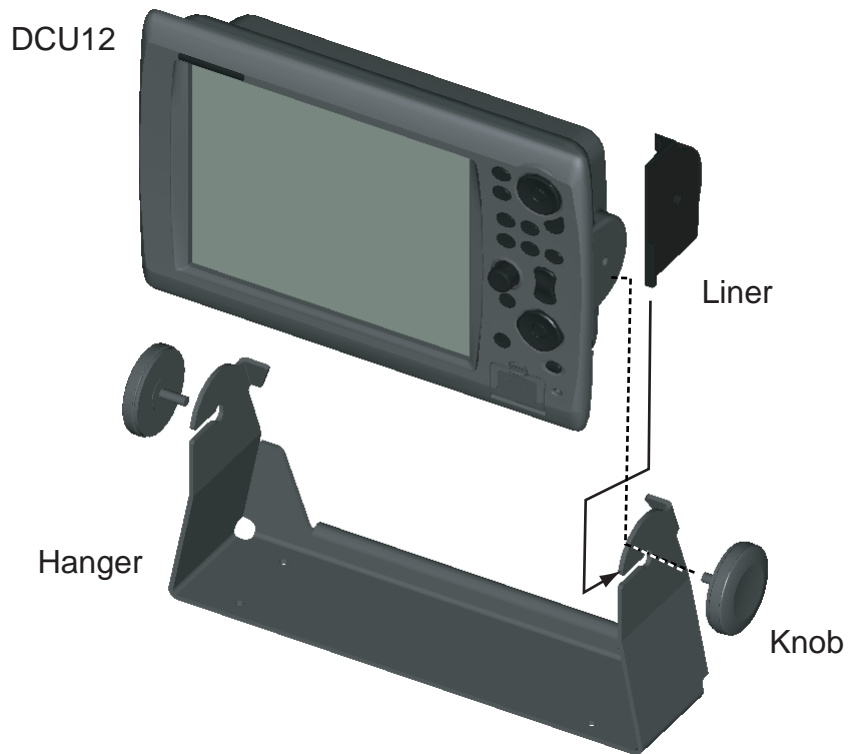
4. Use your hands to detach the front panel from the lower side.



### **Desktop mounting**

Follow the procedures below to mount the DCU12 on a desktop. This method requires the hanger.

1. Attach a liner to each side of the DCU12.
2. Fix the hanger by using self-tapping screws (supplied).
3. Screw knob bolts into the DCU12, set it to the hanger, and tighten the knob bolts.



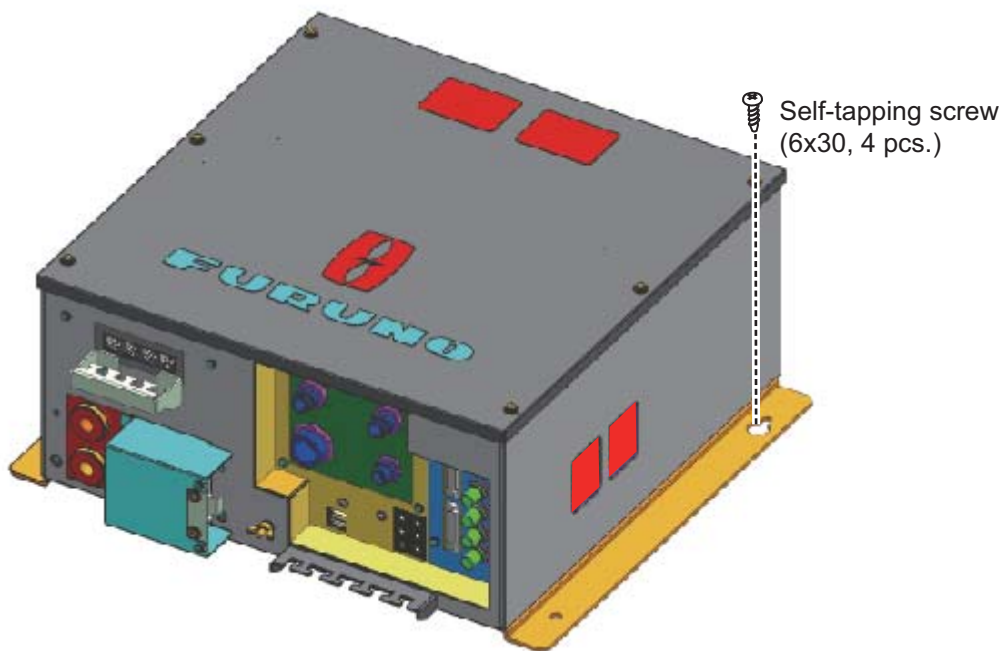
## 1.2 Mounting the Processor Unit

The unit can be mounted on the deck, a desktop or on a bulkhead. Select a mounting location considering the points below.

- Select a location where temperature and humidity are moderate and stable.
- Consider the lengths of the cables connected among the processor unit, radar sensor and control unit.
- For mounting on a bulkhead, be sure the mounting location is strong enough to support the unit under the pitching and rolling normally encountered on the vessel.
- Leave sufficient space around the unit for maintenance and servicing. Recommended maintenance space appears in the outline drawing at the back of this manual.
- A magnetic compass will be affected if the processor unit is placed too close to the magnetic compass. Observe the compass safe distances in SAFETY INSTRUCTIONS to prevent disturbance to the magnetic compass.

### **Desktop or deck mounting**

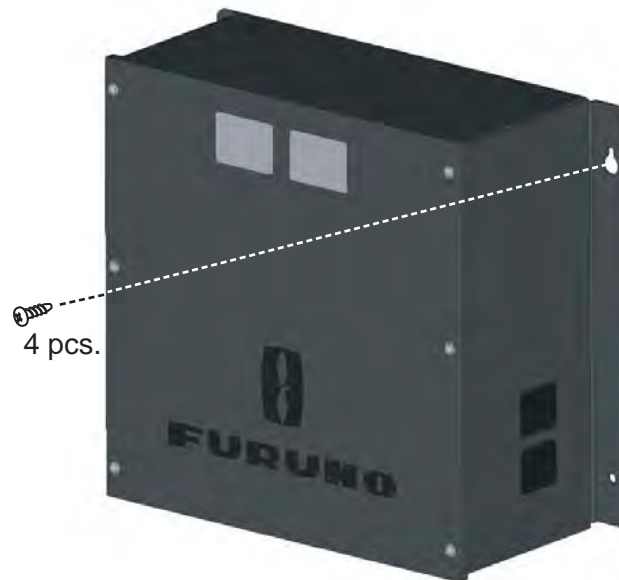
Fasten with four self-tapping screws.



*Processor unit, desktop/deck mounting*

### **Bulkhead mounting**

Mark four fixing hole positions on the bulkhead. Screw in two 6x30 self-tapping screws at upper fixing positions, leaving 5 mm protruding. Set the processor unit to the screws and screw in two self-tapping screws at lower positions. Tighten all screws.

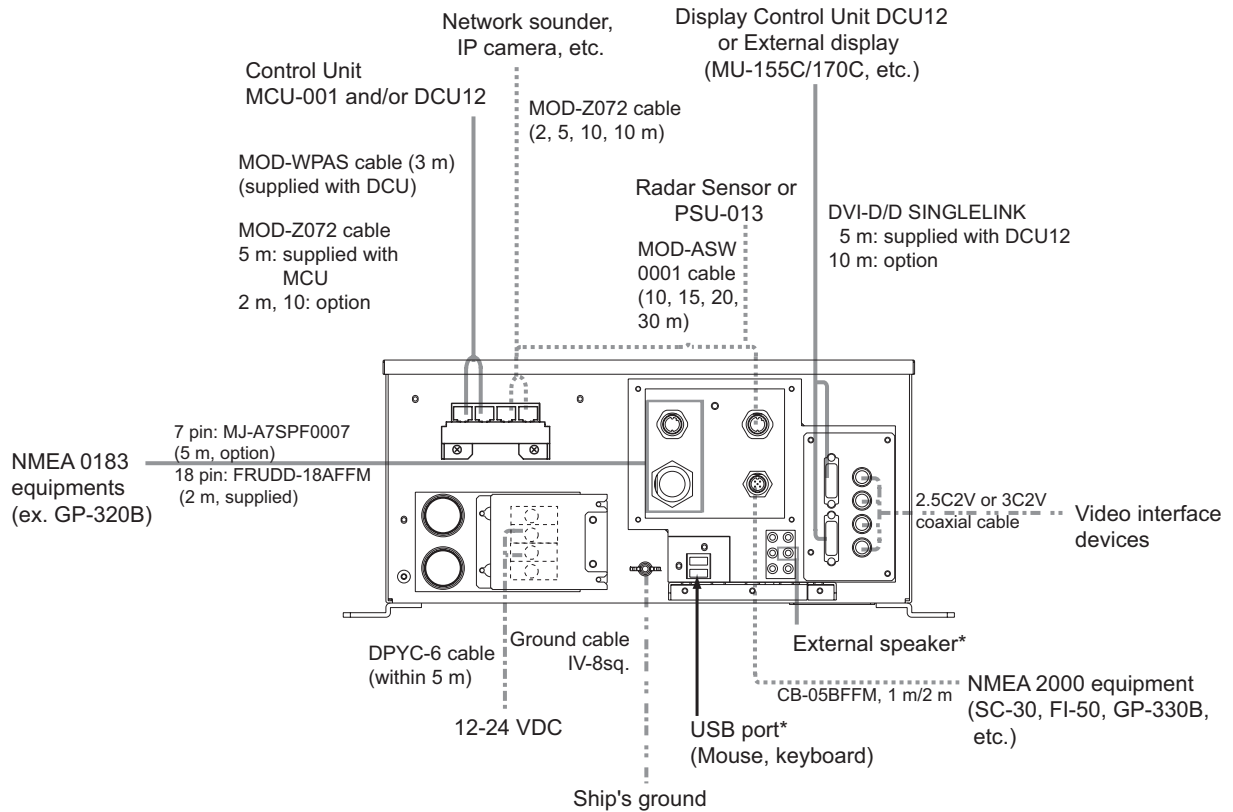


*Processor unit, bulkhead mounting*

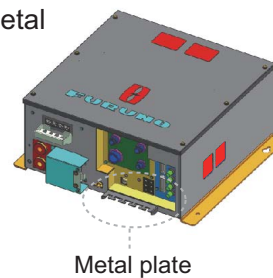
## 2. WIRING

### 2.1 Processor Unit Wiring

For detailed information about NMEA 2000 wiring, see “Furuno CAN bus Network Design Guide” (TIE-00170) on Tech-Net.



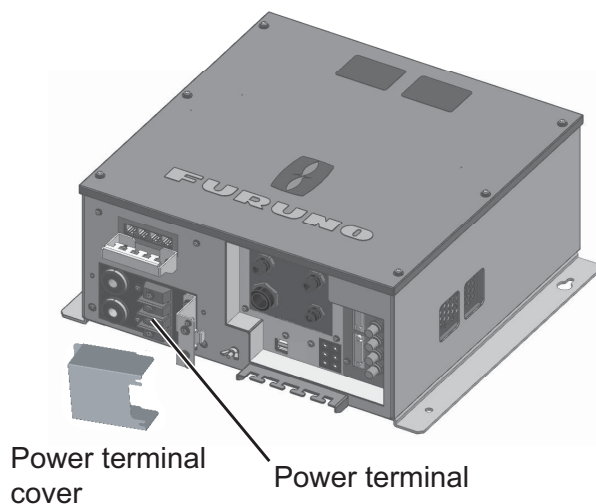
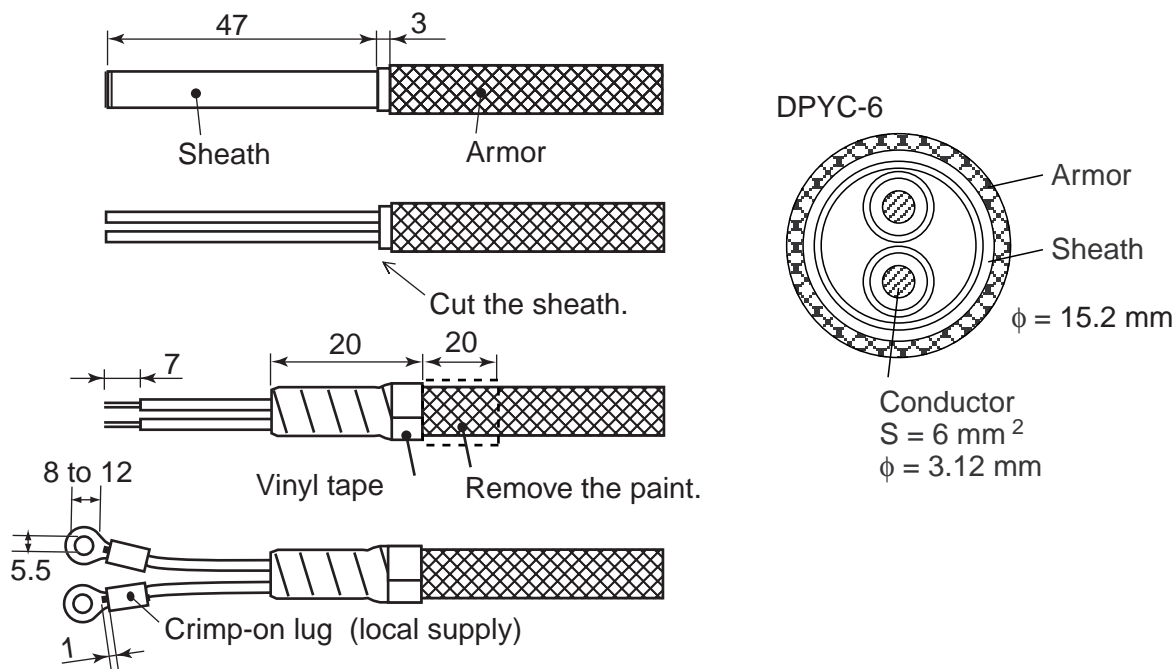
\*: For USB, speaker and microphone connections, appropriate cables should be fastened to the metal plate beneath of connectors by the cable tie.



**Note:** Connect/disconnect cables after turning the power off.

## POWER

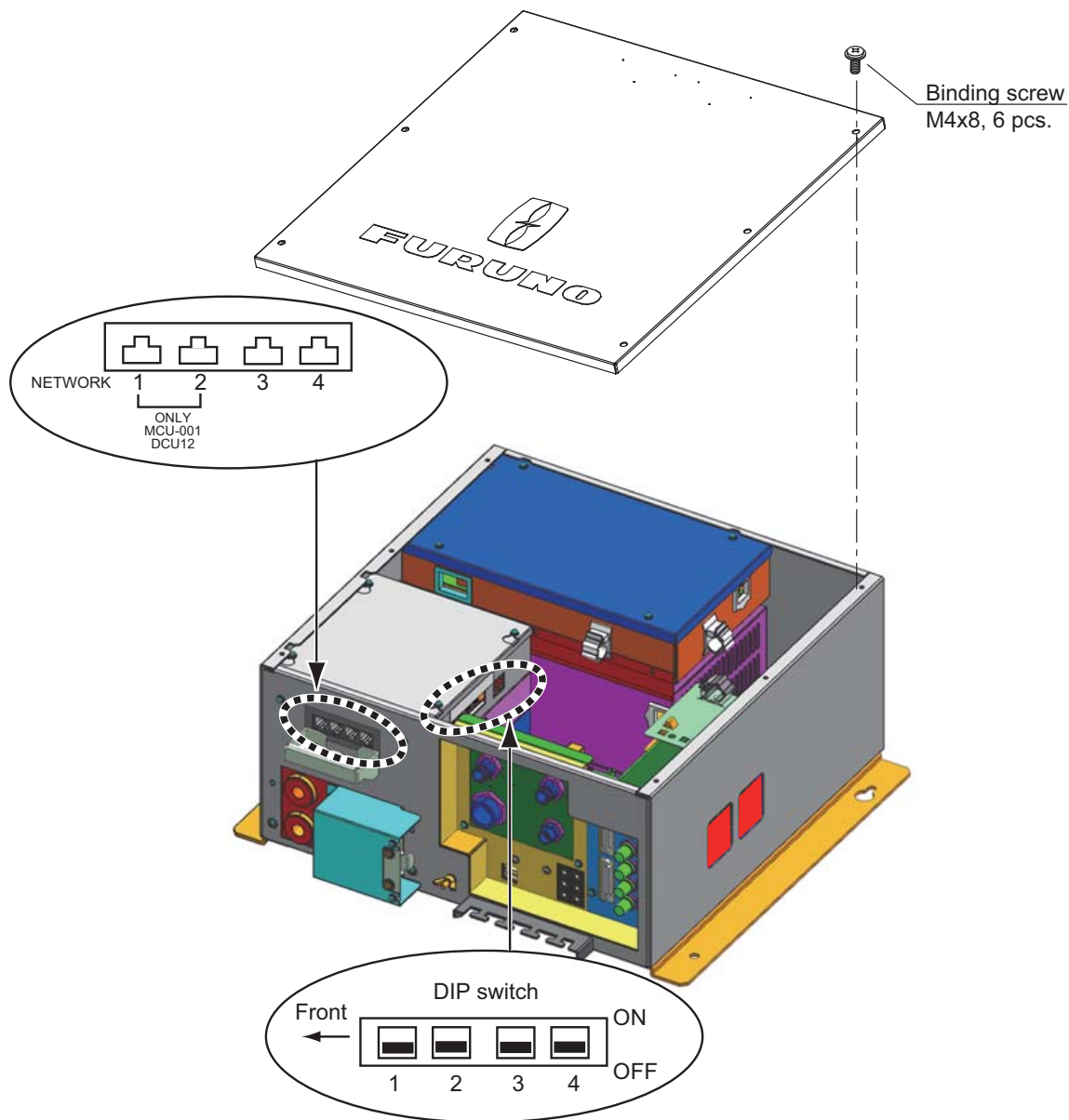
Fabricate the power cable (DPYC-6 or equivalent) as shown below. Unfasten four pan head screws to remove the power terminal cover, and then connect the power cable DPYC-6 to the power terminal (upper: +, lower: -). Reattach the cover. The maximum cable length should be within 5 m.





## **NETWORK 1 to 4**

The DIP switch inside the processor unit functions to enable/disable the network ports. The number on each DIP switch corresponds to port number. Turn DIP switch #1 (or #2) ON when the LAN cable for DCU12/MCU-001 is connected to network #1 (or #2).



**Note 1:** When connecting PC(s) or FAR-2xx7 series radar, confirm that the DIP switch(es) corresponding to the PC port(s) are turned OFF.

**Note 2:** The MCU-001(s) should be connected to the NETWORK 1 and/or 2 port(s) directly, not via the HUB-101.

### Using DATA2 port (NMEA0183)

To connect multiple NMEA 0183 equipment, use the cable assy FRUDD-18AFFM-L180 supplied. This cable has an 18P connector. The DATA 2 port on the back of the processor unit. Solder wires of the FRUDD-18AFFM-L180 and the wires from sensors. The wire arrangement is shown below.

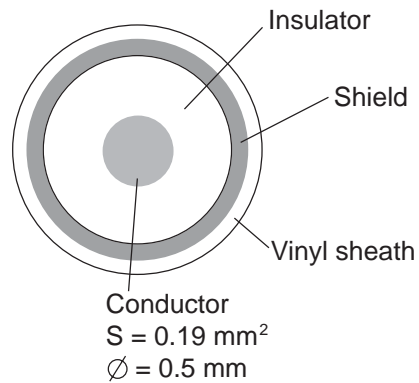


Pin No.	Color	Function	Remark (Port No.)
18	Light green	NET-C IN (0V)	NMEA 2000 Power
17	Pink	NET-S IN (+12V IN)	
16	Purple	Shield	
15	White	BUZZER or EVENT IN	External buzzer or event switch
14	Gray	SPEED-ALARM C	Speed alarm contact
13	Yellow	SPEED-ALARM H	
12	Black/White	+12V	External buzzer power
11	Black	GND	
10	Blue/White	RD3-C	Port 3
9	Blue	RD3-H	
8	Green/White	TD3-B	
7	Green	TD3-A	
6	Orange/White	GND	
5	Orange	GND	
4	Brown/White	RD2-C	Port 2
3	Brown	RD2-H	
2	Red/White	TD2-B	
1	Red	TD2-A	

### **Video interface devices (analog type)**

Maximum four camera/video devices can be connected. For this connection, the following cable is necessary (local supply).

- BNC connector
- 3C2V (Japan Industrial Standard (JIS), or the equivalent) coaxial cable (impedance  $75\Omega$ )



*3C-2V cable, sectional view*

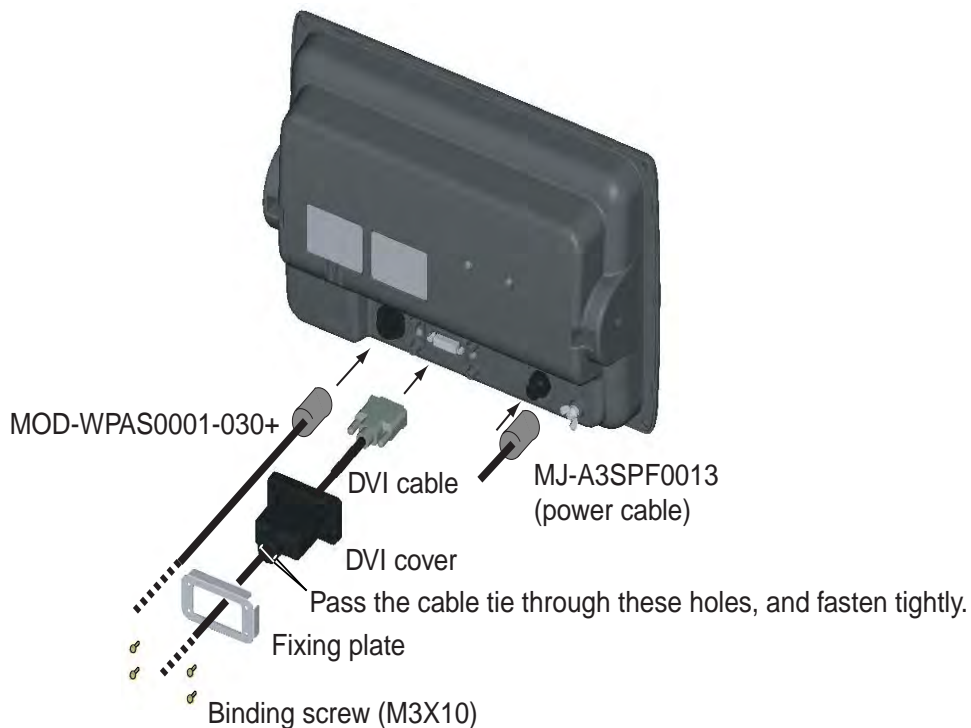
### **Video interface devices (digital type)**

The NavNet 3D can display digital pictures from IP cameras (AXIS model 212 or 207 only) via LAN. IP addresses are allocated 172.31.200.003 through 006. For details, see the Operator's Manual for model 212 and 207.

## 2.2 Display Control Unit Wiring

Connect the MOD-WPAS0001-030+ cable (from the processor unit) to the LAN connector at the rear of the display control unit. This cable has 3 m in length. If you need longer cable, use the optional joint box TL-CAT-012 and cable assy MOD-Z072 cable (2, 5 or 10 m). For DCU12, the connection of DVI cable is also necessary. When connecting this cable, follow the steps shown below for waterproofing.

1. Pass the DVI cable through the DVI cover (supplied) and fixing plate (supplied) in that order.
2. Attach the DVI cable to the DVI connector at the rear of the DCU12, and then tighten the thumbscrews on the connector.
3. Slide the DVI cover so that it covers the connector at the rear of the display control unit.
4. Put the fixing plate over the DVI cover, and then fasten it with four binding screws (supplied).
5. Pass the cable tie (supplied) through two holes on the DVI cap, and fasten it tightly.



# 3. SETTING UP THE EQUIPMENT

This chapter shows you how to set up your system according to the equipment you have connected. To do this more easily the Installation Wizard is provided. It has all the items necessary for setting up your system.

The Installation Wizard has four tabs, and each tab has some dialog boxes. You can construct your network system by setting these items in Wizard series.

**Note:** Do not transmit the radar until you have set up the radar sensor (on page 28).

## Own tab

Set the NMEA 0183/2000 and Analog video devices connected to your MFD.

## Global tab

Set data on the network. These data can be shared with MFDs on the network.

## Sounder tab

This tab appears when a network sounder (DFF, ETR series) or FCV-1150 is connected. Set the items for frequencies and “TD-ID” transducer of Airmar as appropriate.

## Radar tab

This tab appears when a radar sensor (DRS series) or FAR-2xx7 series (Ver. No.: 02.50 or before, type-C only) is connected. Set the antenna position and adjust the heading and main bang.

## Used key on the Installation Wizard

- ① POWER key
- ② RotoKey
- ③ Cursor pad
- ④ Left-click button



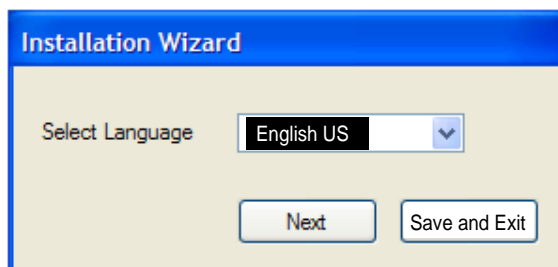
A commercial USB mouse or keyboard can be used.

## 3.1 Setup for Single MFD in the Network

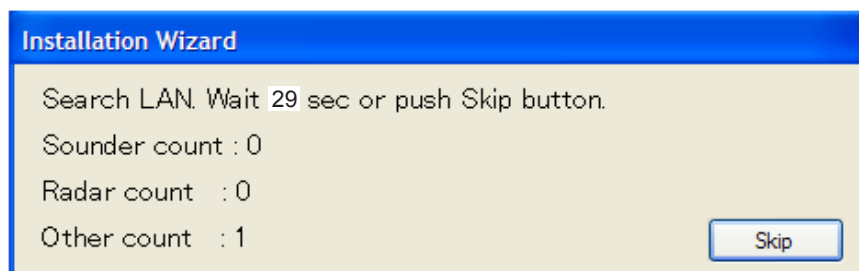
When you have an MFD in the network, do the following procedures.

### Language, DHCP server setting

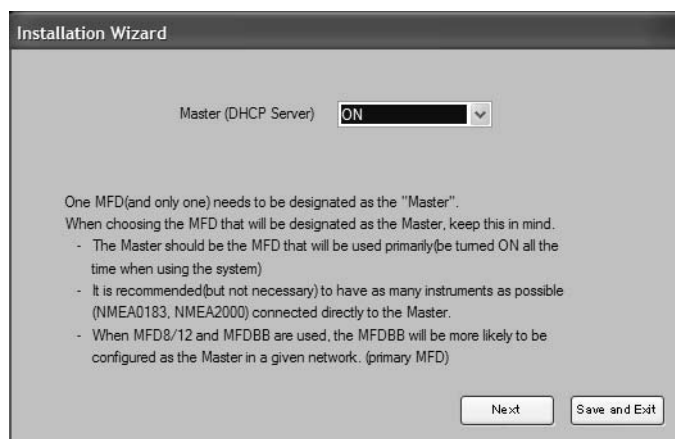
1. Press the **POWER** key on the control unit to power the system. In a few minutes, the Installation Wizard starts. After the system has confirmed sensors, the language selection screen appears. The default language is English. If you don't need to change the language, click the [Next] button. If necessary, change language: choose the Select Language pull-down menu, and push the left-click button. Note that the language of the Installation Wizard is English regardless of language setting. And press the [Next] key.



The system counts the number of sounders, radars and other sensors you have connected and displays the results. Allow the system to count the number of sensors, which takes about 30 seconds.

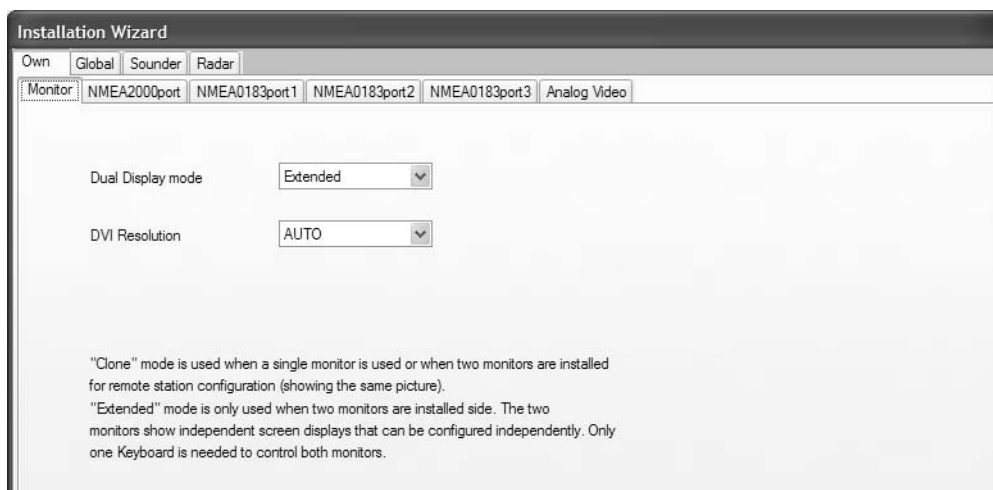


The following menu appears.



2. Confirm that the Master (DHCP Server) pull-down menu shows ON, and press [Save and Exit] button to turn the power off.
3. Press the **POWER** key to turn on the equipment again.  
After the confirming sensors, the Master (DHCP Server) setting screen appears again.
4. Press the [Next] button to show the Own-Monitor tab.

## Own-Monitor tab



5. If the MFDBB is fitted with dual monitors, choose Clone or Extended at the Dual Head mode pull-down menu as applicable and click the [Next] button. MPU-001 can output two picture data to the displays connected to DVI 1 and DVI 2 ports. You can choose how the picture data is shown on two displays at here. (When a monitor is connected, choose Clone.)

**Clone:** Same picture is shown on two displays.



Picture from DVI1 port    Picture from DVI2 port

**Extended:** The picture is split to two screens as below.

Left-side picture: Picture from the display connected to the DVI 1 port.

Right-side picture: Picture from the display connected to the DVI 2 port.



Picture from DVI1 port    Picture from DVI2 port

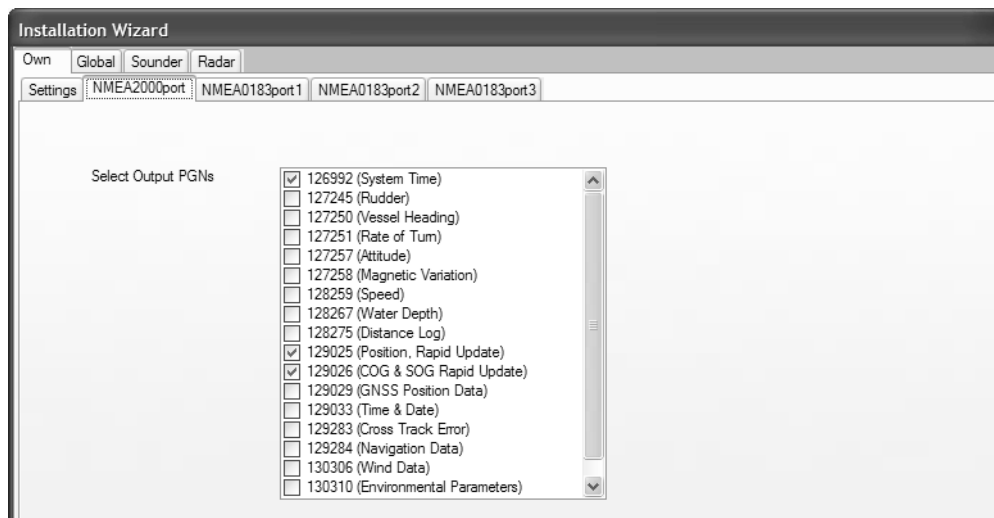
6. Choose the DVI resolution of the display unit (Auto, SVGA, XGA or SXGA) at the DVI Resolution pull-down menu.

Dual Display mode setting	SVGA	XGA	SXGA
Clone	800x600	1024x768	1280x1024
Expanded	1600x600	2048x768	2560x1024

7. Click the [Next] button.

## **Own-NMEA 2000 tab**

8. Check the PGNs (Parameter Group Number, NMEA 2000 messages) to output from the NMEA 2000 port, and click the [Next] button.



### **PGN No. and Messages**

<b>PGN No.</b>	<b>Message mean</b>
126992	System Time
127245	Rudder
127250	Vessel Heading
127251	Rate of Turn
127257	Attitude
127258	Magnetic Variation
127259	Speed, Water referenced
128267	Water Depth
129025	Position, Rapid Update
129026	COG & SOG, Rapid Update
129029	GNSS Position Date
129033	Time & Date
129283	XTE
129284	Navigation Data
130306	Wind Data
130310	Environmental Parameters
130311	
129540	GNSS Sats in view
129285	Navigation-Route/WP information
130577	Direction Data



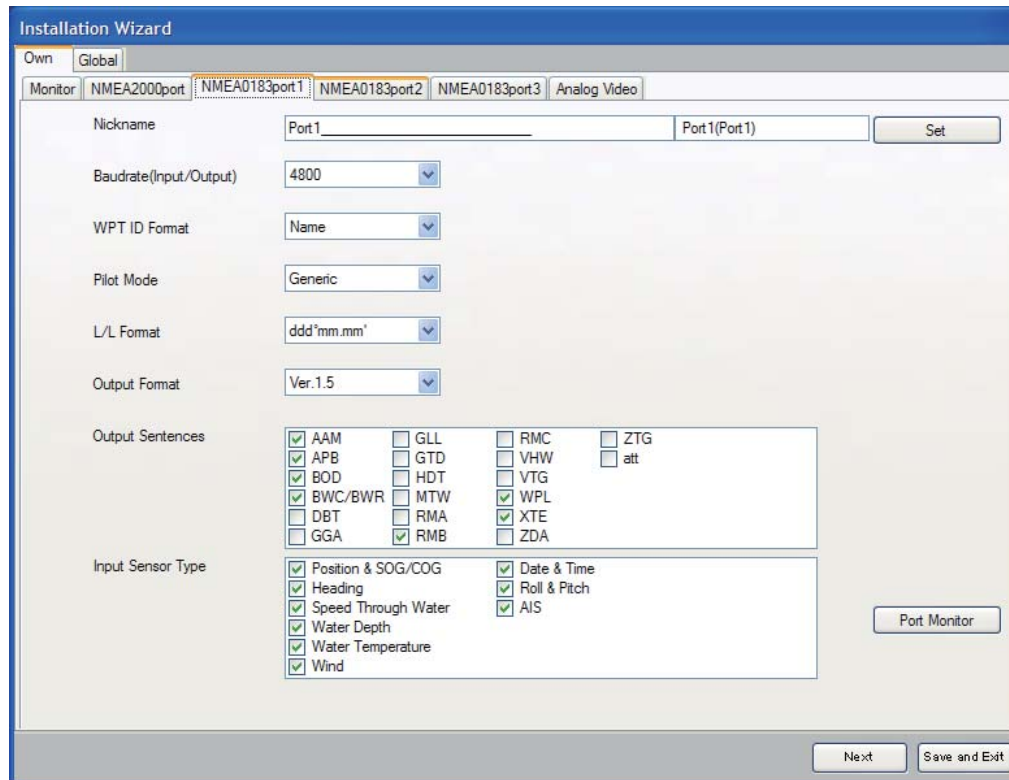
## Own-NMEA 0183 port 1 through 3 tabs

Set up the NMEA0183 data ports.

NMEA0183 port 1: DATA1 connector (7 pins)

NMEA0183 port 2: DATA2 connector (pin #: 1 to 4)

NMEA0183 port 3: DATA2 connector (pin #: 7 to 11)



All NMEA0183 ports on your MFD are assigned respective nicknames. If you don't like the preassigned nickname, you can change it at Nickname field. Use the cursor pad to select location. Rotate the **RotoKey** to select character and push it to confirm selection. Repeat this operation to complete the nicknames

9. Set baud rate at the Baudrate pull-down menu, 4800 or 38400.

10. Choose how to indicate waypoints, Name or ID No., at the WPT ID Format pull-down menu.

11. Choose the pilot mode, Generic or Zeus, at the Pilot Mode pull-down menu.

- Generic: NAV/pilot-500 or other auto pilot
- Zeus: Mercury Zeus electronic steering

**Note:** When choosing Zeus at one of NMEA0183 ports (1 to 3), Generic is automatically set at the other ports.

12. At the L/L format dialog box, choose how many digits (seconds) to display after decimal point in latitude and longitude.

13. Choose the NMEA 0183 version to output, Ver 1.5, Ver 2.0 or Ver 3.0, at the Output format pull-down menu.

14. At the Output Sentences field, check the NMEA0183 sentences to output.

**NMEA0183 Output sentences**

Name	Meaning	Name	Meaning
AAM	Waypoint arrival alarm	RMA	Loran-C data
APB	Autopilot sentence	RMB	
BOD	Bearing origin to destination	RMC	GPS/Transit
BWC/BWR	Bearing and distance to waypoint	VHW	Speed/heading (through water)
DBT	Depth below transducer	VTG	Speed over ground, course (true)
GGA	GPS fix data	WPL	Waypoint location
GLL	Geographic position (L/L)	XTE	Cross-track error, measured
GTD	Geographical Position, Loran-C TDs	ZDA	Time and date
HDT	Heading true	ZTG	UTC and time to destination waypoint
MTW	Water temperature	att	Heading/Roll/Pitch

**Note:** If the Pilot mode is chosen to Zeus (at step 11), check APB, RMC, and XTE.

15. At the Sensor Type field, check sensor data that is input to the MFD.

Example 1: Check Position & SOG/COG for GPS receiver connection.

Example 2: Check Heading for heading sensor connection.

When using the DATA2 and/or DATA3 ports on the MFD, set the NMEA0183 port 2 and/or port 3.

16. If the GPS receiver GP-320B is connected, click the [Advanced Setup] button to show the setting menu for GP-320B. Set all items referring to the table shown below.

Installation Wizard

Own Global Sounder Radar

Settings NMEA2000port NMEA0183port1 NMEA0183port2 NMEA0183port3

POS.Smoothing 0 sec

SOG/COG Smoothing 0 sec

Disable Satellite(0:None) 0 0 0

INIT.Position 0 \* 0 . 0 N

0 \* 0 . 0 E

ANT.Position Bow-stem 0 m

port-starboard 0 m

ANT.Height 0 m

Fix Mode 2D

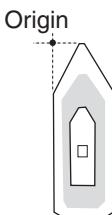
WAAS Mode ON

WAAS Search Auto 120

WAAS Alarm ON

Basic Setup

Next Exit

Menu item	Description
POS. Smoothing	When the receiving condition is unfavorable, the GPS fix may change, even if the vessel is dead in water. This change can be reduced by smoothing the raw GPS fixes. A setting between 000 to 999 is available. The higher setting the more smoothed the raw data, however too high a setting slows response time to change in latitude and longitude. This is especially noticeable at high ship's speeds. Increase the setting if the GPS fix changes.
SOG/COG Smoothing	During position fixing, ship's velocity (speed and course) is directly measured by receiving GPS satellite signals. The raw velocity data may change randomly depending on receiving conditions and other factors. You can reduce this random variation by increasing the smoothing. Like with latitude and longitude smoothing, the higher the speed and course smoothing the more smoothed the raw data. If the setting is too high, however, the response to speed and course change slows. For no smoothing, enter all zeroes.
Disable Satellite	Every GPS satellite is broadcasting abnormal satellite number(s) in its Almanac, which contains general orbital data about all GPS satellites, including those which are malfunctioning. Using this information, the GPS receiver automatically eliminates any malfunctioning satellite from the GPS satellite schedule. However, the Almanac sometimes may not contain this information. If you hear about a malfunctioning satellite from another source, you can disable it manually. Enter satellite number (max. 3 satellites) in two digits.
INIT. Position	Set initial latitude/longitude position for cold start.
ANT. Position	Enter the GPS antenna positioning bow-stern and port-starboard position.   <p>The diagram shows a top-down view of a ship's hull. A dashed line points to the bow of the ship, labeled 'Origin'. The hull is represented by a grey outline with a white interior, and a small square is located near the stern.</p>
ANT. Height	Enter the height of the GPS antenna unit above sea surface.
Rx Mode	Choose position fixing method: 2D (three satellites in view), 2D/3D (three or four satellites in view whichever is greater).
WAAS Mode	Select ON to use the WAAS mode.
WAAS Search	WAAS satellite can be searched automatically or manually. For manual search, enter appropriate WAAS satellite number.
WAAS Alarm	When the WAAS signal is lost, the audible alarm sounds one of two ways. <b>On:</b> Alarm sounds continuously until the WAAS positioning mode is available again or the alarm is acknowledged (by key operation). <b>Off:</b> Alarm sounds three times.

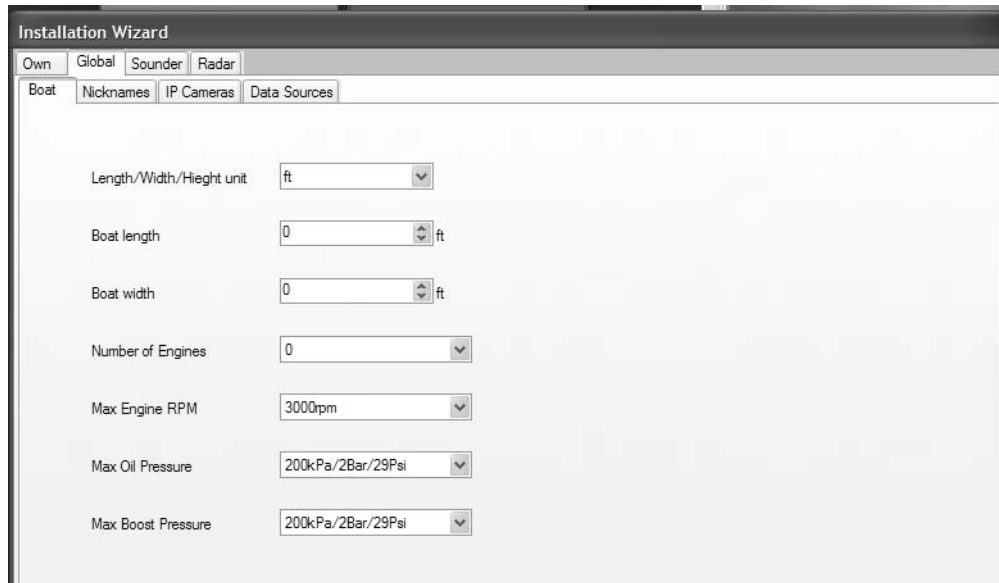
17. Click the [Next] button.

## Own-Analog Video tab

18. Choose the signal format NTSC or PAL for the connected analog video equipment.  
All analog video equipment connected to the MFD are assigned respective nicknames ("PINP1 to 4"). If you don't like the preassigned nickname, you can change it here. Use the cursor pad to select location. Rotate the **RotoKey** to select character and push it to confirm selection. Repeat this operation to complete the nicknames
19. Press the [Next] button.

## Global-Boat tab

Enter your boat's dimensions, length/width unit and engine's specifications.



The screenshot shows the 'Installation Wizard' window with the 'Global' tab selected. Under the 'Global' tab, the 'Boat' sub-tab is active. The 'Boat' sub-tab has four sub-sections: 'Boat', 'Nicknames', 'IP Cameras', and 'Data Sources'. The 'Boat' sub-section is selected, showing the following fields:

- Length/Width/Height unit: ft (pull-down menu)
- Boat length: 0 (spin box) ft
- Boat width: 0 (spin box) ft
- Number of Engines: 0 (pull-down menu)
- Max Engine RPM: 3000rpm (pull-down menu)
- Max Oil Pressure: 200kPa/2Bar/29Psi (pull-down menu)
- Max Boost Pressure: 200kPa/2Bar/29Psi (pull-down menu)

20. Choose the desired unit of length and width for the boat (ft, m) at the Length/Width/Height unit pull-down menu.
21. Set the length of boat at the Boat length pull-down menu.
22. Set the width of boat at the Boat Width pull-down menu.
23. Choose the number of engines on your boat (1, 2 or 3) at the Number of Engine pull-down menu.
24. Choose the max. scale of the tachometer (3000 rpm, 4000 rpm or 8000 rpm) at the Engine Revolution pull-down menu.
25. Choose the max. scale of the oil pressure meter (200kPa/2Bar/29Psi, 500kPa/5bar/72.5Psi or 1000kPa/10bar/145Psi) at the Max. Oil Pressure pull-down menu.
26. Choose the max. scale of the boost meter (200kPa/2Bar/29Psi, 500kPa/5bar/72.5Psi or 1000kPa/10bar/145Psi) at the Max. Boost Pressure pull-down menu.
27. Click the [Next] button.

## Global-Nickname tab

All equipment in the NavNet 3D system are assigned respective nicknames. If you don't like the preassigned nickname, you can change it here. Use the cursor pad to select location. Rotate the **RotoKey** to select character and push it to confirm selection. Repeat this operation to complete the nicknames. To update the nickname information on the network, click the [Refresh] button.

The screenshot shows the 'Installation Wizard' window with the 'Global' tab selected. Under the 'Nicknames' sub-tab, there are two columns: 'Nicknames' and 'Hostnames'. The 'Nicknames' column lists various equipment types with their preassigned names, and the 'Hostnames' column shows the corresponding hostnames. The equipment types include NavNet3D MFDDBB, Port1, Port2, Port3, FAR-2xx7, FCV1150, MCU001, and NavNet3D MFD12. Each equipment type has a corresponding input field for changing its nickname. At the bottom right, there are 'Refresh' and 'Set' buttons.

Nicknames	Hostnames
NavNet3D MFDDBB	MF100254(NavNet3D MFDDBB)
Port1	Port1(Port1)
Port2	Port2(Port2)
Port3	Port3(Port3)
FAR-2xx7	No Hostname(FAR-2xx7)
FCV1150	SOUNDER0(FCV1150)
MCU001	CU000001(MCU001)
NavNet3D MFD12	MF000008(NavNet3D MFD12)
Port1	Port1(Port1)
Port2	Port2(Port2)
Port3	Port3(Port3)

28. Click the [Next] button.

## Global-IP Camera tab

The IP cameras connected to the network are assigned a name ("IPcamera1 to 4"). If you don't like the preassigned name, you can change it here. Change the name using the cursor pad and **RotoKey** as is the Global-Nickname tab.

The screenshot shows the 'Installation Wizard' window with the 'Global' tab selected. Under the 'IP Cameras' sub-tab, there are four input fields labeled 'IPcamera1', 'IPcamera2', 'IPcamera3', and 'IPcamera4'. Each input field is currently empty, allowing the user to enter a custom name for each IP camera. At the bottom right, there are 'Refresh' and 'Set' buttons.

29. Click the [Next] button.

## **Global-Data Source tab**

The Data Source dialog box shows the sources of various nav data. In case of multiple sensors for a nav data item, for example, several position-fixing equipment, choose the sensor to use, with the pull-down menu.

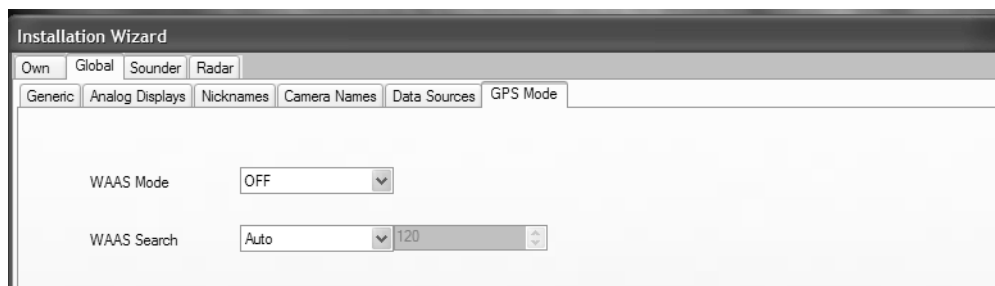
The screenshot shows the 'Installation Wizard' window with the 'Data Source' tab selected. The window has a title bar 'Installation Wizard' and a tab bar with 'Own', 'Global', 'Sounder', 'Radar', and 'Data Source'. Below the tab bar, there are five sub-tabs: 'Generic', 'Analog Display', 'Nickname', 'Camera Name', and 'Data Source'. The 'Data Source' sub-tab is active. The main area contains a list of navigation data items on the left and corresponding pull-down menus on the right. The items are: Position & SOG/COG, Heading, Speed Through Water, Water Depth, Water Temperature, Wind, Date & Time, Roll & Pitch, and AIS. Each item has a pull-down menu to its right.

Item	Description
Position & SOG/COG	Choose the position-fixing sensor to use. (GP-320B, GP-310B, etc)
Heading	Choose the heading sensor to use. (SC-30, PG-500, etc.)
Speed Through Water	Choose the speed (STW) sensor to use. (DFF, etc.)
Water Depth	Choose the depth sensor to use. (DFF, etc.)
Water Temperature	Choose the temperature sensor to use. (DFF, etc.)
Wind	Choose the wind sensor to use. (FI-303/501, WS-200, etc.)
Date & Time	Choose the date and time source to use. (GP-320B, SC-30 etc.)
Roll and Pitch	Choose the motion sensor to use. (SC-30, SC-50, etc.)
AIS	Choose the AIS equipment to use. (FA-30/50/150 etc.)

30. Click the [Next] button.

When the GP-330B or WS-200 is connected to the NMEA2000 network, go to the GPS Mode. Set the WAAS, referring to the step 30. If not, go to step 31.

31. The GPS Mode tab appears when the GP-330B or WS-200 is connected. Set the WAAS Mode and WAAS Search, and click the [Next] button. (See the list on page 21.)

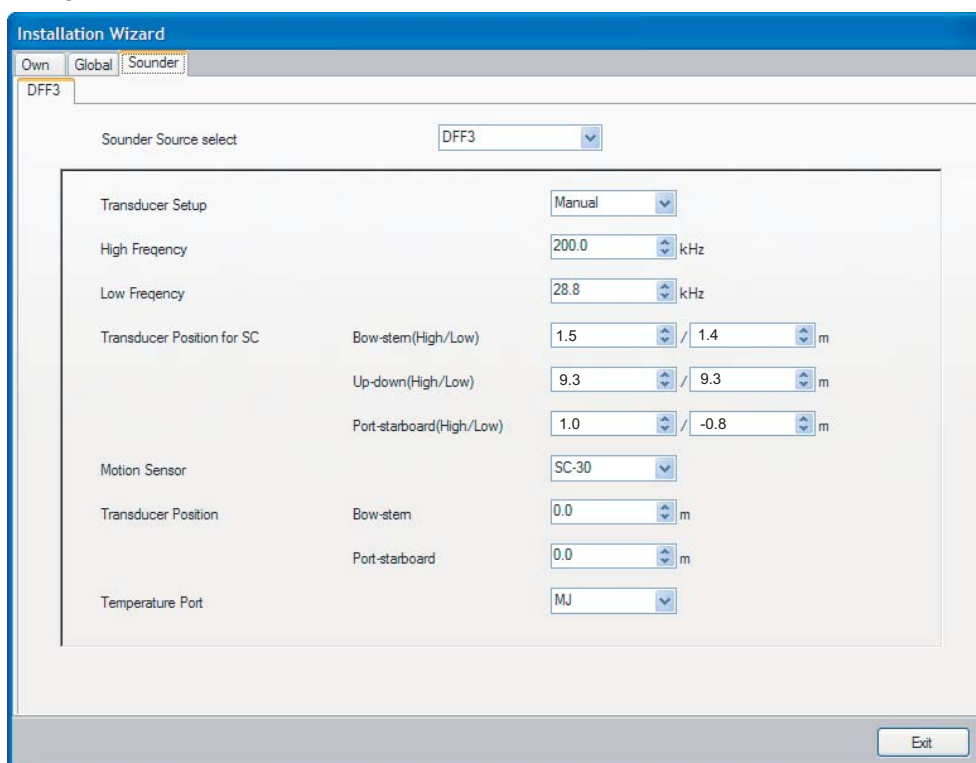


## Sounder, Radar tabs

### Sounder

32. Click the Sounder Source select dialog box, and choose the type of the network sounder.

(Setting for DFF series)



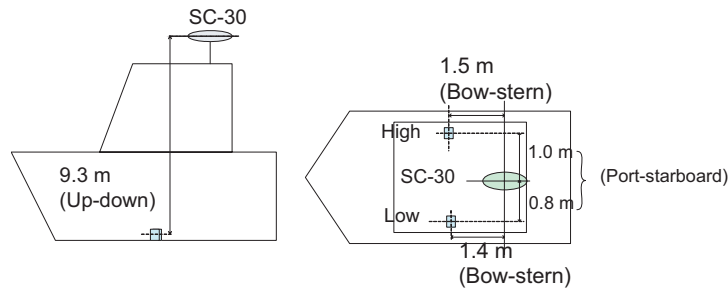
- Click the Transducer Setup pull-down menu, and choose Model Number, TD-ID or Manual, according to the transducer connected.  
**Model Number:** Furuno's transducer  
**TD-ID:** Airmar's transducer w/TD-ID  
**Manual:** Transducers other than above
- If you choose Model Number at step a), click the High Frequency and Low Frequency pull-down menus, and choose the applicable model type. For TD-ID and Manual, set the high and low frequencies.
- For DFF1 or DFF1-UHD, click the Power pull-down menu, and choose output power of the transducer.  
DFF1: 1k(W) or 600W  
DFF1-UHD: 1k(W)

- d) If the satellite compass SC-30 or SC-50/110 is connected, set the distance between antenna unit (or sensor) of the satellite compass and transducer (high and low if connected) at the Transducer Position for SC pull-down menus.

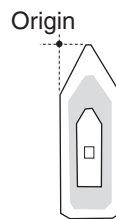
**Bow-stern:** Set the distance from antenna unit to the transducer in bow-stern direction. When the transducer is located on the fore side, set a positive value.

**Up-down:** Set the distance from the transducer to the antenna unit in the vertical direction.

**Port-starboard:** Set the distance from antenna unit to the transducer in port-starboard direction. When the transducer is located on the starboard side, set a positive value.



- e) Click the Motion Sensor pull-down menu, and choose SC-30 or SC-50/110 if connected.  
f) Set the transducer position at the Transducer Position pull-down menus.



- g) If the DFF3 is equipped with a water temperature sensor, click the Temperature Port pull-down menu, and choose the temperature source, MJ (NMEA0183 connector), High-freq(ency) or Low-freq(ency).  
h) If a radar sensor is connected, click the Next button to continue.

**Note:** For DFF3, set the tap setting in the network sounder after setting up all the MFDs. For details, see the Operator's Manual for DFF3.



(Setting for ETR)

Installation Wizard

Own Global Sounder Radar

ETR-30N

Sounder Source select: ETR-30N

Transducer Setup

Model Number

High Frequency: 50kHz:50BL-12HR:C

Low Frequency: 50kHz:50BL-12HR:C

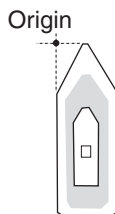
Transducer Position

Bow-stem: 0.0 ft

Port-starboard: 0.0 ft

Next Exit

- Click the Transducer Setup pull-down menu, and choose Model Number or Manual, according to the transducer connected.  
**Model Number:** Furuno's transducer  
**Manual:** Transducers other than Furuno
- If you choose Model Number at step a), click the High Frequency and Low Frequency pull-down menus, and choose the applicable model type. For Manual, set the high and low frequencies with the respective pull-down menus.
- Use the arrow buttons at Transducer Position to set transducer position.



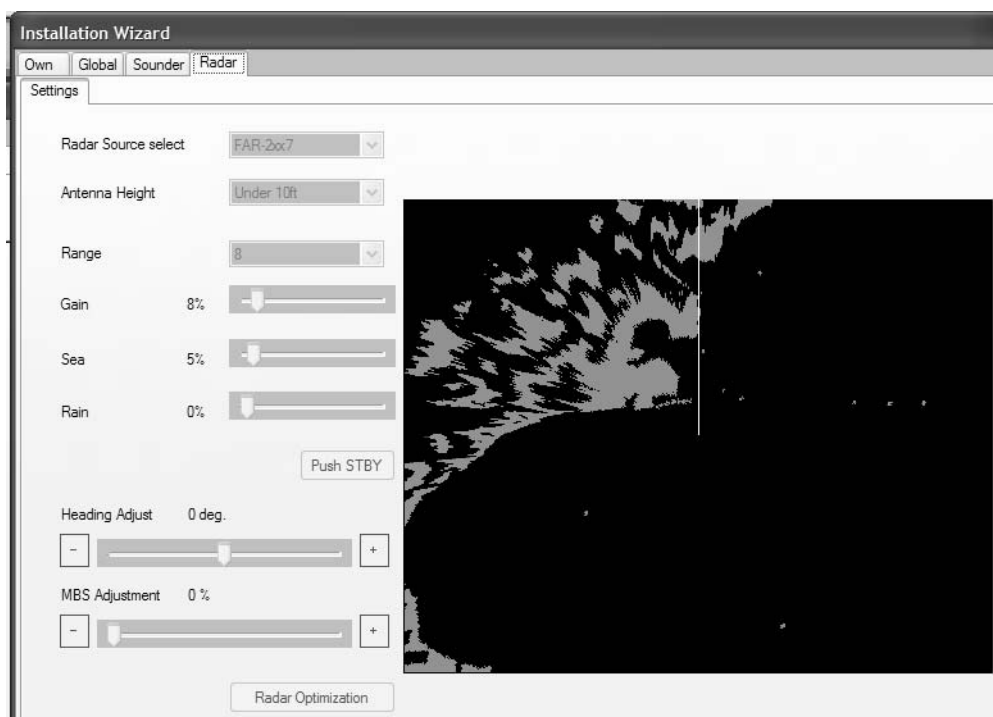
- If a radar sensor is connected, click the Next button to continue.

(For FCV-1150)

Do the step c) shown above.

## Radar

Set the Radar dialog box according to the radar connected.



33. Click the Radar Source select pull-down menu, and choose the radar type connected, DRS RADOME, DRS OPEN or FAR-2xx7.

For “FAR-2xx7”, steps 32 through 35 shown below cannot be done. Set these items on the FAR-2xx7 radar.

34. Click the Antenna Height pull-down menu, and choose the height of the antenna above the waterline, among Under 10ft, 10ft-30ft or Over 30ft.

35. Do the heading adjustment as follows.

You have mounted the radar sensor facing straight ahead in the direction of the bow. Therefore, a small but conspicuous target dead ahead visually should appear on the heading line (zero degrees).

In practice, you will probably observe some small errors on the display because of the difficulty in achieving accurate initial positioning of the radar sensor. The following adjustment will compensate for this error.

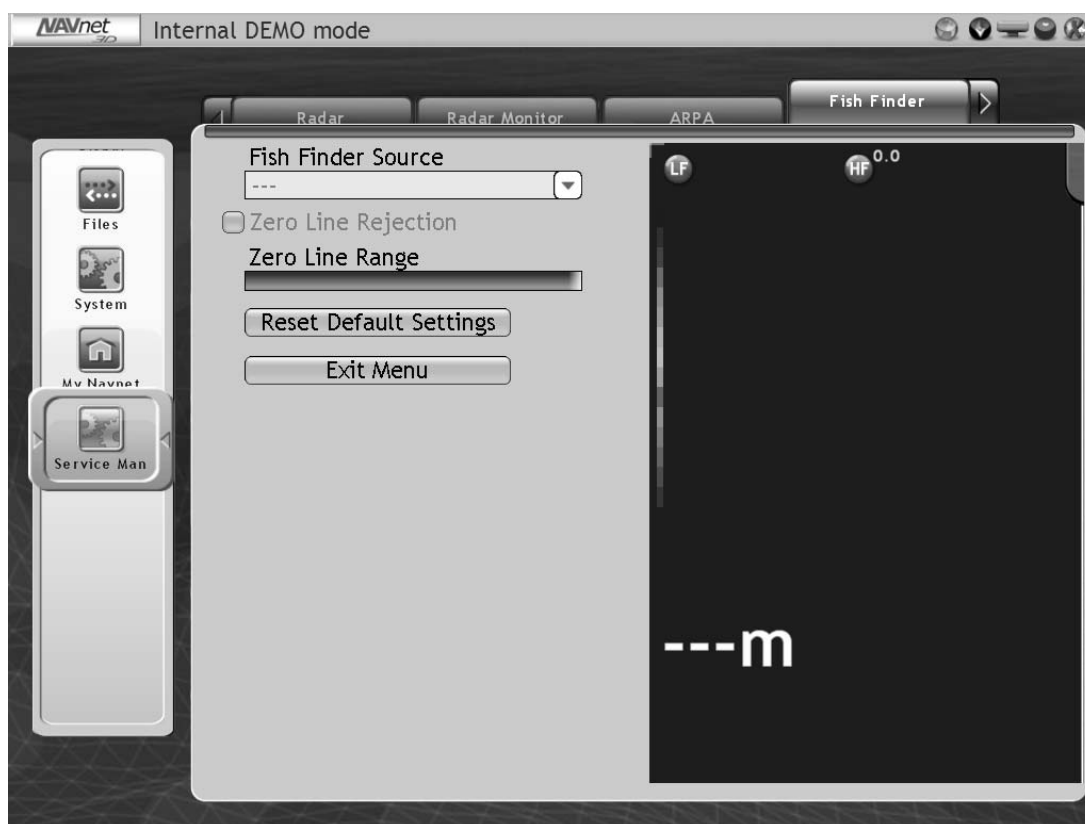
- Set ship's heading toward a suitable target (for example, ship or buoy).
- Click the Range pull-down menu, and choose a range between 0.125 and 0.25 nautical miles.
- Click the [Push TX] button to transmit.  
The radar picture appears on the right-half of the Radar dialog box.
- If necessary, adjust the gain, sea clutter and rain clutter using slider bars.  
Place the cursor on the slider bar, and press the cursor pad while pressing the left-click button.
- Click the [-] [+] buttons for Heading Adjust to bisect the target with the heading line.
- As a final test, move the boat towards a small buoy and confirm that the buoy shows up dead ahead on the radar when it is visually dead ahead.

36. If main bang appears at the screen center, click the [-] [+] buttons for MBS Adjustment so that the main bang disappears while watching the radar echo at the right-hand side of the display.
37. Click the [Radar Operation] button to adjust the tuning and video automatically.
38. Click the [Save and Exit] button to finish the Installation Wizard.

### **Setting the zero line area (For DFF series only)**

Turn the zero line (transmission line) on or off. When turned off, the line is not shown, which allows you to better watch fish echoes near the surface. The width of the line changes with transducer used and installation characteristics. If the width of the line is 1.0 m or more, set the line area as below.

1. At the normal operation mode, press the **MENU** key while pressing the **CNTRL** key down to open the Serviceman menu.
2. Rotate the **Rotokey** to choose the Fish Finder tab, and push the **Rotokey**.



3. Rotate the **Rotokey** to choose Zero Line Rejection, and push the **Rotokey** to turn the zero line on.  
The icon turns green color, and the cursor moves to Zero Line Range.
4. For DFF3, rotate the **Rotokey** to set the effective area (setting area: 1.0 to 2.0 m) and push the **Rotokey**. For DFF1 or DFF1-UHD, turn the zero line on or off.
5. Press the **MENU** key to close the menu.

## 3.2 Setup for Multiple MFDs in the Network

When you have multiple MFDs in the network, designate one as the DHCP (dynamic Host Configuration Protocol) server.

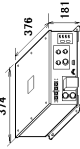


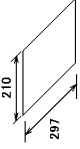


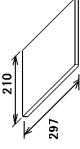
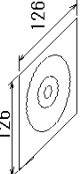
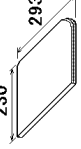
1. Confirm that applicable DIP switches connected MFDs on the internal hub to ON.
2. Turn on the MFD chosen to act as DHCP server.
3. Select Language and click the [Next] button.

The system counts the number of sounders, radars and other sensors you have connected and displays the results. Allow the system to count the number of sensors, which takes about 30 seconds.

4. Set Master (DHCP Server) setting to ON.
5. Click the [Save and Exit] button. (The unit turns off automatically after one minute.)
6. Turn on the server MFD.
7. Turn on all other MFDs in the network.
8. Carry out the Installation Wizard settings on the master MFD, referring to section 3.1.
9. Set up the next MFD as follows:
  - a) Press the **POWER** key to turn the power on.
  - b) Choose language and click the [Next] button.
  - c) Choose OFF from the Master (DHCP Server) setting box.
  - d) Set up the MFD using the Installation Wizard, and wait for the other MFD's setting are finished.
10. Set up other MFDs.
11. After setting up all MFDs, click the [Save and Exit] button on the master MFD and the unit goes off automatically.
12. Click the [Save and Exit] button on other MFDs in the order in which they were set up.

The master MFD starts the normal application, and client MFDs go to the sleep mode, which is shows the no display though the power is turned on. The power LED lights orange.
13. Press the **POWER** key on the master MFD for three seconds to turn off the master MFD. Confirm that other MFDs also are turned off.
14. Press the **POWER** key on master MFD. Confirm that the master MFD starts the normal application, and slave MFDs go to the sleep mode.

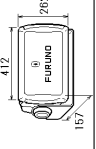
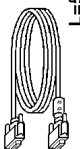
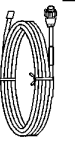

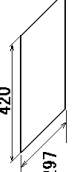
To escape from the sleep mode to the normal mode, press the **POWER** key.

N A M E	O U T L I N E	DESCRIPTION/CODE No.	Q T Y
ユニット			
制御部 PROCESSOR UNIT		MPU-001-E/J 000-011-919-00 **	1
予備品			
予備品		SP19-00501	1
SPARE PARTS		001-023-090-00	
工事材料			
ケーブル組品		CP19-00600	
CABLE ASSEMBLY		FRUDD-18AFFM-L180 000-164-608-10	1
工事材料		CP19-00601	1
INSTALLATION MATERIALS		001-023-100-00	
図書			
ヒューズ変更のお願い NOTIFICATION DOCUMENT		C42-00705-* 000-167-240-1*	1
取扱説明書 OPERATOR'S MANUAL		OM*-44461-* 000-167-235-1* **	1
操作要領書(オペラ) OPERATOR'S GUIDE		MLG-44440-* 000-170-497-1*	1
装備要領書 INSTALLATION MANUAL		IM*-44460-* 000-167-222-1* **	1
取扱説明CD OPERATOR'S MANUAL CD		NAVNET3 0/M *CD-ROM* NAVNET3 0/M *CD-ROM* 000-170-477-1* 000-167-721-1*	1
書類ケース DOCUMENTS CASE		H293XW230XT18 H293XW230XT18 000-168-580-11 000-168-580-10	1

1.コード番号末尾の[\*\*]は、選択品の代表コードを表します。  
CODE NUMBER ENDING WITH "\*\*" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL  
2.一部の図書は、書類ケースに収められています。  
A PART OF THE DOCUMENTS IS PUT IN THE DOCUMENTS CASE.

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

C4446-Z03-H

N A M E	O U T L I N E	DESCRIPTION/CODE No.	Q T Y
ユニット			
ディスプレイコントロールユニット DISPLAY CONTROL UNIT		DCU12 000-011-671-00	1
予備品			
予備品		SP19-00601	1
SPARE PARTS		001-023-040-00	
付属品			
付属品		FP19-01101	1
ACCESSORIES		001-023-060-00	
工事材料			
ケーブル組品		CP19-00800	
CABLE ASSEMBLY		DVI-D/D S-LINK 5M 001-132-960-10	1
ケーブル組品LAN		MOD-WPAS0001-030+ 000-164-609-10	1
LAN CABLE ASSEMBLY		MJ-A3SPF0013-035C(5A) 000-157-939-10	1
CABLE ASSEMBLY		CP19-00801	1
工事材料		001-023-050-00	
SPARE PARTS			
図書			
フラッシュマウント型紙 FLUSH MOUNTING TEMPLATE		C42-00704-* 7/11 000-167-224-1*	1

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

C4446-Z02-D



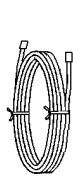

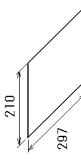
PACKING LIST

MCU-001

19AY-X-9851 -3

1/1

A-3


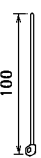
NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット			
操作部		MCU-001	1
CONTROL UNIT		000-011-666-00	
付属品		ACCESSORIES	
付属品		FP19-01201	1
ACCESSORIES		001-033-760-00	
		CP19-00700	
工事材料	INSTALLATION MATERIALS		
ケーブル(組品)LAN		MOD-2072-050+	1
LAN CABLE ASSEMBLY		001-167-890-10	
工事材料		CP19-00701	1
INSTALLATION MATERIALS		001-023-070-00	
図書			
フラッシュマウント型紙		C42-00703-* 7/14	1
FLUSH MOUNTING TEMPLATE JP/EN		000-167-223-1*	

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

C4446-Z01-D

FURUNO


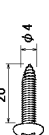
A-4

19AY-X-9401 -3			1/1		
CODE NO.		001-023-100-00			
TYPE		CP19-00601			
工事材料表		MPU-001, FSV-8503, FSV-3503/3503S			
INSTALLATION MATERIALS					
番号 NO.	名 称 NAME	略 図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	+5x30タッピングボルト 1ヶ SELF-TAPPING SCREW		6X30 SUS304 CODE NO. 000-162-614-10	4	
2	ケーブルタイ CABLE TIE		CV-100N CODE NO. 000-162-167-10	4	

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

FURUNO ELECTRIC CO., LTD.

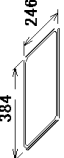
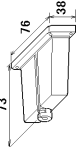
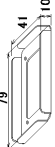
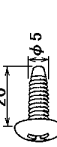
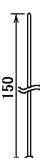
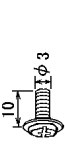
C4446-M01-C

MOU-001			CP19-00701		001-023-070-00		19AY-X-9402 -1	
TYPE			CODE NO.		1/1			
工事材料表								
INSTALLATION MATERIALS								
番号 NO.	名 称 NAME	略 図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q T Y	用途／備考 REMARKS			
1	FパケットパBB PACKING BB		19-028-1581-2	1				
			CODE NO. 100-340-742-10					
2	+152カパ スクリュー SELF-TAPPING SCREW		4X20 SUS304	4				
			CODE NO. 000-158-850-10					

型式/コード 番号が2版の増合、下版より上版に代わる通設部品であり、どちらかが入っています。 なお、品量は変わりません。  
TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.  
(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

FURUNO

CODE NO.		001-023-050-00	19AY-X-9403 -1
TYPE	CP19-00801		

工事材料表			DOU12		
INSTALLATION MATERIALS					
番号 NO.	名称 NAME	略 図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	Fマウントパディング 12 MOUNTING SPONGE		19-028-2062-0 CODE NO. 100-340-040-10	1	
2	DVIハブ - DVI COVER		19-028-2131-1 CODE NO. 100-340-111-10	1	
3	DVIハブ -オサ板 COVER FIXING PLATE		19-028-2132-1 CODE NO. 100-340-121-10	1	
4	+152タップスcrew 1/2 SELF-TAPPING SCREW		5X20 SUS304 CODE NO. 000-162-608-10	4	
5	コンベックス CONVEX		CV-150B CODE NO. 000-167-183-10	1	
6	+Hタイプ 小スcrew BINDING HEAD SCREW		M3X10 SUS304 CODE NO. 000-162-662-10	4	

型式/コード 番号が2版の増合、下版より上版に代わる通設部品であり、どちらかが入っています。 なお、品量は変わりません。  
TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.  
(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

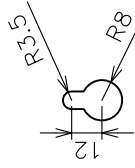




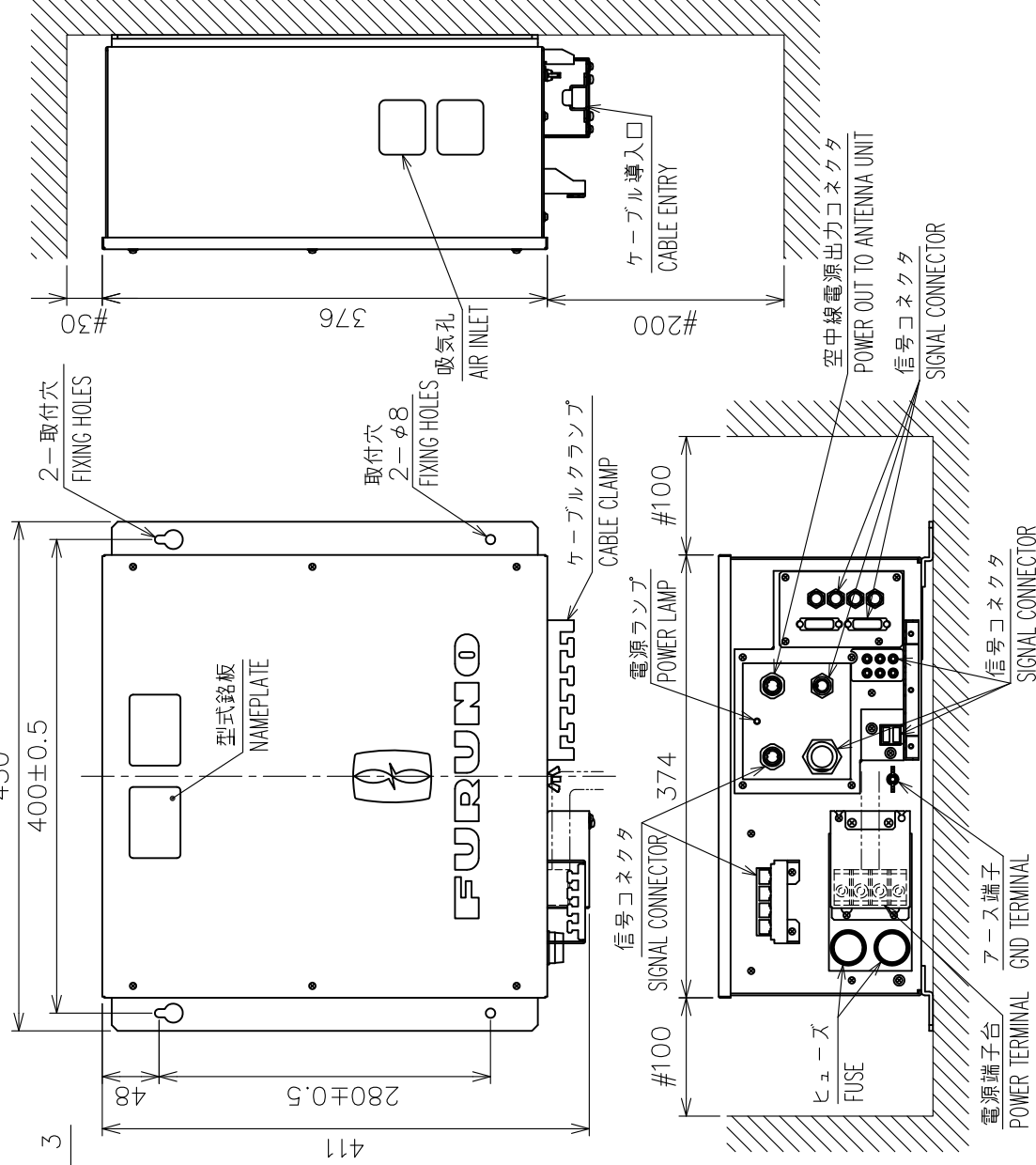
FURUNO									
SHIP NO.		SPARE PARTS LIST FOR		U S E		TYPE		19AY-X-9301 -0 1/1	
						SP19-00601		BOX NO. P	

表1 TABLE 1

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



取付部詳細 (尺度: 1/3)  
DETAIL FOR FIXING (SCALE: 1/3)

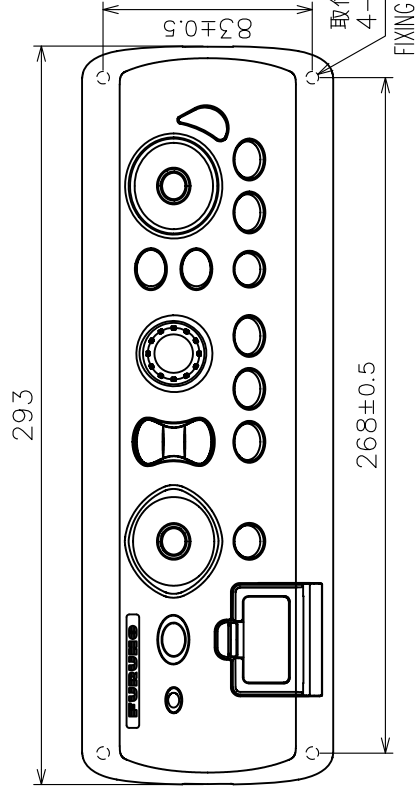
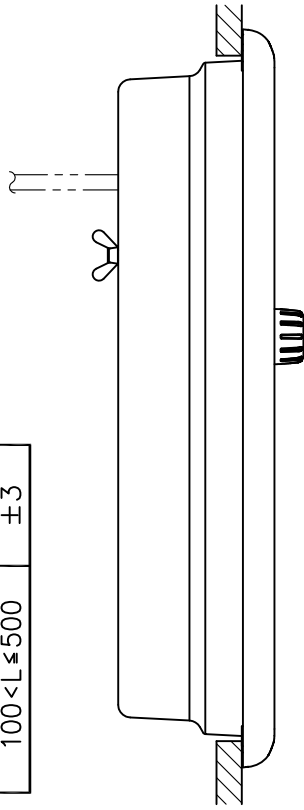


- 注記 1) 指定外の寸法公差は表1による。  
2) #印寸法は最小サービス空間寸法とする。  
3) 取付用ネジはトラスタッピンネジ呼び径6×30を使用のこと。
- NOTE 1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.  
2. #: MINIMUM SERVICE CLEARANCE.  
3. USE TAPPING SCREWS φ6x30 FOR FIXING THE UNIT.

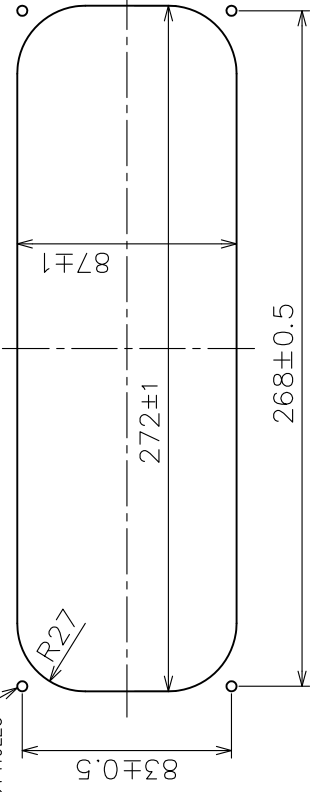
DRAWN	6/Aug/2012	I. YAMASAKI	TITLE	MPU-001
CHECKED	6/Aug/2012	H. MAKI	名称	制御部
APPROVED	8/Aug/2012	Y. NISHIYAMA	外寸図	
SCALE	1/6	WSS 15	NAME	PROCESSOR UNIT
DWG.No.	C4446-G01-B	REF.No.	19-028-100G-4	OUTLINE DRAWING

表1 TABLE 1

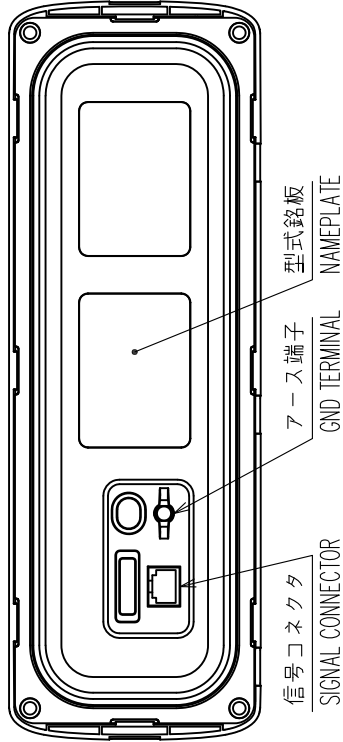
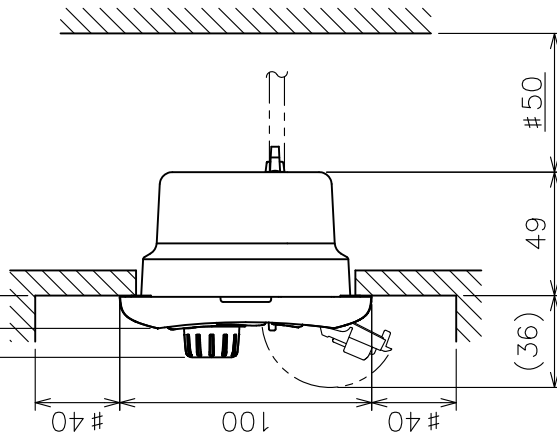
寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
$L \leq 50$	$\pm 1.5$
$50 < L \leq 100$	$\pm 2.5$
$100 < L \leq 500$	$\pm 3$



4-取付穴位置  
PILOT HOLES



取付穴寸法図  
CUTOUT DIMENSIONS



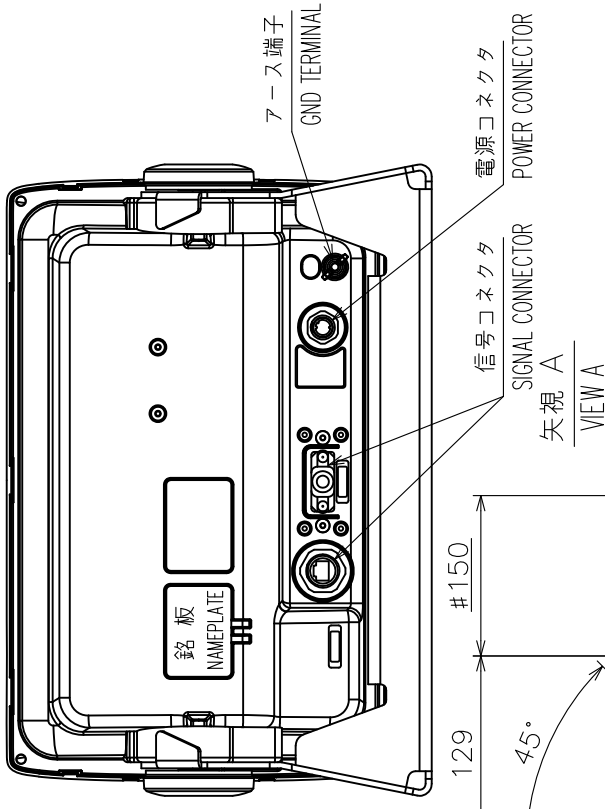
## 注 記

- 1) # 印寸法は最小サービスク間寸法とする。
- 2) 指定外の寸法公差は表1による。
- 3) 取付にはトラスタッピンネジ呼び径4×20を使用のこと。

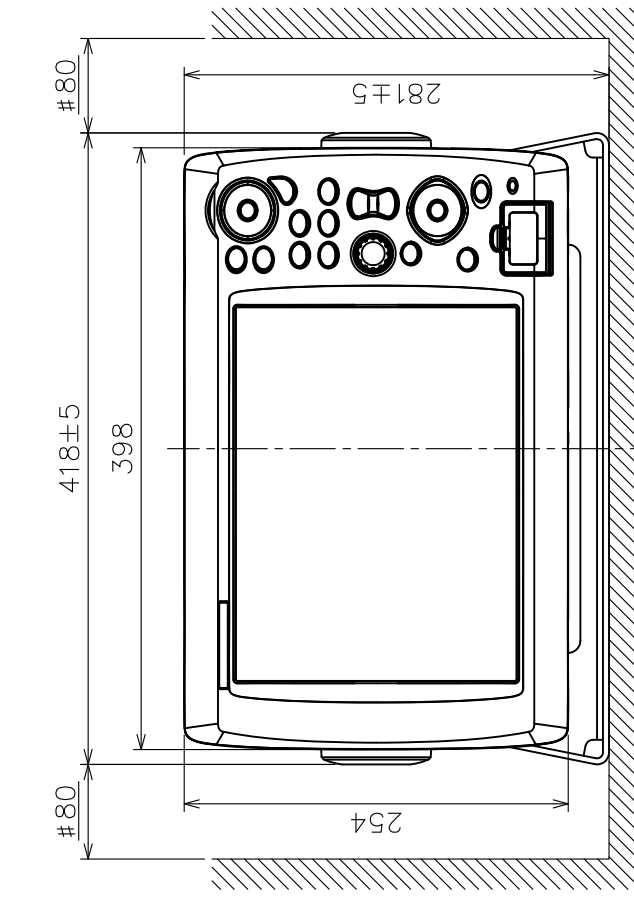
## NOTE

1. #: MINIMUM SERVICE CLEARANCE.
2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
3. USE TAPPING SCREWS  $\phi 4 \times 20$  FOR FIXING THE UNIT.

DRAWN	Jun. 19 '07	I. YAMASAKI	TITLE	MCU-001
CHECKED	Jun. 19 '07	I. TAKENO	名 称	操作部
APPROVED	Jun. 27 '07	R. Esumi	MFDBB	外寸図
SCALE	1/3	WASS 1.0 kg	NAME	CONTROL UNIT
DWG. No.	C4446-G02-A	REF. No.	19-028-150G-1	OUTLINE DRAWING



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



- 1) #印寸法は最小サージス空間寸法とする。
- 2) 指定外の寸法公差は表 1 による。
- 3) 取付には＋トラスタップピンネジ 5×20 を使用のこと。

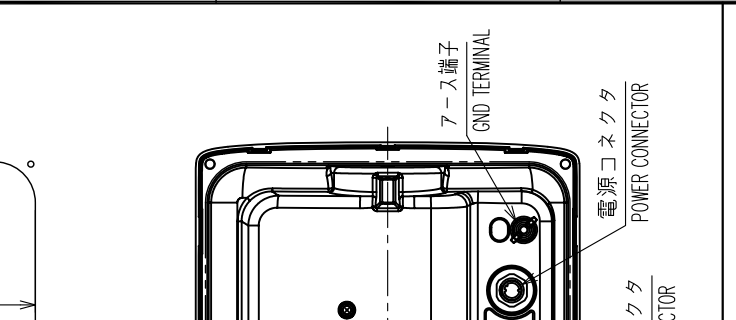
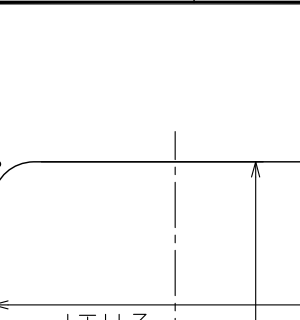
## 1. #. MINIMUM SERVICE CLEARANCE.

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

3. USE TAPPING SCREWS Ø5x20 FOR FIXING THE UNIT.

DRAWN	Oct. 17 '07	I. YAMASAKI			TITLE	DCU12
CHECKED	Oct. 18 '07	I. TAKENO			名称	ディスプレイコントロールユニット (卓上装備)
APPROVED	Oct. 22 '07	R. ESUMI		WFDDB		外寸図
SCALE	1/5	MASS 5.7 kg	1/100		NAME	DISPLAY CONTROL UNIT (TABLETOP MOUNT)
DWG. No.	C4446-G03-B		REF. No.		Q1711NF DRAWING	
19-078-2153-3						

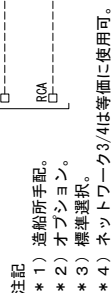
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「タタ」

- |      |                        |
|------|------------------------|
| クタクタ | POWER CONNECTOR        |
| クタクタ |                        |
| クタクタ | コンソールユニット (埋込装備)       |
| クタクタ |                        |
| クタクタ | COL UNIT (FLUSH MOUNT) |
| クタクタ |                        |

IC	
	COL UNIT (FLUSH MOUNT)
	ソートローユニット (埋込装備)



DRAWN	17/May/2013	I. YAMASAKI
CHECKED	17/May/2013	H. MAKI
APPROVED	17/May/2013	H. MAKI
SCALE		MASS      kg
TITLE	MFD88	
名称	マルチファンクションディスプレイ	
	相互結線図	
NAME	MULTI-FUNCTION DISPLAY	
DWG No.	C4446-C01-E	REF. No. 19-028-7003-3
INTERCONNECT I/O DIAGRAM		





(Elemental Chlorine Free)

The paper used in this manual  
is elemental chlorine free.

## FURUNO ELECTRIC CO., LTD.

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