

Installation Manual Multi Function Display Black Box Type TZTBB

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SAFETY INSTRUCTIONS

The installer must read the safety instructions before attempting to install 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.

(Examples of symbols)



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.

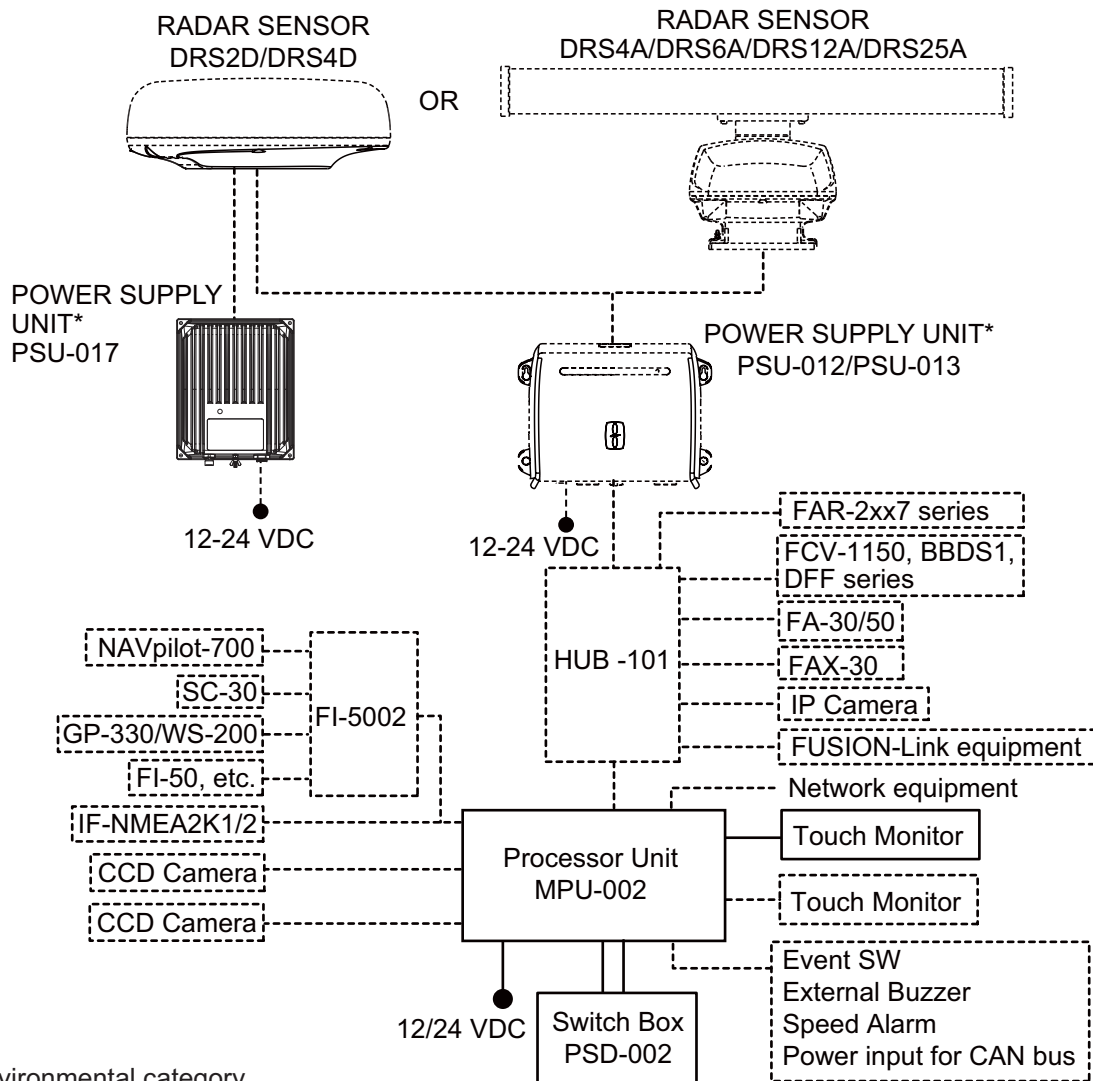


Observe the following compass safe distances to prevent interference to a magnetic compass:

	Standard compass	Steering compass
MPU-002	0.45 m	0.30 m
PSD-002	0.35 m	0.30 m

SYSTEM CONFIGURATION

Basic configuration is shown with solid line.



Environmental category

Sensor units: Exposed to the weather

All other units: Protected from the weather

*: The power supply unit is required when you connect the radar sensor.

PSU-012: w/DRS2D/4D/4A/6A/12A

PSU-013: w/DRS25A

PSU-017: w/DRS2D/4D

For details of the power supply unit, see the installation manual of the radar sensor (IME-35670).

Note 1: Do not connect or disconnect the DVI cable between TZTBB and the touch monitor while TZTBB is powered.

Note 2: When the two monitors are connected, the resolutions and the aspect ratio should match between two monitors. The two monitors show same images (compatible with clone mode only).

EQUIPMENT LISTS

Standard supply

Name	Type	Code No.	Qty	Remarks
Processor Unit	MPU-002	-	1	
Switch Box	PSD-002	-	1	
Installation Materials	CP19-01700	000-022-530	1	CP19-01701
Accessories	FP19-01801	001-205-650	1	
Spare Parts	SP19-01401	001-205-630	1	Fuses

Optional supply

Name	Type	Code No.	Remarks
Joint Box	TL-CAT-012	000-016-714-01	For LAN network
NMEA2000-Interface Unit	IF-NMEA2K1	-	
NMEA Data Converter	IF-NMEA2K2	-	
Network HUB	HUB-101	-	
Junction Box	FI-5002	-	
Rectifier	RU-3423	000-030-443	
	PR-62	000-013-484	100VAC
		000-013-485	110VAC
		000-013-486	220VAC
		000-013-487	230VAC
RU-1746B-2	000-030-439		
CAN bus Cable Assy.	M12-05BM+05BF-010	001-105-750-10	w/connectors (light), 1 m
	M12-05BM+05BF-020	001-105-760-10	w/connectors (light), 2 m
	M12-05BM+05BF-060	001-105-770-10	w/connectors (light), 6 m
	M12-05BFFM-010	001-105-780-10	w/connector (light), 1 m
	M12-05BFFM-020	001-105-790-10	w/connector (light), 2 m
	M12-05BFFM-060	001-105-800-10	w/connector (light), 6 m
	CB-05PM+05BF-010	000-167-968-10	w/connectors (heavy), 1 m
	CB-05PM+05BF-020	000-167-968-10	w/connectors (heavy), 2 m
	CB-05PM+05BF-060	000-167-970-10	w/connectors (heavy), 6 m
	CB-05BFFM-010	000-167-971-10	w/connector (heavy), 1 m
	CB-05BFFM-020	000-167-972-10	w/connector (heavy), 2 m
	CB-05BFFM-060	000-167-973-10	w/connector (heavy), 6 m
DVI-D Cable Assy.	DVI-D/D S-LINK 5M	001-132-960-10	24 pin, for video output, 5 m
	DVI-D/D S-LINK 10M	001-133-980-10	24 pin, for video output, 10 m
External Buzzer	OP03-136	000-086-443	Buzzer: PKB5-3A40
Network (LAN) Cable	MOD-Z073-030+	000-167-171-10	LAN cable, straight, 2 pairs, 3 m
	MOD-Z072-020+	001-167-880-10	LAN cable, cross-pair, 2 m
	MOD-Z072-050+	001-167-890-10	LAN cable, cross-pair, 5 m
	MOD-Z072-100+	001-167-900-10	LAN cable, cross-pair, 10 m

EQUIPMENT LISTS

Name	Type	Code No.	Remarks
CAN bus Connector	SS-050505-FMF-TS001	000-168-603-10	Micro style: 3
	NC-050505-FMF-TS001	000-160-807-10	Mini style: 2, micro style: 1
	LTWMC-05BMMT-SL8001	000-168-604-10	Micro style, male, termination resistor
	LTWMN-05AMMT-SL8001	000-160-508-10	Mini style, male, termination resistor
	LTWMC-05BFFT-SL8001	000-168-605-10	Micro style, female, termination resistor
	LTWMN-05AFFT-SL8001	000-160-509-10	Mini style, female, termination resistor
	FRU-0505-FF-IS	001-077-830-10	w/inline terminator
MJ Cable Assy.	MJ-A6SPF0016-005C	000-159-689-10	for FAX-30
Operator's Manual	OME-44700-*	000-176-016-1*	English
	OMJ-44700-*	000-176-015-1*	Japanese

1. MOUNTING

1.1 Mounting Considerations

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

- The temperature at the mounting location shall be between -15°C and +55°C (wireless LAN: 0°C and +55°C).
- The humidity at the mounting location shall be 93% or less at 40°C.
- Locate the unit away from exhaust pipes and ventilators.
- The mounting location should be well ventilated.
- Mount the unit where shock and vibration are minimal (comply with IEC 60945 Ed.4).
- Keep the unit away from electromagnetic field generating equipment such as motors and generators.
- For maintenance and checking purposes, leave sufficient space around the unit and leave slack in cables. Minimum recommended space is shown in the outline drawings.
- A magnetic compass will be affected if the equipment is placed too close to it. Observe the compass safe distances shown in the SAFETY INSTRUCTIONS to prevent disturbance to the magnetic compass.

1.2 Processor Unit

The processor unit MPU-002 can be mounted on the tabletop or a bulkhead. Refer to the outline drawing for mounting dimensions. For bulkhead mounting, be sure the unit bottom is oriented downward.

Tabletop/ bulkhead mount

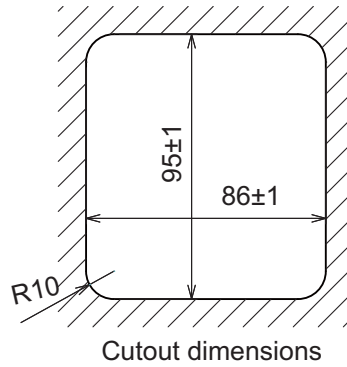
1. Decide the mounting location for the unit.
2. Make four pilot holes for self-tapping screws in the mounting location.
3. Screw the self-tapping screws ($\phi 6 \times 20$, 4 pcs.) into the pilot holes, leaving a clearance of 5 mm.
4. Hang the unit on the screws.
5. Fasten all screws.

1.3 Switch Box

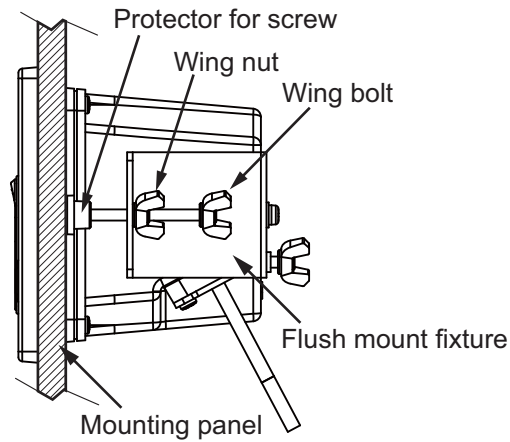
The switch box PSD-002 is designed to be flush mounted on a flat bulkhead. Refer to the outline drawing for mounting dimensions.

Procedure

1. Make a cutout in the mounting location as shown below.

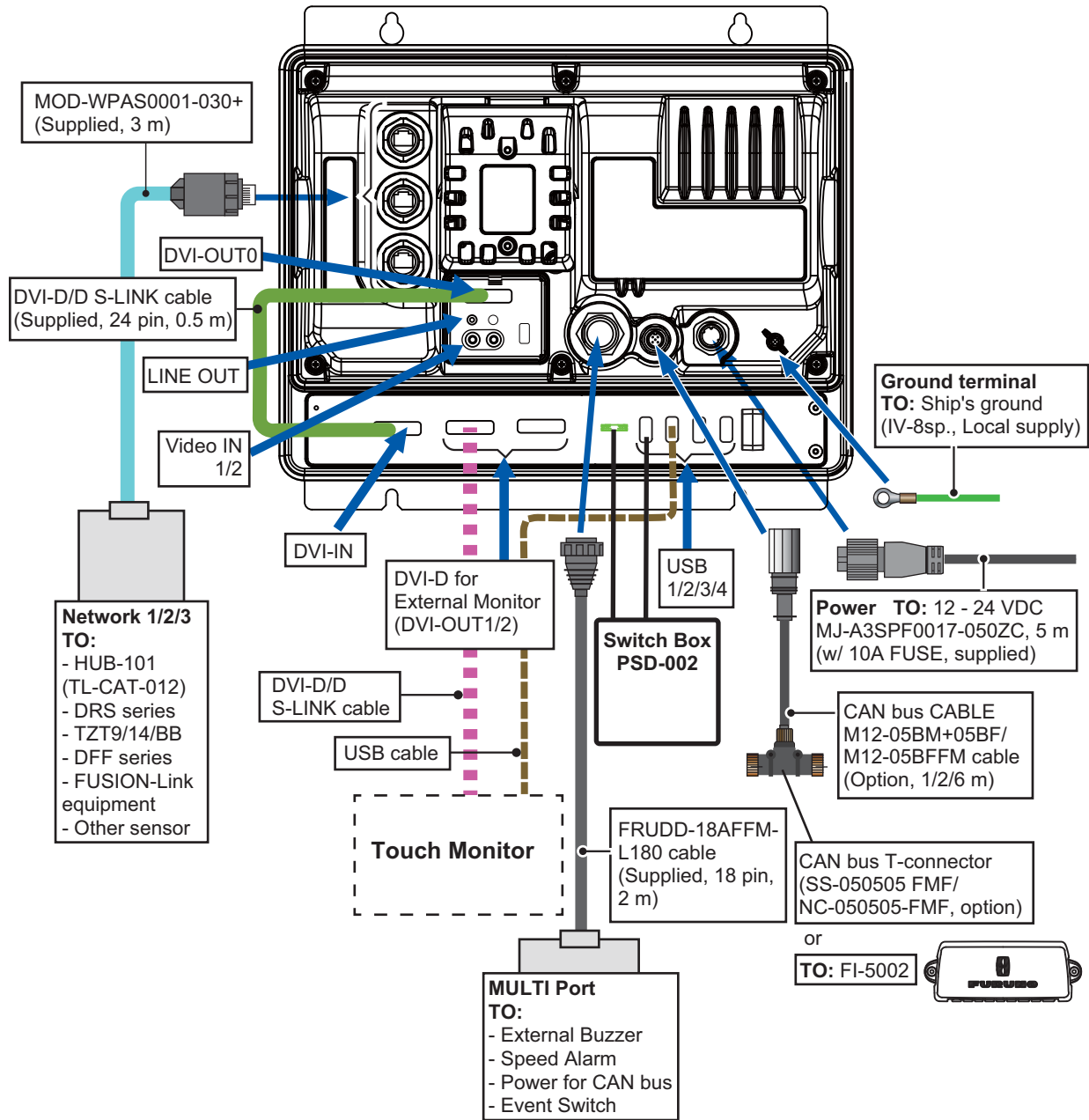


2. Insert the sponge to the switch box from the rear side.
3. Set the unit to the cutout and fix the flush mount fixture from the rear side with two screws.
4. Tighten the wing bolts to fasten the switch box.
5. Tighten the wing nuts to fasten the flush mount fixture.



2. WIRING

2.1 Wiring Instructions



2.1.1 NETWORK ports

TZTBB uses a standard TCP/IP Ethernet to share radar/sounder images and other navigation information from devices connected to the network system. In any single NavNet TZtouch network, a combination of up to **six** TZT series devices may be connected to each other. All NavNet TZtouch network components have integrated regular RJ45 Ethernet port(s), three on TZTBB. The MOD-WPAS0001-030+ cable (supplied) connects to equipment in the network.

2. WIRING

2.1.2 MULTI port

Use the cable assembly FRUDD-18AFFM-L180 (supplied, 2 m) for the event switch, external buzzer, speed alarm and the power for CAN bus. This cable has an 18-pin connector. For example, a MOB contact closure input may be connected to pin 15 and 11*.

*Note that any TZTBB interfaces to virtually any MOB system or event switch (point save) contact closure signal using these pins.



Pin No.	Color	Function	Remark (Port No.)
18	Light green	NET-C IN (0V)	CAN bus Power IN. When 12V DC power is applied to these pins, the CAN bus port will be powered (up to 1 ampere).
17	Pink	NET-S IN (+12V IN)	
16	Purple	Shield	
15	White	BUZZER or EVENT IN	External Buzzer Output or MOB/Event Input (Contact Closure)
14	Gray	SPEED-ALARM C	Speed alarm contact. Can trigger an external alarm or device when speed exceeds the limit specified.
13	Yellow	SPEED-ALARM H	
12	Black/White	+12V	External buzzer power ONLY (100 mA max.)
11	Black	GND	GND for Event/MOB Input
10	Blue/White	-	For debug
9	Blue	-	
8	Green/White	-	
7	Green	-	
6	Orange/White	-	
5	Orange	GND	
4	Brown/White	DC_N	
3	Brown	PWR_SW	
2	Red/White	GND	
1	Red	GND	

2.1.3 CAN bus port

Every TZTBB has one CAN bus port (micro style connector). All TZT9/14 MUST be connected to the same CAN bus backbone. However, the TZTBB and DRS (radar sensor) CAN bus ports cannot be connected together. The TZTBB and DRS (radar sensor) use “Ethernet Bridging” to link the DRS CAN bus and the TZTBB CAN bus data. Refer to paragraph 2.2.1 for more information. Note that the TZTBB CAN bus port is not powered unless external power is applied to the FRUDD-18AFFM-L180 cable of MULTI port and must be connected to a properly configured CAN bus network.

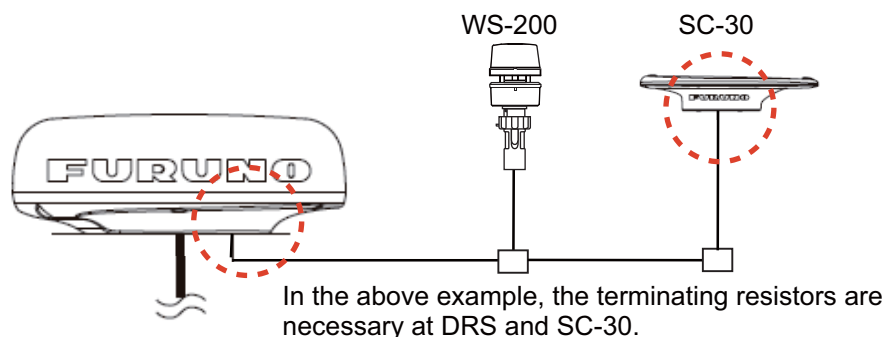
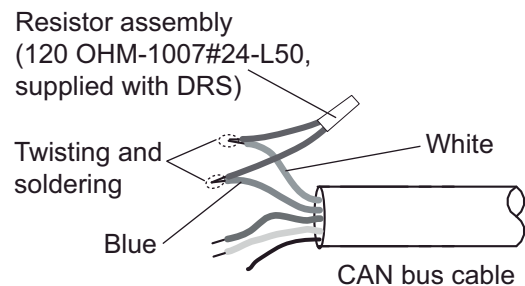
What is CAN bus?

CAN bus is a communication protocol that shares multiple data and signals through a single backbone cable. You can simply connect any CAN bus devices onto the backbone cable to expand your network onboard. With CAN bus, IDs are assigned to all the devices in the network, and the status of each sensor in the network can be detected. All the CAN bus devices can be incorporated into the NMEA2000 network. For detailed information about CAN bus wiring, see “Furuno CAN bus Network Design Guide” (Type: TIE-00170) on Tech-Net.

DRS radar sensor

In addition to the CAN bus port found on the TZTBB, all DRS radar sensors have one powered CAN bus port (terminal strip connector). You may directly connect various Furuno CAN bus sensors to the DRS radar sensor without having to run a separate CAN bus cable to the mast. The total number of sensors that can be connected to the CAN bus DRS port without external

power connection depends on power consumption. The DRS can supply up to 1 amp (20LEN) to the DRS CAN bus network. Note that the CAN bus network connected to the DRS is its own independent CAN bus backbone and needs to be terminated at both ends by a terminating resistor. A 120 Ohm resistor is standard supply with the DRS to terminate the CAN bus. For example, if you install a SC-30/WS-200 with the DRS CAN bus port, you must have two terminators on the backbone. One can be at the sensor and the other located inside the DRS as shown in the inset at right.



Refer to the DRS Installation Manual for more information about connection.

NMEA0183 equipment

To connect an NMEA0183 equipment to TZTBB, use the CAN bus network via the optional NMEA data converter IF-NMEA2K2 (or IF-NMEA2K1). This NMEA connection can accept a baud rate of 4800 or 38400.

Heading input to TZTBB allows functions such as Radar Overlay and course stabilization (North up, Course up, etc.) in the radar operating modes. The NMEA0183 heading refresh rate needs to be 100 ms in order for any radar function to work properly. NMEA0183 heading can be accepted on any CAN bus port at a baud rate up to 38400 bps. In other words, data sent (IF-NMEA) and received (TZTBB) must use the same baud rate for each individual data port.

Note: Heading data from a CAN bus source/sensor is always at the correct refresh speed for the DRS ARPA function.

2.1.4 VIDEO, DVI-D, AUDIO or USB ports

How to connect VIDEO, DVI-D, AUDIO or USB ports

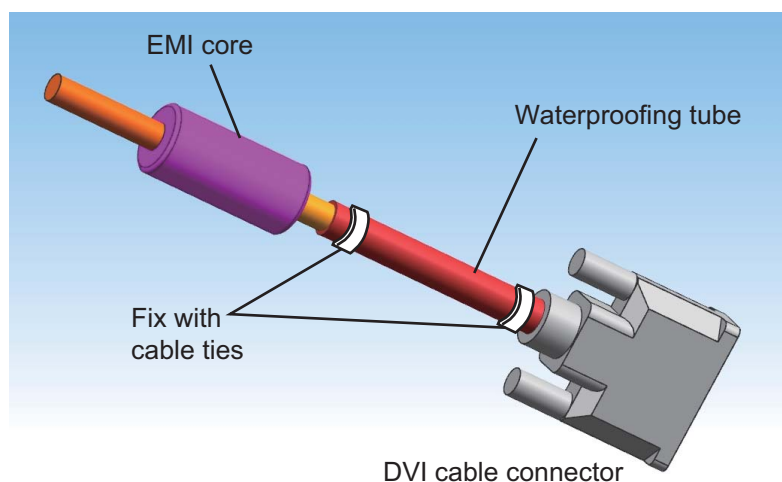
The above-mentioned ports are behind the connector cover on the rear panel. Access the ports and connect cables as shown in the procedure below.

Note 1: The processor unit must be mounted indoors to do this connection because of reduced waterproofing.

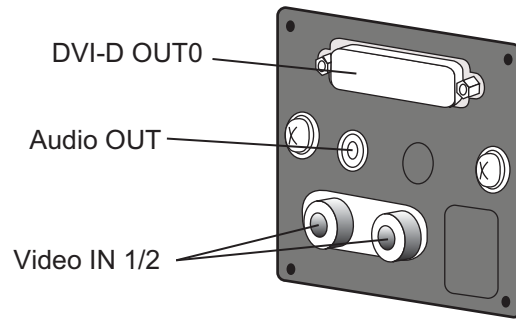
Note 2: DVI OUT1 takes priority over DVI OUT2. Use DVI OUT1 port and USB2 to connect a single touch monitor.

1. Attach waterproofing tubes to the DVI cables.
Open the slit on the waterproofing tube and set the tube to the DVI cable between the connector of port DVI-D OUT0 and the EMI core.
Attach supplied cable ties at each end of the tube.

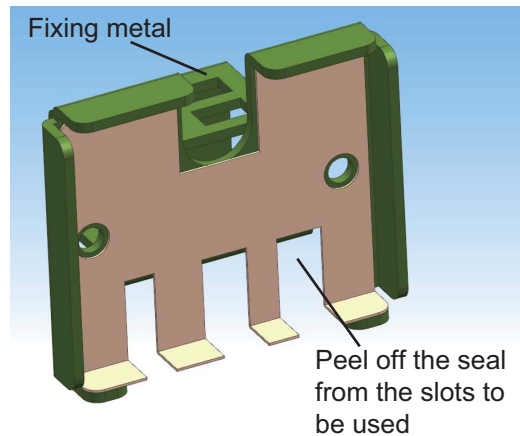
Note: Attach the waterproofing tube also to the external DVI monitor cable whose outer diameter is less than 9 mm.



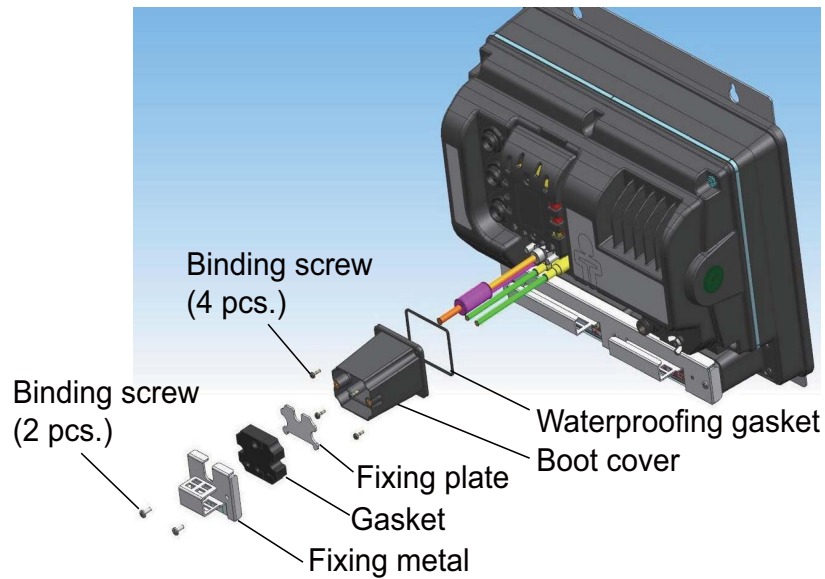
- Attach the DVI-D, Video composite and Audio cable connectors to their respective ports.



- Set the waterproofing gasket to the boot cover then pass the cables through the boot cover.
- Fasten the boot cover with four binding screws.
- Attach the fixing plate to the boot cover.
- Pass the cables through appropriate holes in the gasket. The largest hole is for the DVI-D cable.
- Set the cable adapter to the entrance of the boot cover.
- Peel off the seal from the slots to be used on the fixing metal.



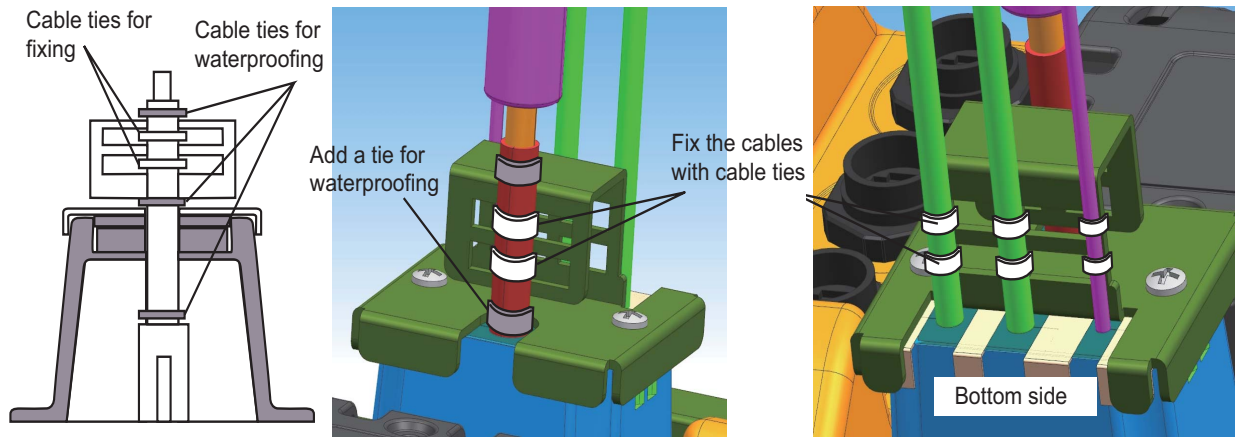
- Fasten the fixing metal to the boot cover with two binding screws.



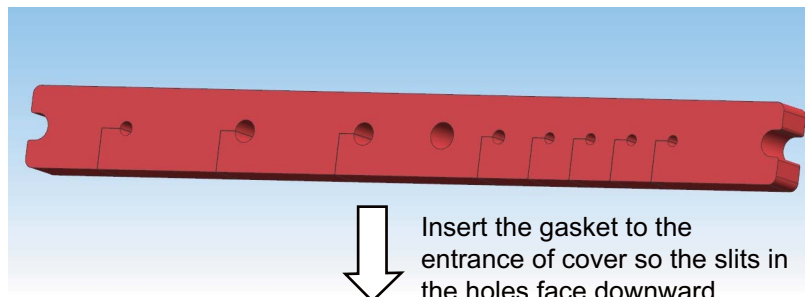
2. WIRING

10. Fix the cables to the cable clamp with cable ties (2 pcs. each).
Attach a cable tie at the base of waterproofing tube.

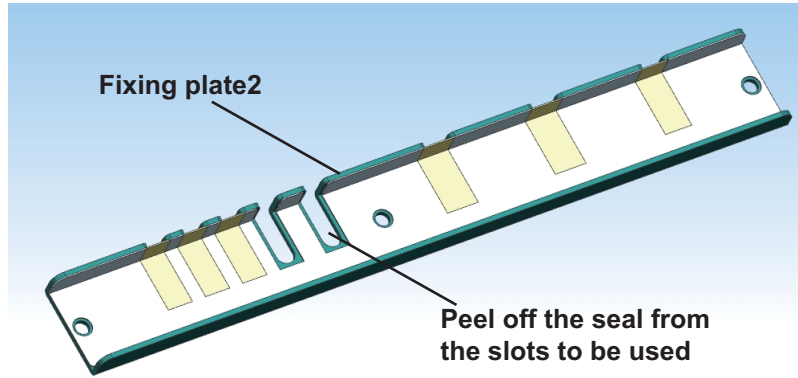
Note: Cable ties are necessary for waterproofing. Do not fail to attach them.



11. Pass the opposite end of the DVI-D cable (connected at step 1) through the outside entrance of the connector cover.
12. Connect the plug to the DVI-IN port and fasten the plug with the screws on the plug.
13. Pass the DVI-D cable and USB cable for external touch monitor through the outside entrance of the connector cover.
14. Connect the DVI-D plug to the DVI OUT1 port and connect the USB plug to the USB2 port.
15. If the second touch monitor is installed, connect the DVI-D plug to the DVI OUT2 port and connect the USB plug to the USB3 port.
16. Pass the power plug and USB plug from the switch box PSD-002 through the connector cover then connect them to the PWR SW port and the USB1 port, respectively.
17. If another USB device is installed, connect the USB plug to USB4 port.
18. Fasten the connector cover to the unit with six binding screws.
19. Attach the fixing plate1 to the entrance of the connector cover.
20. Pass the cables through appropriate holes in the gasket.
21. Set the gasket to the entrance of the cover.

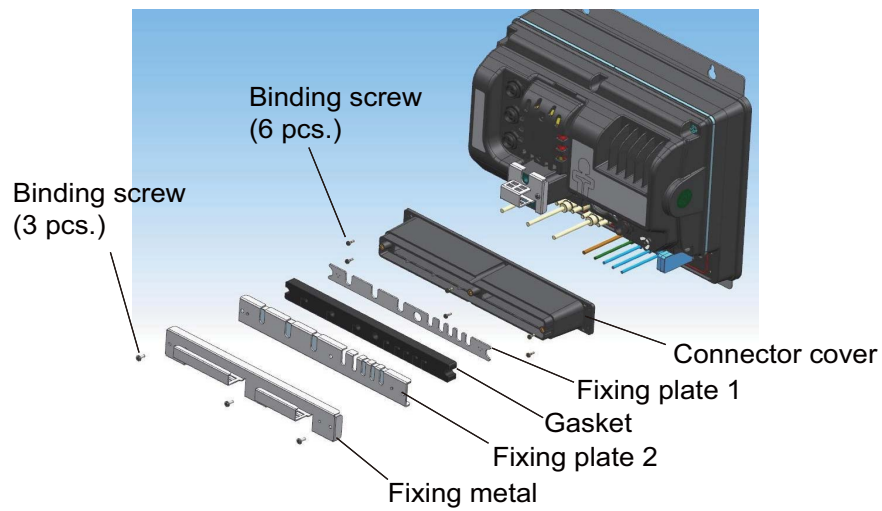


22. Peel off the seal from the slots to be used on the fixing plate2.



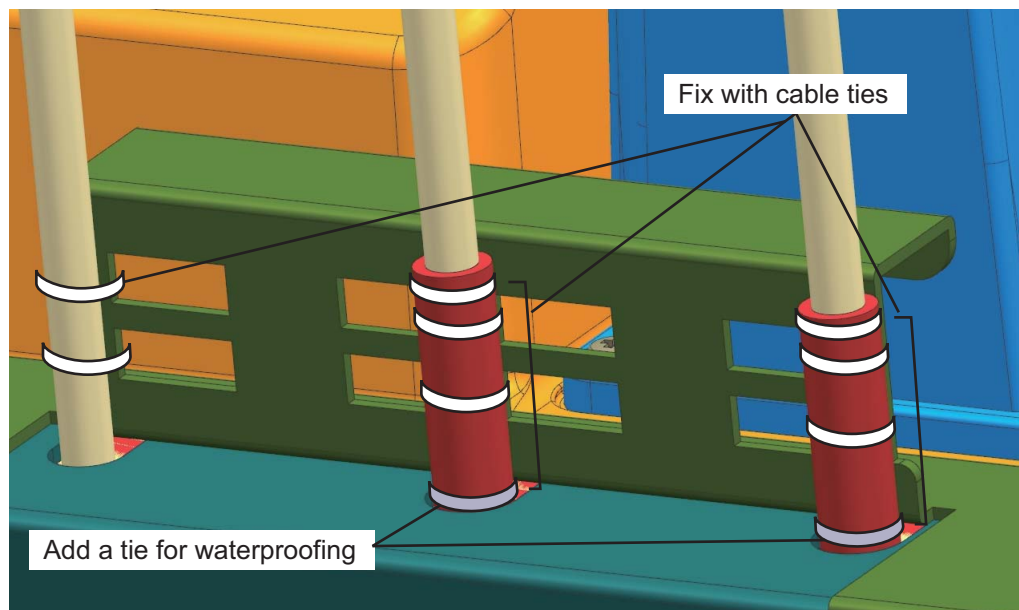
23. Attach the fixing plate2 to the entrance of the connector cover.

24. Fasten the fixing metal to the connector cover with three binding screws.



25. Fix the cables to the cable clamp with cable ties (2 pcs. each). Attach a cable tie at the base of waterproofing tube projection.

Note: Cable ties are necessary for waterproofing. Do not fail to attach them.



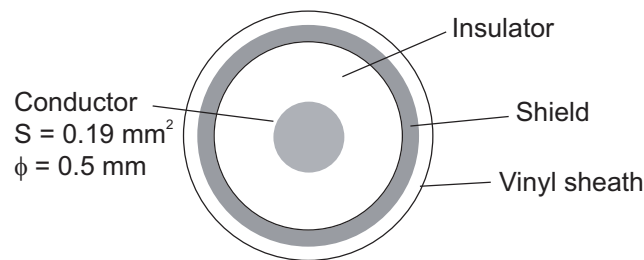
Video input

TZTBB can use regular analog video inputs (PAL or NTSC) that connect to the TZTBB directly or use IP cameras that connect directly to the network HUB. IP cameras can be seen by all TZTBB connected to the NavNet TZtouch network, unlike analog video that can be viewed only on the equipment where the source is connected. Additionally some IP cameras can be controlled from TZTBB.

Analog video

The TZTBB processor unit has two analog video inputs (PAL/NTSC) on 2 mm RCA type connectors located on the rear of the equipment. For this connection, the following cable is necessary (local supply).

- 3C2V (Japan Industrial Standard (JIS), or the equivalent) coaxial cable (impedance: 75 Ω)



IP camera

IP cameras are network devices that connect directly to a HUB. Up to four IP cameras can be connected to one NavNet TZtouch network. At this time, only AXIS IP cameras that support MPEG4 video are functional in the network. For more details, see the operator's manual for the AXIS IP cameras.

DVI-D (external monitor)

A DVI monitor is required for the TZTBB. The plug is DVI-D format and only a DVI-D monitor with VESA DDC (Display Data Channel) can be connected. The TZTBB uses the monitor information (EDID) given via DDC to output the video data with the appropriate resolution. Furuno offers two lengths of DVI-D cables, 5 m and 10 m.

Note: When a second monitor is used, use the same aspect ratio and resolutions monitor as the first monitor. The DVI-OUT1 port should be used in DVI-D connection. If this port is converted into HDMI, the DVI-OUT2 port may not transmit the picture signal.

USB port

The TZTBB has six USB Ver. 2.0 ports. The USB port2/3 are used to connect USB Touch Monitor (compatible with Windows® 7 HID generic driver) and USB port 1 is used to connect to switch box for SDXC card. The USB port5/6 are used to connect the devices for internal installation.

Audio

Outputs the audio line from the left-hand connector.

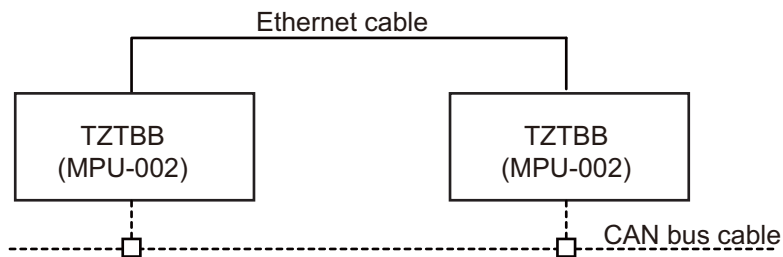
2.2 CAN bus/NMEA0183 Data Conversion

2.2.1 Connection with DRS radar sensor

All DRS radar sensors have one CAN bus port (Terminal Block connector). You can directly connect Furuno CAN bus sensors to the DRS radar without having to run another CAN bus cable up the mast. In this case, each separate CAN bus network (the DRS CAN bus and the ship CAN bus) will be “Bridged” together via the Ether Network. Note that the TZTBB and DRS CAN bus ports must not be connected together.

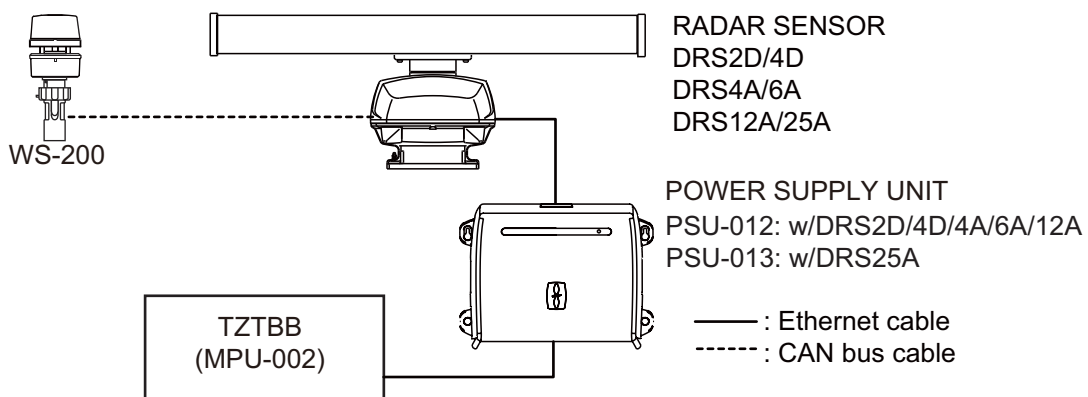
Connection of multiple TZTBBs, no DRS radar sensor

Connect multiple TZTBBs with Ethernet and CAN bus cables.



Connection of TZTBB and DRS radar sensor

Connect TZTBB to DRS radar sensor with Ethernet cable.



2.2.2 CAN bus (NMEA2000) input/output PGN**Input PGN**

No.	PGN	Description
01.	059392	ISO Acknowledgement
02.	059904	ISO Request
04.	060928	ISO Address Claim
06.	126208	NMEA-Request Group Function
07.		NMEA-Command Group Function
08.		NMEA-Acknowledge Group Function
11.	126992	System Time
12.	126996	Product Information
13.	127237	Heading/Track Control
14.	127245	Rudder
15.	127250	Vessel Heading
16.	127251	Rate of Turn
17.	127257	Attitude
18.	127258	Magnetic Variation
19.	127488	Engine Parameters, Rapid Update
20.	127489	Engine Parameters, Dynamic
21.	127505	Fluid Level
22.	128259	Speed
23.	128267	Water Depth
24.	129025	Position, Rapid Update
25.	129026	COG & SOG, Rapid Update
26.	129029	GNSS Position Data
27.	129033	Time & Date
28.	129038	AIS Class A Position Report
29.	129039	AIS Class B Position Report
30.	129040	AIS Class B Extended Position Report
31.	129041	AIS Aids to Navigation (AtoN) Report
32.	129291	Set & Drift, Rapid Update
33.	129538	GNSS Control Status
34.	129540	GNSS Sats in View
35.	129793	AIS UTC and Date Report
36.	129794	AIS Class A Static and Voyage Related Data
37.	129798	AIS SAR Aircraft Position Report
38.	129808	DSC Call Information
39.	129809	AIS Class B "CS" Static Data Report, Part A
40.	129810	AIS Class B "CS" Static Data Report, Part B
41.	130306	Wind Data
42.	130310	Environmental Parameters
43.	130311	Environmental Parameters
44.	130312	Temperature
45.	130313	Humidity
46.	130314	Actual Pressure
47.	130577	Direction Data
48.	130578	Vessel Speed Component

Output PGN

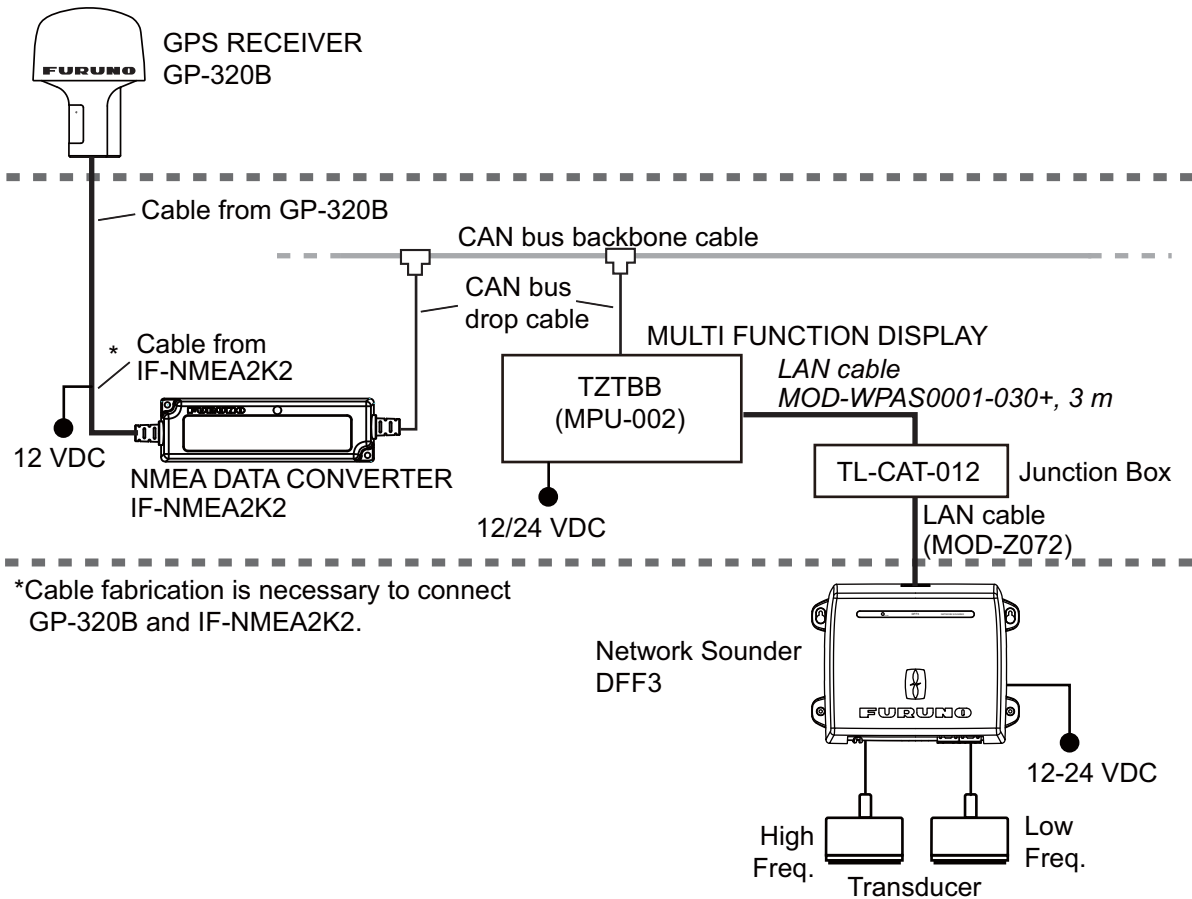
The CAN bus output PGN setting (found under the [Initial Setup] menu) is global to the network. Note that only one TZTBB will output CAN bus data on the network at a time: the TZTBB which is powered ON first. If that display is turned OFF, another will take its place to output the data.

No.	PGN	Description	Remarks	Output cycle (msec)
01.	059392	ISO Acknowledgement	For Certification Level A/B Refusing output requirement	
02.	059904	ISO Request	For Certification Level A/B Requiring output	
04.	060928	ISO Address Claim	For Certification Level A/B • Address autonomy • Receiving output requirement	
05.	126208	NMEA-Request group function	For Certification Level A/+ α • Address autonomy • Receiving output requirement	
06.		NMEA-Command group function	For Certification Level A/+ α Changing the setting of other equipment	
07.		NMEA-Acknowledge group function	For Certification Level A/+ α Sending the confirmation for NMEA-Request group function and NMEA-Command group function	
08.	126464	PGN List-Transmit PGN's group function	For Certification Level A/+ α Receiving output requirement	
09.		PGN List-Received PGN's group function	For Certification Level A/+ α Receiving output requirement	
12.	126992	System Time		1000
13.	126996	Product Information	For Certification Level A/B Receiving output requirement	
14.	127250	Vessel Heading		100
15.	127251	Rate of Turn		100
16.	127257	Attitude		1000
17.	127258	Magnetic Variation		1000
18.	128259	Speed		1000
19.	128267	Water Depth		1000
21.	129025	Position, Rapid Update		100
22.	129026	COG & SOG, Rapid Update		250
23.	129029	GNSS Position Data		1000
24.	129033	Time & Date		1000
25.	129283	Cross Track Error		1000
26.	129284	Navigation Data		1000
27.	129285	Navigation-Route/ WP Information	• Outputs when waypoint is set/changed (own ship's position is required) • Outputs when receiving ISO request	
28.	130306	Wind Data		100
29.	130310	Environmental Parameters		500
31.	130312	Temperature		2000
32.	130313	Humidity	Outputs when receiving the ISO request	
33.	130314	Actual Pressure		2000

2.3 Example NavNet TZtouch System Configurations

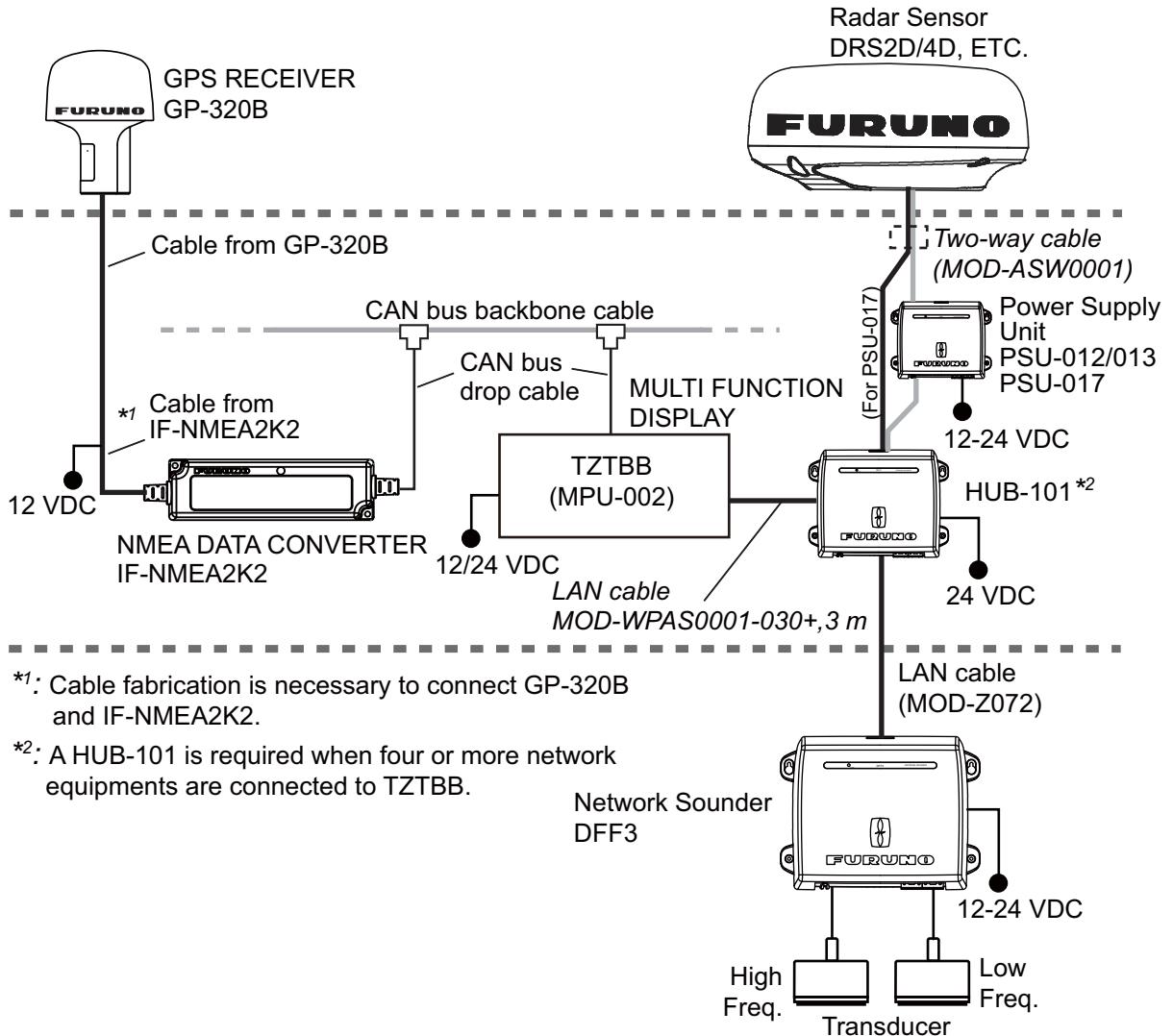
Basic plotter/fish finder installation

The Furuno GP-320B is connected to the CAN bus backbone cable, using the optional NMEA data converter IF-NMEA2K2 (or IF-NMEA2K1). The DFF1/3 network sounder is connected to the LAN port of the TZTBB using the standard supply cable MOD-WPAS0001-030+(3 m) and a junction box TL-CAT-012.



Basic plotter/radar/fish finder installation

This is a single station plotter/radar/fish finder installation. Connection of multiple sensors, such as DFF3 and DRS series, requires the optional Ethernet Hub HUB-101. Also, the power supply unit PSU-012, PSU-013 or PSU-017 is required for the connection with DRS series radar sensor.



2. WIRING

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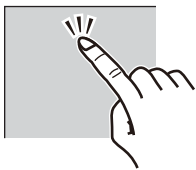

3. SETTING UP THE EQUIPMENT

This chapter shows you how to set up your system according to the equipment you have connected. You can do almost all operations on this equipment by just touching the display, following the instructions below.



Touch control description

The touch control depends on the screen type. The basic operations to use at the installation setting are in the table shown below.

Operation by a finger

Operating by a finger		Function
Tap		<ul style="list-style-type: none"> • Select a menu item. • Select an object. • Display the pop-up menu.
Drag		<ul style="list-style-type: none"> • Scroll the menu.



Operation by two fingers

Operation by two fingers		Function
Pinch	  Zoom in Zoom out	Change the radar range.

3. SETTING UP THE EQUIPMENT

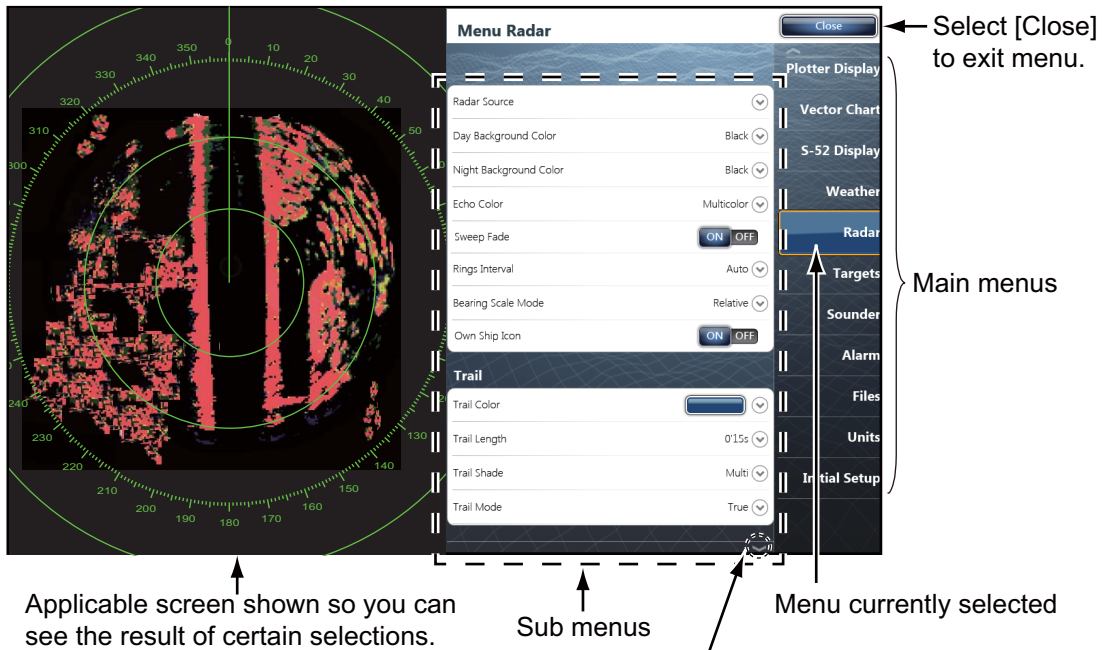
About menu operations

The following procedure shows how to use the menu system.

1. Press the  key on the switch box to turn the power on. The chart plotter display appears after the start-up screen appears.
2. Tap the **Home** icon () at the top right-hand corner of the screen. The menu icon bar appears on the menu selection display.




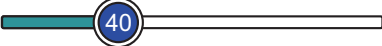


3. Select (tap) the **Menu** icon () to open the main menu.



Scroll mark (Indicates menus currently not shown on the screen. You can see the menus currently not shown by dragging.)

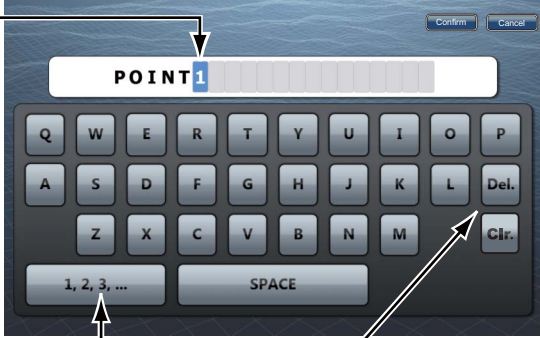
4. Drag the main menus on the right-hand side of the screen. The current selection is circumscribed with a yellow rectangle. The sub menus for the selected menu appear.
5. Select the menu item to set from the sub menu. There are four types of icons to indicate how to set a menu item, and each has the unique function as shown on the next page.

Icon	Description
	This icon means that a menu item has some options. Touch it to show the option window (pull-down list).
	Touch the menu item with this icon to display the software keyboard, to enter alphanumeric data. For details, see "How to use the software keyboard" shown below.
	<ul style="list-style-type: none"> Shows a sub menu. Switches a functions ON or OFF. Selects a color.
	Drag the circle icon to adjust the setting value.

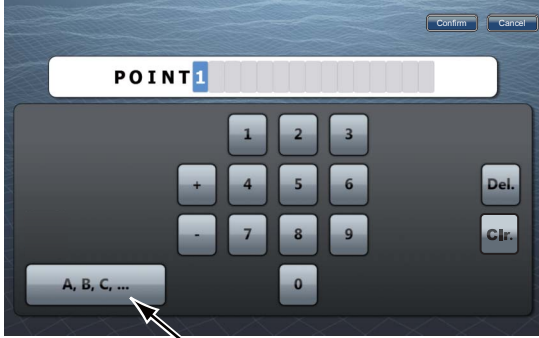
6. Select [Close] at the top right-hand side of the screen to exit the menu.

(How to use the software keyboard)


Alphabet software keyboard




Numeric software keyboard



Select this to switch to the numeric software keyboard.


 : Delete the character selected.

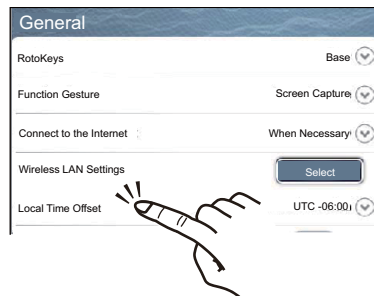
 : Clear all characters.

Select this to switch to the alphabet software keyboard.

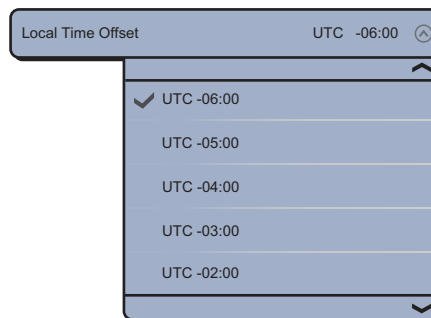
3.1 How to Set Time Zone, Language and Units

Before setting up your equipment, select the time zone, language and units to use on your equipment as shown below.

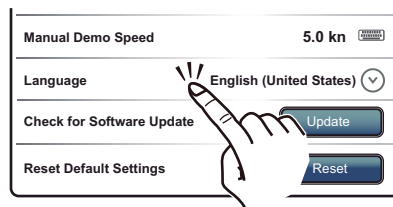
1. Tap the **Home** icon, then select [Menu] icon () from the menu icon bar.
2. Select [General] on the main menu to show the [Menu General] sub menus.
3. To use local time (instead of UTC), do this step and step 4. Otherwise, skip to step 5.
Select [Local Time Offset] to show the option window.



4. Select time difference between local time and UTC time from the pull-down list.



5. Select [Language] to show its option window.



6. Select the language to use.
7. Drag the main menu to select [Units], and set the units to show on the display.

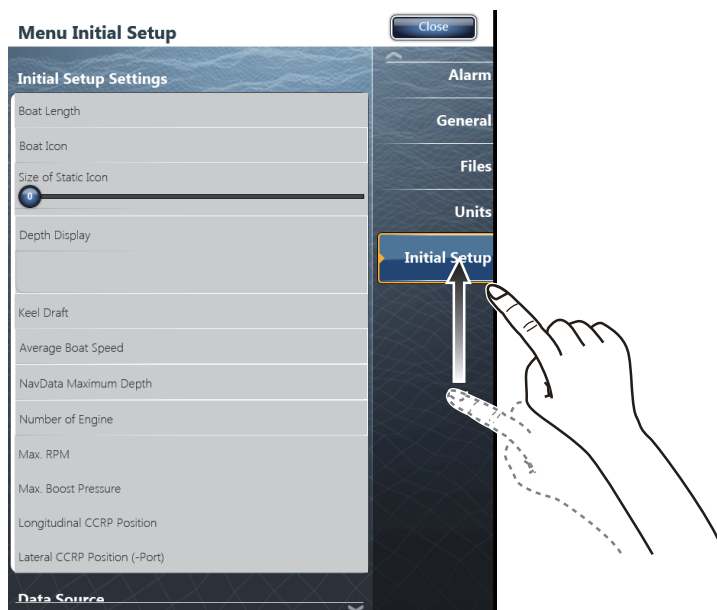
[Menu Units] sub menus

Menu item	Options	
[Bearing Display]	[True], [Magnetic]	
[True Wind Calculation Reference]	[Ground], [Surface]	
[Position Format]	[DDD°MM.mmmm'], [DDD°MM.mmm'], [DDD°MM.mm'], [DDD°MM'SS.ss"], [DDD.ddddd°], [Loran C], [MGRS]	
[Loran C Station & GRI]	[GRI]	Select GRI code.
	[Master]	-
	[First (Second) Slave]	X: Upolu Point, Y: Kure Island
	[Correction First (Second) Slave]	Enter a position offset to refine Loran C position.
[Range (Long)]	[Nautical Mile], [Kilometer], [Mile]	
[Range (Short)]	[Foot], [Meter], [Yard]	
[Short/Long Change Over]	Set the distance at which to change between short and long range. Set the long range here.	
[Depth]	[Foot], [Meter], [Fathom], [Passi Braza]	
[Height/Length]	[Foot], [Meter]	
[Temperature]	[Fahrenheit Degree], [Celsius Degree]	
[Boat Speed]	[Knot], [Kilometer per Hour], [Mile per Hour], [Meter per Second]	
[Wind Speed]	[Knot], [Kilometer per Hour], [Mile per Hour], [Meter per Second]	
[Atmospheric Pressure]	[HectoPascal], [Millibar], [Millimeter of Mercury], [Inch of Mercury]	
[Oil Pressure]	[KiloPascal], [Bar], [Pound per Square Inch]	
[Volume]	[Gallon] (Gallon & Gallon/hour), [Liter] (Liter & Liter/hour)	
[Reset Default Settings]	Restore default unit settings.	

3.2 Menu Initial Setup


This section shows you how to set your system according to the sensors you have connected.

Drag the main menu, then select the [Initial Setup] to show the [Menu Initial Setup] sub menu.



3. SETTING UP THE EQUIPMENT

Menu Initial Setup

Menu item	Description	Options (setting range)
[Boat Length]	Set the length of your boat.	5.0 to 9,999 ft
[Longitudinal GPS Position]	Enter the GPS antenna positioning bow-stern (Longitudinal) and port-starboard (Lateral) position from the origin.	
[Lateral GPS Position (-Port)]		
[Boat Icon]	Select the icon that best matches your boat.	[Sport Fishing], [Cruiser], [Sailboat], [Commercial]
[Size of Static Icon]	Set the size of static (such as own ship) icons.	50 to 150
[Depth Display]	Select the start point for depth measurement.	[Under Keel], [Under Sea Level]
[Transducer Draft Source]	Select the draft source to use on the display, among the following: Automatic: Use the offset value in the DPT sentence. If the DPT sentence does not have an offset value, the value entered at Transducer Draft (page 3-11) is used. Hardware: Use the offset value in the DPT sentence from an echosounder. Manual: Use the value entered at Transducer Draft (page 3-11).	[Automatic], [Hardware], [Manual]
[Keel Draft]	Set the keel draft.	0.0 to 99 ft
[Average Boat Speed]	Select your boat type to use for average speed calculation.	[Sailing], [Commercial], [Powerboat]
[Nav Data Maximum Depth]	Select the maximum depth for navigation data.	[Very Shallow] (under 10 m), [Shallow] (10 to 20 m), [Deep] (20 to 200 m), [Very Deep] (200 to 2000 m)

Menu Initial Setup (Engine)

Menu Item	Description	Options (setting range)
[Number of Engine]	Select the number of engines on your boat.	[1], [2], [3], [4]
[Max. RPM]	Set the maximum rpm of your engine to show on the RPM display.	1000 to 20,000 rpm
[Red Zone RPM]	Set the starting value for the red zone area of the tachometer.	0 to 20,000 rpm
[Red Zone Oil Pressure]	Set the starting value for the red zone area of the oil pressure meter.	0 to 999 kPa
[Red Zone Temperature]	Set the starting value for the red zone area of the engine temperature indicator.	0°F to 999°F
[NickName Engine 1 to 4]	Change the nickname for engine 1 to 4.	

Menu Initial Setup (Fuel)

Menu Item	Description	Options (setting range)
[Number of Tank]	Select the number of fuel tanks on your boat.	[1], [2], [3], [4]
[NickName Tank 1 to 4]	Change the nickname for fuel tank 1 to 4.	

Manu Initial Setup (Use Fuel Tank for calculations)

Menu Item	Description	Options (setting range)
[Tank 1 to 4]	Select the tanks to calculate the fuel consumption.	[ON], [OFF]

Menu Initial Setup (Data Acquisition)

Menu Item	Description	Options (setting range)
[GP330B WAAS Mode] [WS200 WAAS Mode]	Select [ON] to use the WAAS mode for the corresponding GPS antenna.	[ON], [OFF]
[Data Source]	Select the source for each data to input to the system. If two or more sources are connected for a data, select one using the pull-down dialog box. The Furuno products are shown at the upper part of the list.	
[Sensor List]	Show the information for sensors connected to your equipment. Also, you can set "Nickname" for them here.	
[PGN Output]	Select [ON] for the PGNs (Parameter Group Number, CAN bus (NMEA2000) message) to output from the CAN bus port.	
[Sky View]	Show the condition of GPS and GEO (WAAS) satellites. Number, bearing and elevation angle of all GPS and GEO satellites (if applicable) in view of your receiver appear.	

Menu Initial Setup (SC-30 Setup)

Menu item	Description	Options (setting range)
[WAAS Mode]	Select [ON] to use the WAAS mode.	
[Heading Offset]	Enter the offset value for heading.	-180° to +180°
[Pitch Offset]	Enter the offset value for pitching.	-180° to +180°
[Roll Offset]	Enter the offset value for rolling.	-180° to +180°

Menu Initial Setup (Calibration)

Menu item	Description	Options (setting range)
[Heading]	Offset heading data.	-180.0° to +180.0°
[Speed Through Water]	Calibrate speed data. Enter amount in percentage.	-50% to +50%
[Wind Speed]	Offset wind speed data. Enter amount in percentage.	-50% to 50%
[Wind Angle]	Offset wind angle data.	-180° to +180°
[Sea Surface Temperature]	Offset sea surface temperature data.	-10°C to +10 °C

3. SETTING UP THE EQUIPMENT

Menu Initial Setup (Data Damping)

Menu item	Description	Options (setting range)
[COG & SOG]	Set data damping time. The lower the setting the faster the response to change.	0 to 59 seconds
[Heading]		
[Speed Through Water]		
[Wind Speed & Angle]		
[Rate of Turn]		

Menu Initial Setup (Browser Installation)

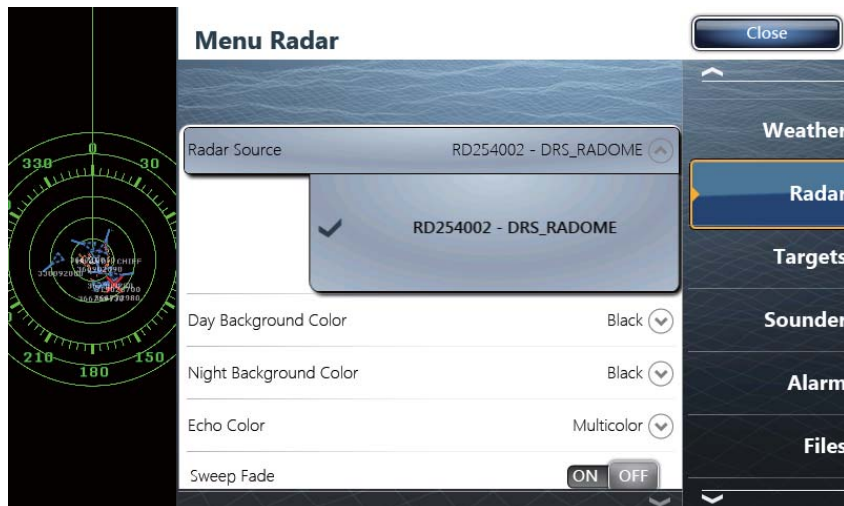
Menu item	Description	Option (setting range)
[FAX30 Browser]	Show the Facsimile Receiver FAX-30 display.	
[FA30 Browser]	Show the AIS Receiver FA-30 display.	
[FA50 Browser]	Show the AIS Receiver FA-50 display.	

3.3 How to Set up the Radar

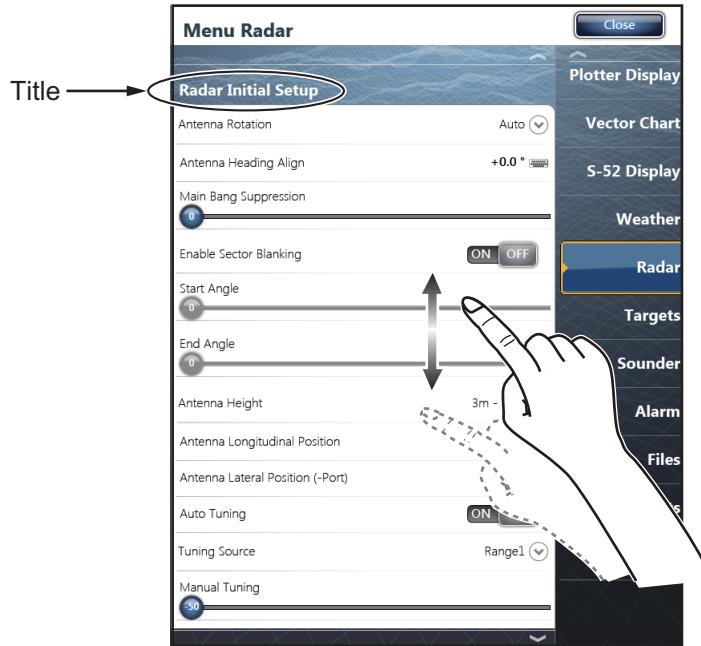
If you have a radar sensor, set the sensor's characteristics on the [Radar] menu. Open the [Menu Radar] sub menus. Drag the main menu to select [Radar].

1. Select [Radar Source] on the [Menu Radar] sub menus, then select the radar type connected.

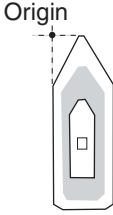
Note: If a DRS sensor is connected but does not appear in the [Radar Source] list, close the list and open it again. The name of the DRS sensor should appear with a check mark, as in the example below.



2. Drag the [Menu Radar] sub menus to find the menu item [Radar Initial Setup].



Menu Radar (Radar Initial Setup)

Menu item	Description	Options (setting range)
[Antenna Rotation]	Select the speed of antenna rotation.	[Auto], [24 RPM], [48 RPM]
[Antenna Heading Align]	See the topic of “How to align the antenna heading” shown on the next page.	-180° to +180°
[Main Bang Suppression]	If main bang appears at the screen center, slide the circle icon so that the main bang disappears, while watching the radar echo at the left-hand side of the display.	0 to 100
[Antenna Height]	Select the height of the antenna above the waterline.	[5m], [7.5m], [10m], [15m], [20m], [25m], [30m], [35m], [40m], [45m], [50m]
[Antenna Longitudinal Position]	Enter the antenna positioning bow-stern (Longitudinal) and port-starboard (lateral) position from the origin.	
[Antenna Lateral Position (-Port)]		
Others	See Operator' Manual for TZT9/14/BB.	

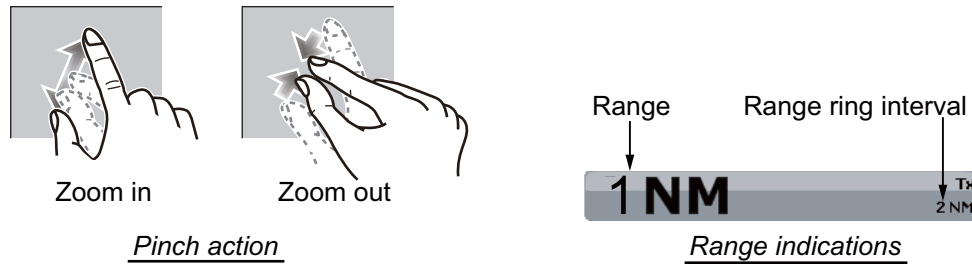
3. SETTING UP THE EQUIPMENT

How to align the antenna heading

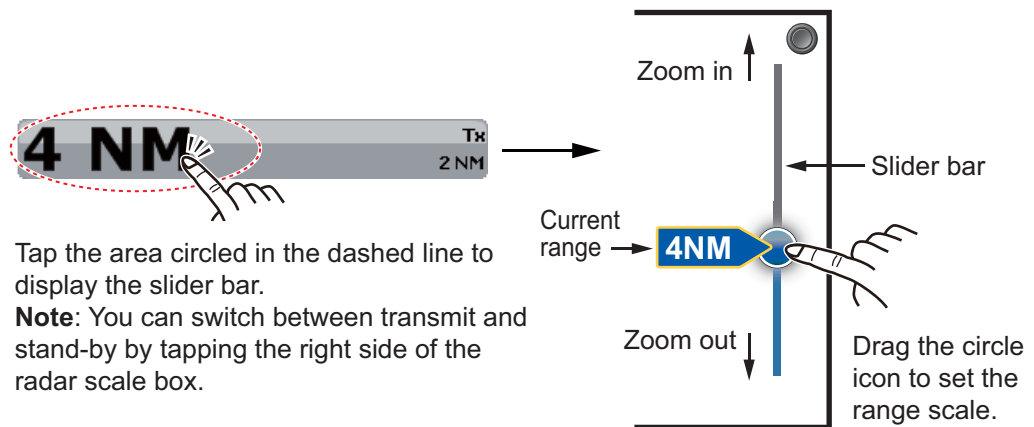
You have mounted the antenna unit facing straight ahead in the direction of the bow. Therefore, a small but conspicuous target dead ahead visually should appear on the heading line (zero degrees).

In practice, you will probably observe some small bearing error on the display because of the difficulty in achieving accurate initial positioning of the antenna unit. The following adjustment will compensate for the error.

- 1) Select a range between 0.125 and 0.25 nm and set the mode to “head up”. You can select a range by a pinch action. The range and range ring interval appear at the bottom left of the screen.



Or tap the radar scale box at the bottom left-hand corner of the screen to display the slider bar. Drag the circle icon to set the range scale.



Tap the area circled in the dashed line to display the slider bar.

Note: You can switch between transmit and stand-by by tapping the right side of the radar scale box.

- 2) Turn the vessel's bow toward a target.
- 3) Tap the **Home** icon, then select [Menu] icon, [Radar], and [Antenna Heading Align] in that order to show the numeric software keyboard.
- 4) Key in the offset value so that the target is at the very top of the screen (setting range: +/- 0° to 180°, +: clockwise direction, -: counterclockwise direction), then tap [Save].
- 5) Confirm that the target echo is displayed at correct bearing on the screen.

3.4 How to Set up the Sounder

If you have a sounder (BBDS or DFF series), set up the sounder as shown in this section. Drag the main menu to select [Sounder]. You can confirm the actual sounder display on the left-hand side of the screen while setting up.

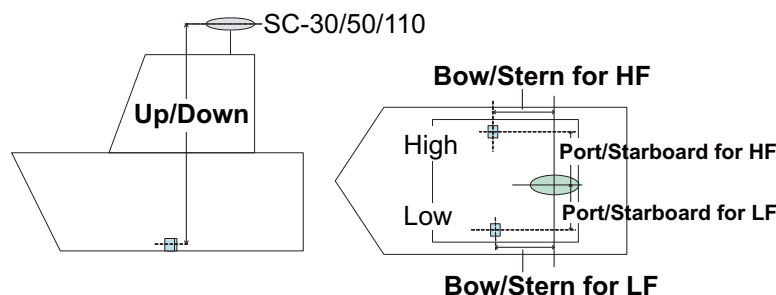
Drag the [Menu Sounder] sub menus to select [Sounder Initial Setup].

Menu item	Description	Options (setting range)
[Zero line Rejection]	Turn off the zero line (transmission line) to erase it and see fish echoes near the surface. The width of the line changes with the transducer used and installation characteristics. If the width of the line is 1.4 m or more, select [ON].	[ON], [OFF]
[Zero line Range]	When [ON] is selected at [Zero line Rejection], set the effective area.	1.4 to 2.5 m
[Transducer Draft]	Set the distance between the transducer and the draft line to show the distance from the sea surface.	0.0 to 99.9 ft
[Salt Water]	Select [ON] if the equipment is to be used in salt water.	[ON], [OFF]
[Fish Finder Source]	Select the sounder used, among DFF1, DFF3, DFF1-UHD, BBDS1 and FCV-1150.	
[Transducer Setup]	Select the method to setup the transducer, manually or by selecting the model number. Manual: Enter high/low frequencies and TX power. Model Number: Select the type of the transducer connected.	[Manual], [Model Number]

Motion sensor setup (requires Satellite Compass SC-30/50/110)

If the satellite compass SC-30/50/110 is connected, set the distance between the antenna unit (or sensor) of the satellite compass and transducer (high and low if connected), on the [Motion Sensor] sub menu, referring to the descriptions below. Tap [Transducer Setup] and the [Motion Sensor] sub menu appears beneath the [Transducer Setup] menu.

- **Motion Sensor Type:** Select [SC30] or [SC50-SC110] depending on the sensor connected.
- **Motion Sensor Antenna Position Bow/Stern HF (LF):** Set the distance from the antenna unit to the transducer in the bow-stern direction.
- **Motion Sensor Antenna Position Up/Down HF (LF):** Set the distance from the transducer to the antenna unit in the vertical direction.
- **Motion Sensor Antenna Port/Starboard HF (LF):** Set the distance from the antenna unit to the transducer in the port-starboard direction. If the transducer is located on the starboard side, set a positive value.

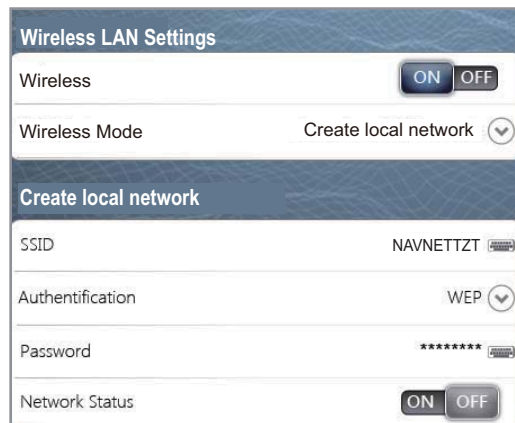


3.5 Wireless LAN Setting

Note: Some TZTBBs are not equipped with the wireless LAN.

The TZTBB can be configured to create a wireless network (“Ad Hoc”) or to connect to an existing wireless network. Connecting to an existing wireless network is very useful if you already have an Access Point setup on your boat, especially if you have Internet available. Simply connect the TZTBB and your smartphone or tablet to the existing wireless network. Since the TZTBB and smartphone/tablet will be on the same network, you will be able to share data (using the “NavNet Viewer” App) as well as access the internet (for Weather downloads). Please note that in this configuration, the “NavNet Remote” App performance is inferior due to a larger amount of data being exchanged between the smartphone/tablet device and the MFD (through the access point). The “NavNet Viewer” App performance will not be affected in this mode, as the bandwidth usage is very low. If you do not have an existing wireless access point on your boat or if you want to achieve the best performance with the “NavNet Remote” App, we recommended you establish a “point-to-point” connection. This can be accomplished by configuring the MFD to create a wireless LAN network (Ad Hoc network). In this mode, the MFD becomes an Access Point (you can setup the network name and password) to which the smartphone/tablet can connect directly.

Create a wireless LAN network to use the application on your smartphone or tablet with the wireless LAN signal. Select [Wireless LAN Settings] on the [Menu General] sub menus.



Wireless LAN Settings sub menus

How to create a new Wireless LAN network

1. Select [ON] at [Wireless].
2. Select [Create local network] at [Wireless Mode].
3. Set items as shown below.

Item	Description	Options
[SSID]	Enter SSID (Service Set Identifier) to use.	Maximum 32 characters
[Authentication]	Select the Authentication.	[Open], [WEP], [WPA2-PSK]
[Password]	Enter the password for connection to the LAN.	The number of characters available depends on the selection at [Authentication].
[Network Status]	Select [ON] to connect with your tablet/ smartphone over wireless LAN network.	[ON], [OFF]

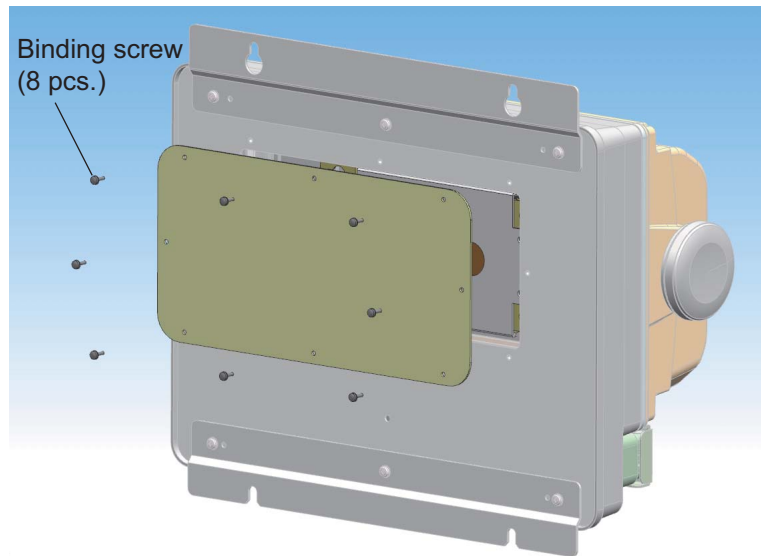
4. HOW TO INSTALL THE HDD

4.1 Hard Disk Drive (HDD)

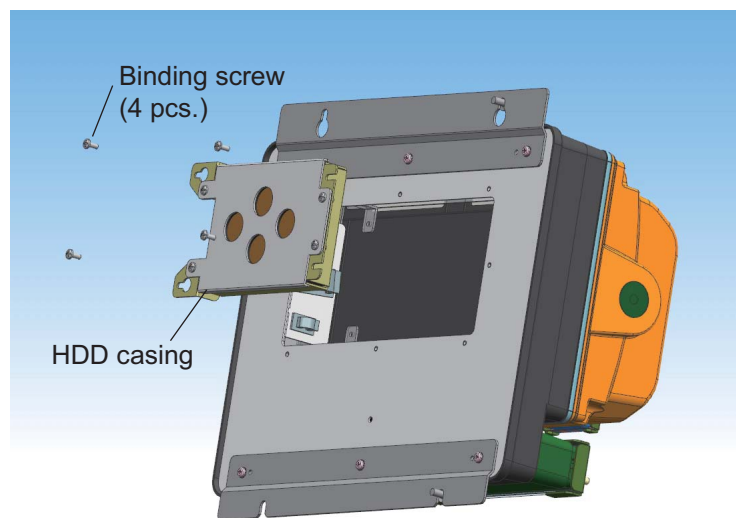
An HDD (local supply) can be installed inside the processor unit. The usable HDD size is 90 x 134 x 20 mm. Install the HDD inside the processor unit as follows.

Procedure

1. Unfasten the binding screws (M3x10, 8 pcs.) to remove the cover from the rear panel.

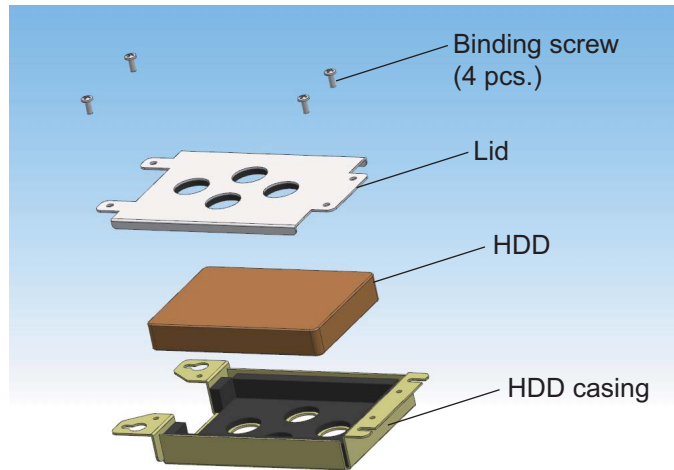


2. Unfasten the binding screws (M4x8, 4 pcs.) to remove the HDD casing.

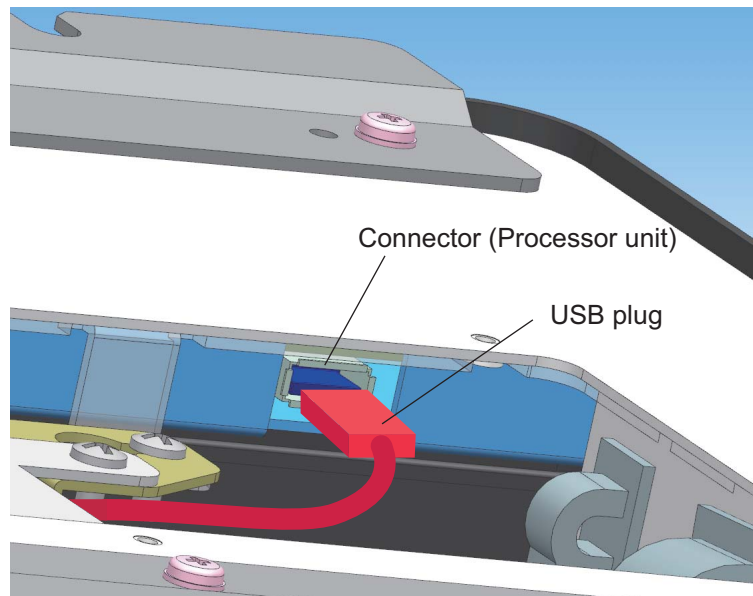


4. HOW TO INSTALL THE HDD

3. Unfasten the binding screws (M4x8, 4 pcs.) to remove the lid of the HDD casing.



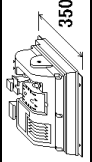
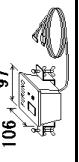

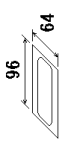


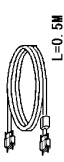

4. Set the HDD into the casing with correct orientation.
5. Fasten the lid to the HDD casing with four binding screws.
6. Connect the USB plug to the port of the processor unit with the HDD cable.



7. Set the HDD casing into the processor unit and fasten it with four binding screws.
8. Fasten the cover to the processor unit with eight binding screws

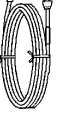


PACKING LIST MPU-002/PSD-002

19BD-X-9851-1 1/1

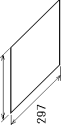
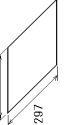
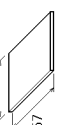
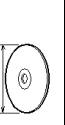
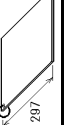
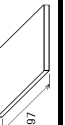
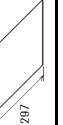
NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット			
制御部 PROCESSOR UNIT	 350	MPU-002- 000-022-525-00	1
スイッチボックス SWITCH BOX	 106	PSD-002- 000-022-528-00	1
予備品	SPARE PARTS		
予備品 SPARE PARTS		SP19-01401 001-205-630-00	1
付属品	ACCESSORIES		
WiFiリバーテッカー WIFIARIB STICKER	 96	19-031-1563-0 100-375-230-10	1 (*1)
書類ケース (NAV4) DOCUMENTS CASE	 230	L293XW230XH18 000-176-350-1*	1
付属品 ACCESSORIES		FP19-01801 001-205-650-00	1
工事材料	INSTALLATION MATERIALS		
ケーブル(クミヒ)	 L=0.5M	DVI-D S-LINK 0.5M 000-177-282-10	1
ケーブル組品 CABLE ASSEMBLY	 L=2M	FRUDD-18AFFM-L180 000-164-608-10	1

1.コード番号末尾の[*1]は、選択品の代表コードを表します。
CODE NUMBER ENDING WITH " *1 " INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL.
2.付属品及び一部の図書は、書類ケースに収められています。
ACCESSORIES AND A PART OF THE DOCUMENTS IS PUT IN THE DOCUMENTS CASE.

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

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ケーブル組品LAN LAN CABLE ASSEMBLY	 L=3M	MOD-WPAS001-030+ 000-164-609-10	1
ケーブル組品MJ CABLE ASSY.	 L=5M	MJ-A3SPF0017-050ZC 000-157-995-10	1
工事材料 INSTALLATION MATERIALS		CP19-01701 001-205-640-00	1

図書 DOCUMENT

ユーザー変更のお願い NOTIFICATION DOCUMENT	 210 297	C42-01206- 000-177-242-1*	1
フラッシュマウント型紙 FLASH MOUNTING TEMPLATE	 210 297	C42-01207- 000-177-243-1*	1
ユーザーハンドブック USER'S HANDBOOK	 182 257	*42-011107- 000-176-084-1**	1
取扱説明CD OPERATOR'S MANUAL CD	 φ120	NAVNET4 O/M *CD-ROM* 000-176-349-1*	1
操作要領書(多言語) OPERATOR'S GUIDE (MLG)	 210 297	MLG-44720- 000-177-348-1*	1
装備要領書 INSTALLATION MANUAL	 210 297	IM*-44720- 000-177-239-1**	1
注意書き NOTIFICATION	 210 297	E42-01212- 000-177-318-1*	1 (*2)

3.(*1)は和文仕様用です。
*1: FOR JAPANESE SET.
4.(*2)は中文仕様用です。
*2: FOR CHINESE SET.

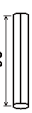
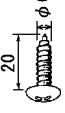
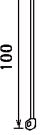
型式/コード番号が2段の場合、下段が上段に代わる通称部品であり、どちらかが入っています。なお、品質は変わりません。
TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.

FURUNO

CODE NO.	001-205-640-00	198D-X-9401-1	1/1
TYPE	CP19-01701		

工事材料表

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	チューブスペーサ TUBE SPACER		19-031-4031-0 CODE NO. 100-379-740-10	3	
2	セルフタッピングソケット SELF-TAPPING SOCKET		6X20 SUS304 CODE NO. 100-162-613-10	4	
3	ケーブルタイ CABLE TIE		CV-100N CODE NO. 100-162-167-10	40	

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

FURUNO ELECTRIC CO., LTD.



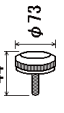
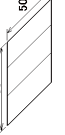
C4472-M01-B

FURUNO

CODE NO.	001-205-650-00	198D-X-9501-0	1/1
TYPE	FP19-01801		

付属品表

ACCESSORIES

番号 NO.	名称 NAME	略図 OUTLINE	型名/規格 DESCRIPTIONS	数量 Q'TY	用途/備考 REMARKS
1	ハンガーワッシャー HANGER WASHER		05-029-0132-1 ROHS CODE NO. 100-087-911-10	2	
2	ブラインドシールN2.5 BLIND SEAL 2 N2.5		05-104-6604-0 CODE NO. 100-373-480-10	2	
3	ワッシャー(N2.5) KNIBER (N2.5)		19-028-2073-1 CODE NO. 100-340-481-10	2	
4	ヒューズラベル FUSE LABEL		19-031-1561-0 CODE NO. 100-372-600-10	1	

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

FURUNO ELECTRIC CO., LTD.

C4472-F01-A

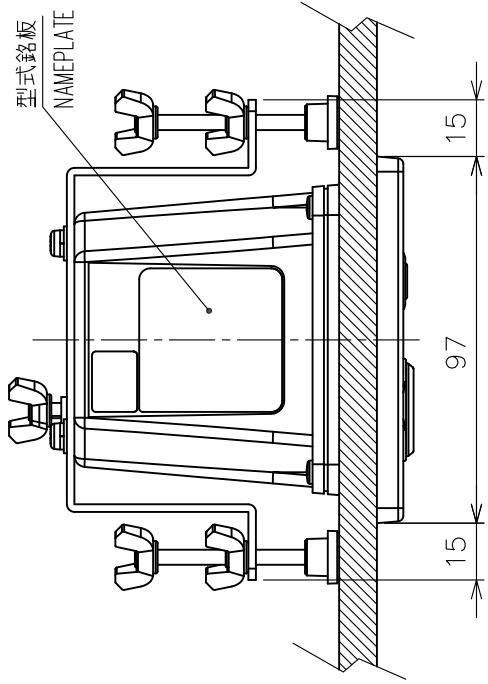
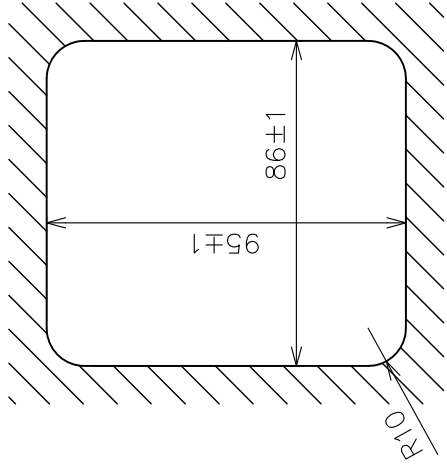
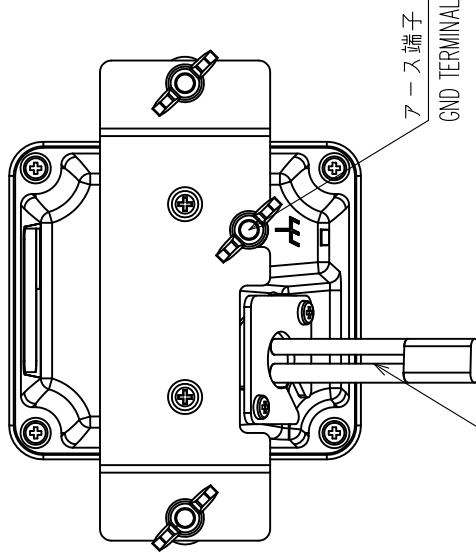
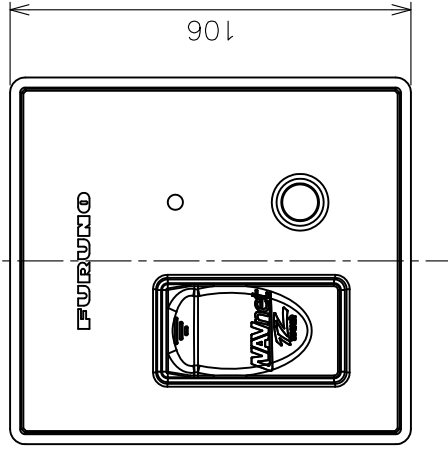
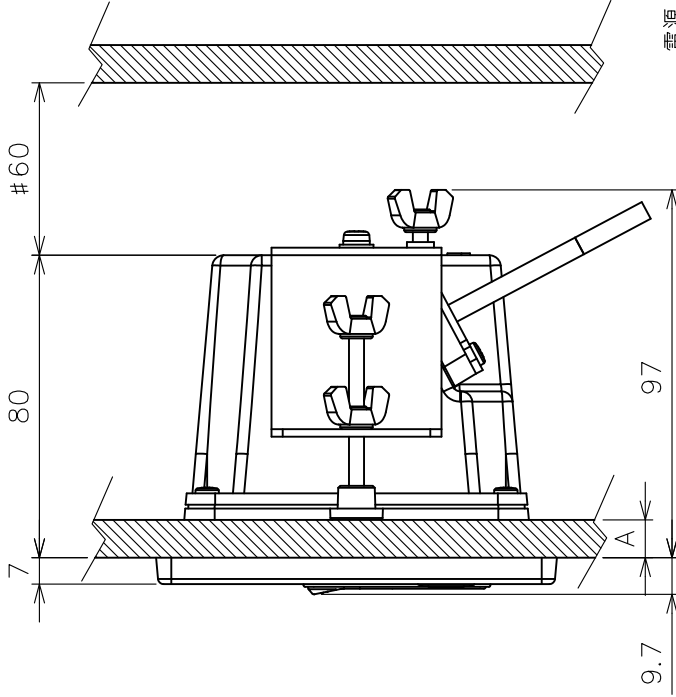


表 1 TABLE 1

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



取付穴寸法
CUTOUT DIMENSIONS



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ペース寸法とする。
- 3) 壁の厚さ (A) は最小 5、最大 20 とする。

NOTE

1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
2. # MINIMUM SERVICE CLEARANCE.
3. BULKHEAD THICKNESS (A): 5 ≤ A ≤ 20.

DRAWN	19/Dec/2012	I. YAMASAKI	TITLE	PSD-002
CHECKED	19/Dec/2012	H. MAKI	名称	スイッチボックス (埋込装備)
APPROVED	21/Dec/2012	Y. NISHIYAMA	外寸図	
SCALE	1/2	質量はケーブルを含まず。 ±10% MASS DOES NOT INCLUDE CABLE.	NAME	SWITCH BOX (FLUSH MOUNT)
DWG. No.	04472-002-B	REF. No.	19-031-5000-3	OUTLINE DRAWING

ケーブル接続時の防水カバー取付手順

防水を確保するため、以下の手順をお守りください。

手順 1

- 1) DVIケーブルに防水用チューブを取り付け、ケースの端に接するように取り付け、両端をコンベックスで固定する。
- 2) DVI OUT0、AUDIO、VIDEOポートにケーブルを接続する。
- 3) プーツカバーに防水パッキンを取り付け、ケーブルを通す。
- 4) バインドネジ(4本)でブーツカバーをパネルに固定する。
- 5) 固定板、ケーブルアダプタ、ケーブル固定金具の順にブーツカバーに取り付ける。固定金具のシールは使う部分のみ剥がす。
- 6) ケーブル固定金具をバインドネジ(2本)で固定する。
- 7) コンベックス(2本)でケーブルをケーブルクランプに固定する。(※)
防水用チューブの根元はコンベックスで固定する。(※)

手順 2

- 1) DVIケーブルをコネクタカバー外側から通し、DVI INポートにつなぐ。
- 2) DVI OUT1、USB1ポートに外部モニターケーブルを接続する。
- 3) スイッチボックスのケーブルをコネクタカバーを通して、USB1、PWR SWポートにつなぐ。
- 4) 必要に応じてDVI OUT2、USB3ポートに外部モニターを、USB4ポートに外部USB機器をつなぐ。
- 5) バインドネジ(6本)でコネクタカバーをパネルに固定する。
- 6) 固定板1、ケーブルアダプタ、固定板2をコネクタカバーに挿入する。ケーブルアダプタの切れ込みは、下を向くようにケーブルにはめ込む。固定板2のシールは使う部分のみ剥がす。
- 7) ケーブル固定金具をバインドネジ(3本)で固定する。
- 8) コンベックス(2本)でケーブルをケーブルクランプに固定する。(※)
防水用チューブの根元はコンベックスで固定する。(※)

※) 防水用のコンベックスは必ず取り付けること。コンベックスで固定しないと防水性が確保できません。

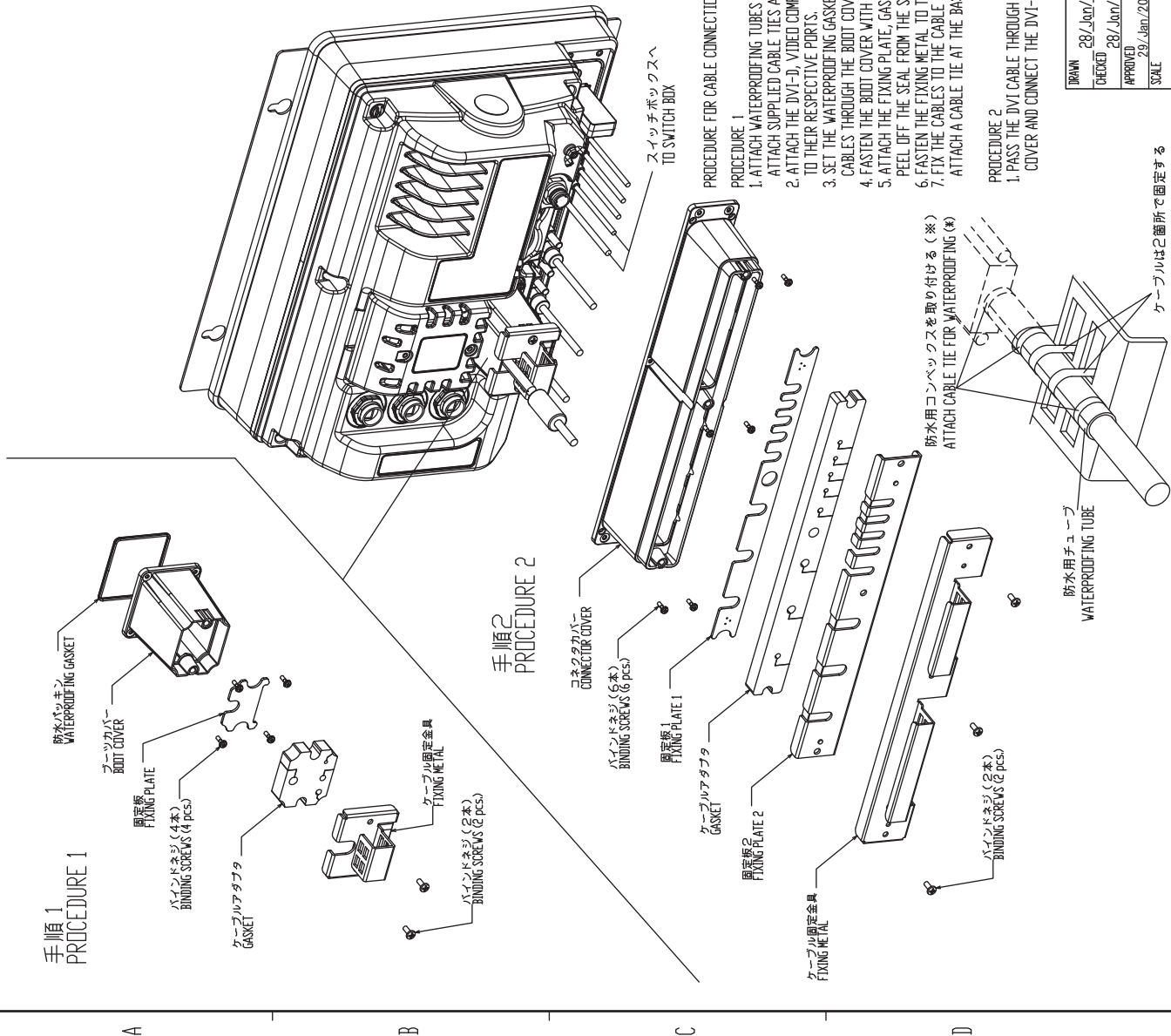
PROCEDURE FOR CABLE CONNECTION (WATERPROOFING COVER)

PROCEDURE 1

1. ATTACH WATERPROOFING TUBES TO THE DVI CABLES.
2. ATTACH THE DVI-0, VIDEO COMPOSITE AND AUDIO CABLE CONNECTORS TO THEIR RESPECTIVE PORTS.
3. SET THE WATERPROOFING GASKET TO THE BOOT COVER THEN PASS THE CABLES THROUGH THE BOOT COVER.
4. FASTEN THE BOOT COVER WITH FOUR BINDING SCREWS.
5. ATTACH THE FIXING PLATE, GASKET AND FIXING METAL TO THE BOOT COVER. PEEL OFF THE SEAL FROM THE SLOTS TO BE USED.
6. FASTEN THE FIXING METAL TO THE BOOT COVER WITH TWO BINDING SCREWS.
7. FIX THE CABLES TO THE CABLE CLAMP WITH TWO CABLE TIES EACH. ATTACH A CABLE TIE AT THE BASE OF THE WATERPROOFING TUBE. (*)

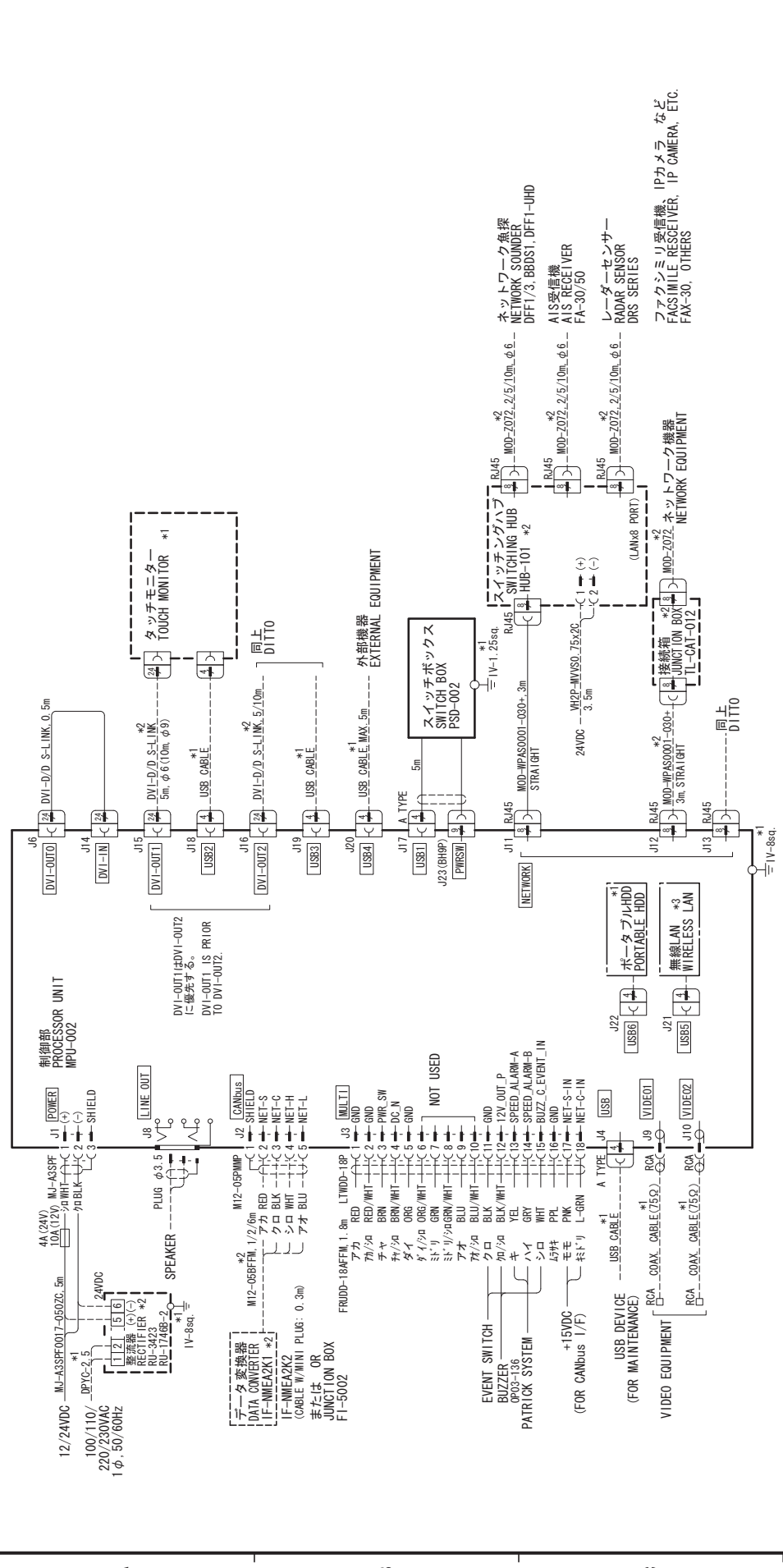
PROCEDURE 2

1. PASS THE DVI CABLE THROUGH THE OUTSIDE ENTRANCE OF THE CONNECTOR COVER AND CONNECT THE DVI-1 PLUG TO THE DVI-IN PORT.



DRAWN	28/Jan/2013	I. YAMASAKI	TITLE	MPI-002
CHECKED	28/Jan/2013	H. MAKI	名称	制御部防水カバー
APPROVED	29/Jan/2013	Y. INOUE	装備要領	
SCALE	1/10		NAME	PROCESSOR UNIT WATERPROOFING COVER
DWG. No.	C4472-701-A	REF. No.	INSTALLATION PROCEDURE	

ケーブルは2箇所固定する
FIX CABLE WITH TWO CABLE TIES.



注記
 * 1) 造船所手配。
 * 2) オプション。
 * 3) 一部仕様では無線LANモジュール非搭載。
 NOTE
 *1: SHIPYARD SUPPLY.
 *2: OPTION.
 *3: SOME SPECIFICATION SETS ARE NOT EQUIPPED WITH THE WIRELESS LAN MODULE.

ECF

(Elemental Chlorine Free)

The paper used in this manual
is elemental chlorine free.

FURUNO ELECTRIC CO., LTD.

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C : MAR. 28, 2013



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