

Installation Manual

RADAR SENSOR



MODEL DRS4D-NXT

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SAFETY INFORMATION

Read these safety instructions before installing or operating the equipment.

 WARNING	Indicates a potentially hazardous situation which, if not avoided, can result in serious injury or death.
 CAUTION	Indicates a potentially hazardous situation which, if not avoided, can result in minor or moderate injury.

 Warning, Caution	 Prohibitive Action	 Mandatory Action
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WARNING

	ELECTRICAL SHOCK HAZARD Do not open the equipment. The installation does not require you to open the radar sensor.
	Do not disassemble or modify the equipment. Fire, electrical shock or serious injury can result.
	Wear a safety belt and hard hat when working on the antenna unit. Serious injury or death can result if someone falls from the radar mast.
	Be sure the power source is compatible with the voltage rating of the equipment. Connection of an incorrect power source can cause fire or damage the equipment.
	Turn off the power at the power source before beginning the installation. Fire, electrical shock or serious injury can result if the power is left on or is applied while the equipment is being installed.
	Use the proper fuse. Use of a wrong fuse can damage the equipment or cause fire.
	Do not depend one navigation device for the navigation of the vessel. For the safety of vessel and crew, the navigator must check all aids available to confirm position.
	The radar antenna emits electromagnetic radio frequency (RF) energy which can be harmful, particularly to your eyes. Never look directly into the antenna aperture from a close distance while the radar is in operation or expose yourself to the transmitting antenna at a close distance. Distances at which RF radiation levels of 100, 50 and 10 W/m ² exist are given in the table below.

Model	100W/m ²	50W/m ²	10W/m ²
DRS4D-NXT	N/A	N/A	0.7 m

 **NOTICE**

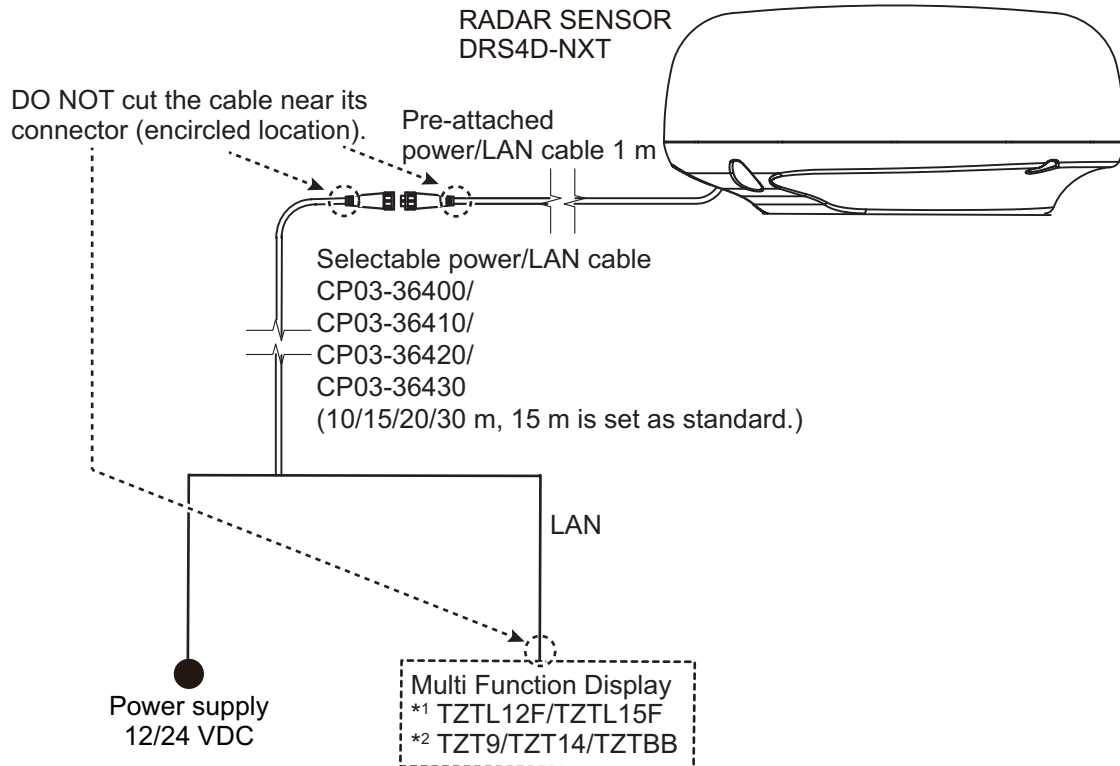
Observe the following compass safe distances to prevent interference to a magnetic compass.

Standard compass	Steering compass
0.55 m	0.30 m



It is recommended that you connect the sensor to a disconnecting device (circuit breaker, etc.) to control the power.

SYSTEM CONFIGURATION



----- : Local supply

*1 Software upgrade to V4 or after is required.

*2 Software upgrade to V5 or after is required.

EQUIPMENT LISTS

Standard supply

Name	Type	Code No.	Qty	Remarks
Radar Sensor	RSB-135	000-027-200	1	
Installation Materials	CP03-35701	001-295-920	1	
	CP03-36400	000-027-211	Select one	Power/Network cable 10 m
	CP03-36410	000-027-212		Power/Network cable 15 m
	CP03-36420	000-027-213		Power/Network cable 20 m
	CP03-36430	000-027-214		Power/Network cable 30 m
Spare Parts	SP03-17901	001-351-470	1	Fuses

Optional supply

Name	Type	Code No.	Qty	Remarks
Radome Mount	OP03-208	001-078-340	1	

Optional supply for Retrofit from DRS2D, DRS4D and DRS6A

Name	Type	Code No.	Qty	Remarks
Gland Bush	03-174-3205-1	100-340-911-10	1	
Clamp	E0806A	000-166-489-10	1	For power cable
Simplified Installation Manual for Retrofit	C32-01501	000-191-116	1	

1. INSTALLATION

1.1 General Information about DRS4D-NXT

- ECHO ANALYZER function, the first model in the world to achieve with marine radar, to display rain clutter, moving objects (approaching/ moving away) and static objects with different colors.*
* Requires heading sensor and GPS sensor.
- ACCU-SHIP function, the first model in the world to achieve with marine radar, to automatically acquire only the moving objects by doppler velocity and display other ships and their traces with large/medium/small icons.
* The judged speed of objects is dependent on its vector towards own ship.
- RezBoost function achieved high-azimuth resolution, the same as open-array radar.
- Instant ON function.
- No radiation hazard to look out for.
- No need to worry about the life of magnetron or to replace any parts periodically.
- Retrofit from DRS2D, DRS4D and DRS6A is available with using the installed cable. Refer to Chapter 4 for retrofit.
- RACON (RADar beaCON) and SART (Search And Rescue Transponder) within 0.5 to 1.5 NM (Range dependant) can be displayed.
* The signal from RACON and SART will be shown as a line.
- ARPA (Automatic Radar Plotting Aid) function applicable range varies according to the range scale. 12 NM when display range is less than 1 NM. 24 NM when display range is larger than 1.5 NM. * Changing the display range may lose the ARPA symbols.
- Dual Range Mode sets below limitations.
 - The maximum display range is 12 NM. (32 NM when single display)
 - Echo Analyzer function becomes unselectable.
 - The maximum detection range lowered by 20% at the maximum comparing to the single display.

1.2 Installation Considerations

Don'ts to Avoid Damages to the Radome and Connectors

- Do not apply paint, anti-corrosive sealant or contact spray to coating or plastic parts of the equipment. Those items contain organic solvents that can damage coating and plastic parts, especially plastic connectors.
- Do not paint the radome, its emission of the radar waves may be deteriorated.
- Do not select a location that allow water to accumulate at the base of the sensor.
- Do not cut pre-attached cable or selectable power/Network cable when installing.

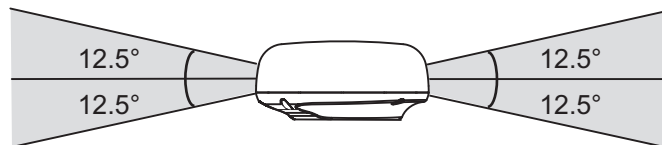
Connect to a Distribution Switchboard

- The radar sensor has no power switch. Therefore, it is recommended that you connect the sensor to a distribution switchboard with a switch for power control.

Considerations for Selecting a Location for Installation

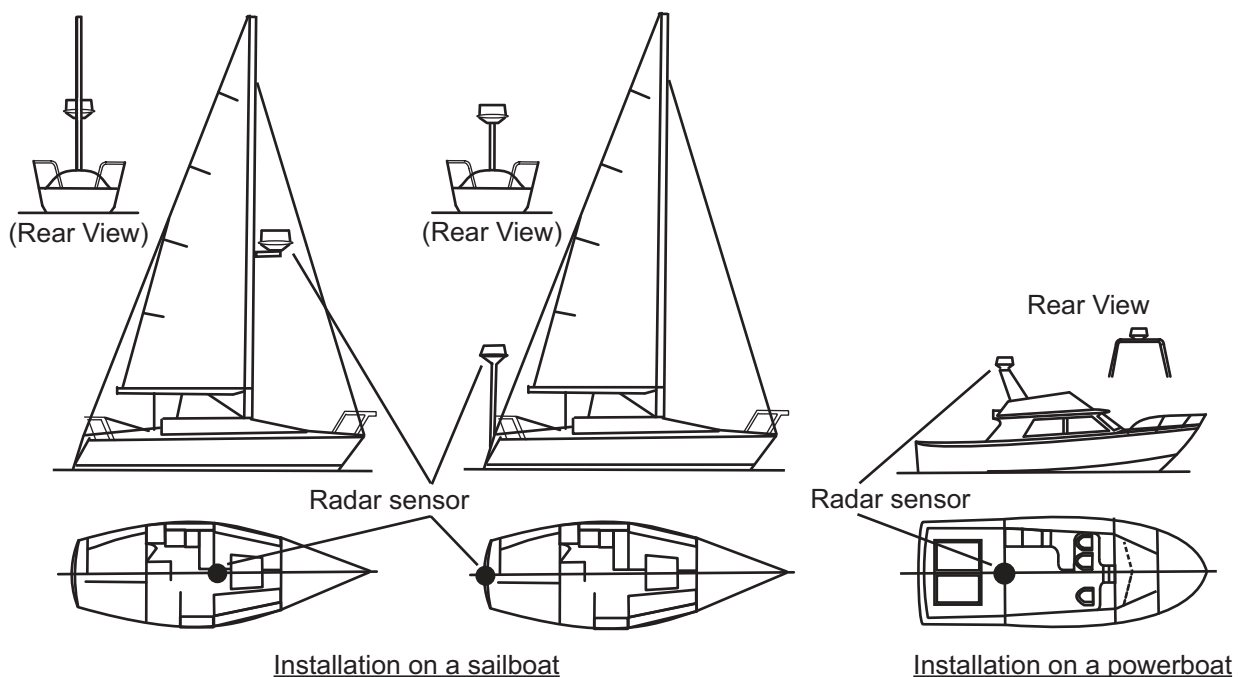
- Install the radar sensor on radar arch, on a mast or on an appropriate platform. For sailboats, a “radome mount” is optionally available for installing the sensor to a mast.
- This radar sensor emits horizontal (360°) and vertical (25°) beam.

Horizontal and vertical Beam Width of DRS4D-NXT



Place the sensor where there is a good all-round view with, as far as possible, no part of the ship's superstructure or rigging intercepting the scanning beam. Any small obstruction causes not only the shadow, an blind sectors, but also the deterioration of antenna ability, such as beam width, side-lobe level. It also worsens the radar functionality, such as azimuth resolution and occurrence of the false echo. A mast for instance, with a diameter considerably less than the horizontal beam width of the radiator, causes only a small blind sector, but a horizontal spreader or cross trees in the same horizontal plane as the radar sensor would be a much more serious obstruction; you would need to place the radar sensor well above or below it. Be sure there are no metallic objects near the antenna. See illustrations below for typical placement on a sailboat and powerboat.

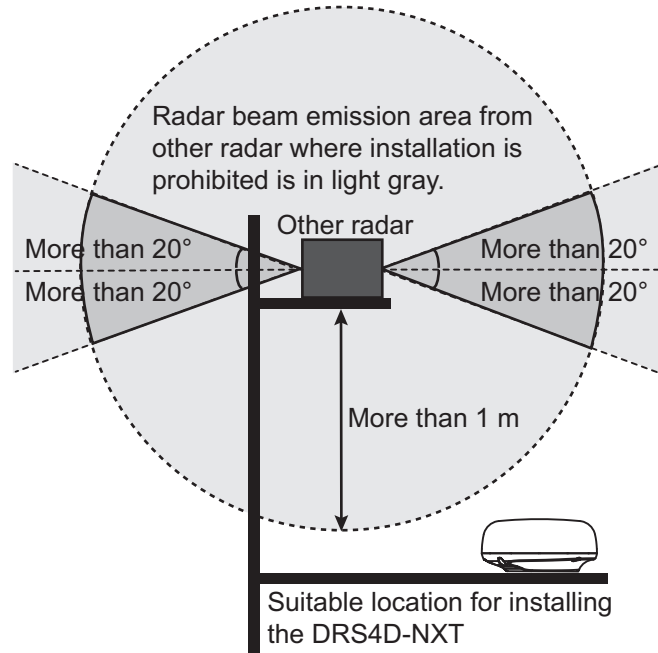
- It is rarely possible to place the radar sensor where a completely clear view in all directions is available. Thus, you should determine the angular width and relative bearing of any shadow sectors for their influence on the radar at the first opportunity after fitting.



Typical installation on a sailboat and power boat

Consideration for Selecting a Location for Installation (Multiple Radars)

- In case multiple radars are installed on a ship, DO NOT install the DRS4D-NXT within the range of beam area emitted from other radar(s). See below illustration for the suitable place to install the DRS4D-NXT. The SSD of DRS4D-NXT will be damaged if it is within the radar beam emission area from other radar.



Installation with the Radiotelephone Equipment

- Install the radome away from the radiotelephone equipment, VHF antennas, GPS antennas and Inmarsat dome so that the emission beam from the radome not obstructed.
- Install the radome away from the radiotelephone equipment so that the radiotelephone equipment do not pick up electrical noise.

Cable Routing

- In order to reduce the chance of picking up electrical interference, avoid where possible routing the power/Network cable near other electrical equipment on-board. Also, avoid running the cable in parallel with other electrical cables.
- Make sure that the power/Network cable does not run horizontally and it is put away from the cables carrying radio signal and antennas.

For Large Vessels

- When this radar sensor is to be installed on a large vessel, consider the following points:
 - The length of the pre-attached power/Network cable is 1 m from radome to the connector.
 - The length of the standard supply power/Network cable is 15 m from the connector to the power supply and display.
 - The power/Network cable which runs between the radar sensor and power supply and display comes in lengths of 10 m, 15 m, 20 m or 30 m. Select the length when purchasing.

- Deposits and fumes from a funnel or other exhaust vent can adversely affect the aerial performance and hot gases may distort the radiator portion. The radar sensor must not be mounted where the temperature is more than 55°C (131°F).

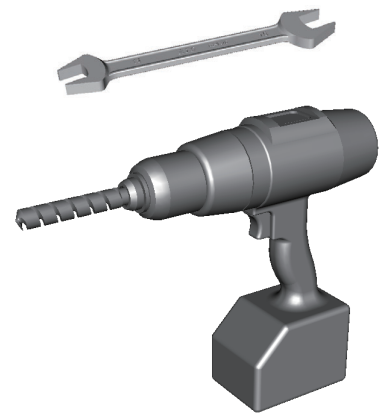
1.3 Installation of the Radar Sensor

Determine the suitability of the mounting location **BEFORE** permanently mounting the sensor. Incoming and outgoing signals may overlap one another depending on the shape of the vessel, preventing communication between the radar and display. Set the sensor on the selected location and connect the sensor to the distribution switchboard and display unit. Turn on the sensor and the display unit. Check that the picture is updated with each sweep on the display unit. Some trial and error may be necessary to find a suitable location.

Required tools for installation

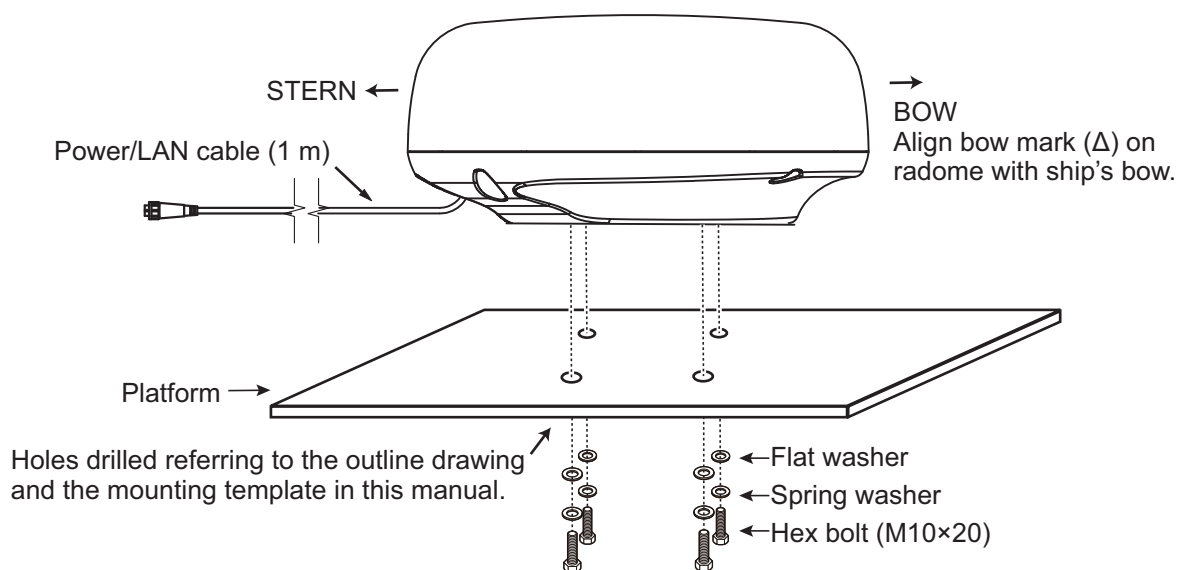
Prepare the tools shown below.

- A wrench for M10 bolts
- An electric drill with $\phi 11$ mm (0.43") drill bit



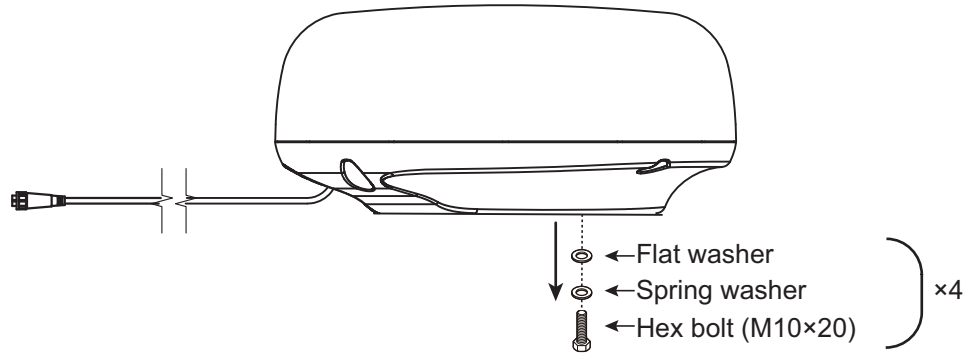
Installation on a platform

There are 6 steps to proceed for installing the radar sensor to the selected location. Below illustration shows the collective information explained from steps 1 to 6.

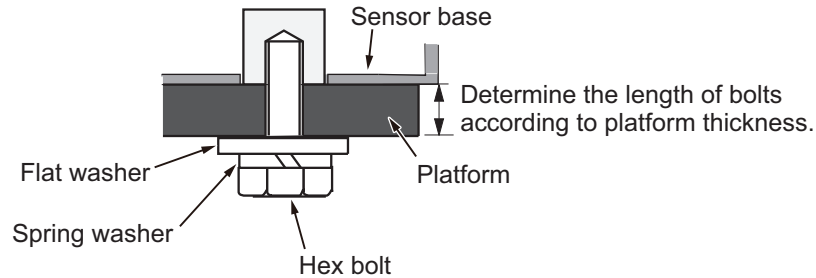


1. INSTALLATION

1. Remove four each of hex bolts (M10×20), flat washers and spring washers.



2. Using the template supplied, construct a platform and drill mounting holes in the platform to fasten the sensor. The holes must be parallel with the fore and aft line.
3. Put the radar sensor on the platform with the bow mark (Δ) on the sensor aligned with the ship's bow.
4. Use hex bolts (see the table below for bolt length), flat washers and spring washers (removed at the first step) to tighten the radar sensor to the platform. The torque for the bolts is 19.6 to 24.5 N·m.



Platform thickness and bolt to use

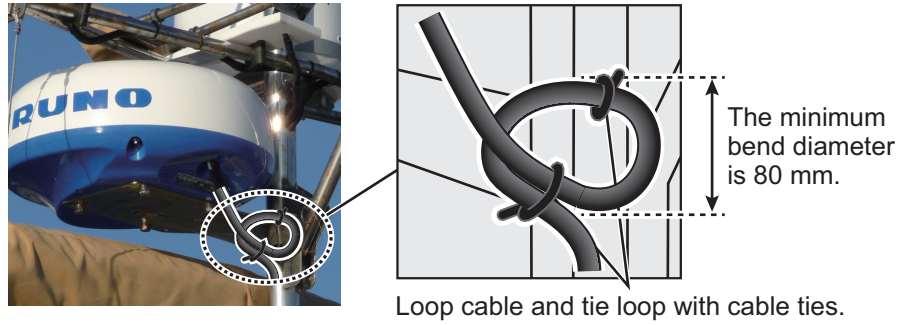
Platform thickness	Size of bolts to use
5 mm or less	M10×20 (Supplied, prefastened to radome.)
6 - 10 mm	M10×25 (Supplied as spare parts)
Over 10 mm	Local supply

5. Connect the power/Network cable pre-attached to the radar sensor to the power/Network cable.

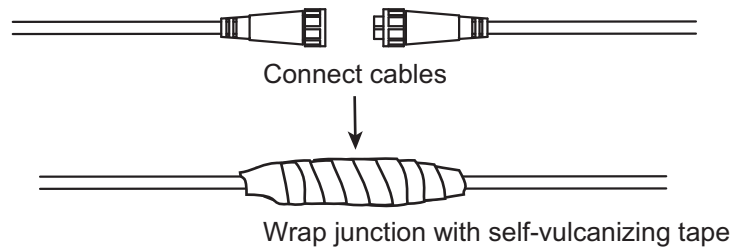
Follow this guidelines for laying the power/Network cable

- The connectors must not strike any part of the vessel by wind, etc.
- Do not apply any load to the connectors.
- If the cable is passed through a mast on a sailboat, be sure the cable does not touch ropes (sheet, halyard, etc.).
- Do not let the cable touch the hull.

- The cable must be located where no tension is applied to the connectors. To prevent tension, create a loop in the cable close to the sensor and tie the loop with cable ties, as in the figure below.



- Wrap the junction of the connectors with self-vulcanizing tape for waterproofing.



- Fasten the cable to the mast, etc. at the neck of each connector with a cable tie.
 - Make loops with redundant cable.
6. Connect the power/Network cable to the power source and display unit.

1. INSTALLATION

Installation with the radome mount

The optional radome mount lets you fasten the radar sensor to a mast on a sailboat.

Name, Type: Radome Mount, OP03-208

Code No.: 001-078-340

Name	Type	Code No.	Qty
Mounting plate	03-018-9001-0	100-206-740-10	1
Support plate (1)	03-018-9002-0	100-206-753-10	1
Support plate (2)	03-018-9003-0	100-206-763-10	1
Fixing plate	03-028-9004-3	100-206-773-10	2
Bracket (1)	03-028-9005-0	100-206-780-10	1
Bracket (2)	03-028-9006-0	100-206-790-10	1
Hex bolt w/washer	M8×20 SUS304	000-162-955-10	8
Hex bolt w/washer	M4×12 SUS304	000-162-956-10	4

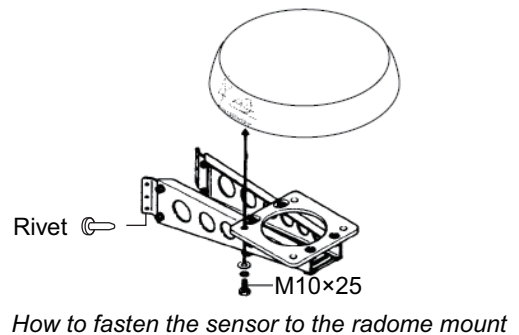
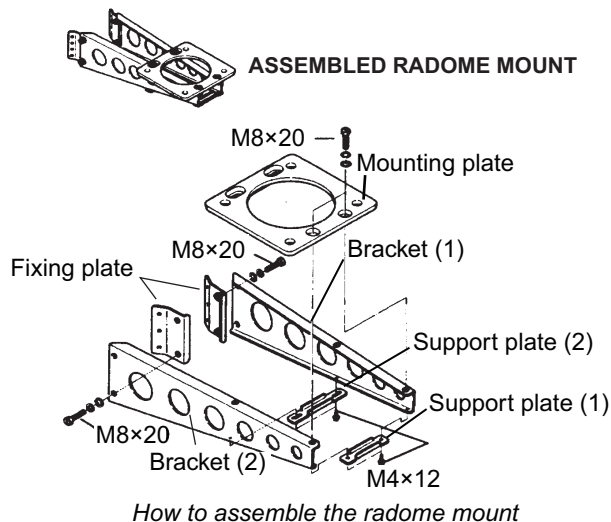
How to assemble the bracket

1. Fasten the fixing plates to brackets (1) and (2) with four M8×20 hex bolts.
2. Fit brackets (1) and (2) loosely with support plates (1) and (2) using four M4×12 hex bolts, so that the gap between the brackets can be adjusted.
3. Place the mounting plate on the bracket and fix it loosely with four M8×20 hex bolts.

How to fasten the bracket to the mast

1. Drill eight holes of 6.5 mm diameter in the mast and fix the bracket with eight stainless steel rivets (local supply) of 6.4 mm diameter.
2. Fasten the bolts on the bracket.
3. Fasten the radar sensor to the bracket.

Connect the power cable to the power source, observing the guidelines for laying the power cable shown on this page.



2. WIRING

2.1 Connections

2.1.1 Power Requirement

The DRS4D-NXT requires either 12 VDC or 24 VDC power. Connect the red cable to the positive terminal of ship's battery; the blue cable to the negative terminal. The black cable is a shielding cable for grounding.

2.1.2 Network Cable Connection

Connect Network cable to the multi function display device*.

*Hereafter TZTL12F, TZTL15F, TZT9, TZT14 and TZTBB are referred to as "multi function display device".

2.2 Check Points After Installation

Before using the product, carry out the following:

- Mechanical checks
- Turning the power on and initial setup

Mechanical checks

Check below points before switching on the DRS4D-NXT.

- All washers are in place and bolts are fully tightened.
- All connections are secure and Network cable is connected to the multi function display device.
- All connecting cables and wires are secured as instructed in page 4.

Turning the power on and initial setup

Use the information in this manual and the manual for multi function display device to power the sensor and to proceed with initial setup.

1. Ensure that all personnel are clear of antenna.
2. Press and hold down the power key of your multi function display device until the unit is ON.
3. Take the appropriate action on your multi function display device to turn on the DRS4D-NXT.
4. Check if the heading is correctly aligned - targets should appear at their correct bearing relative to the boat's bow. Adjust the alignment if necessary, referring to section 2.3.

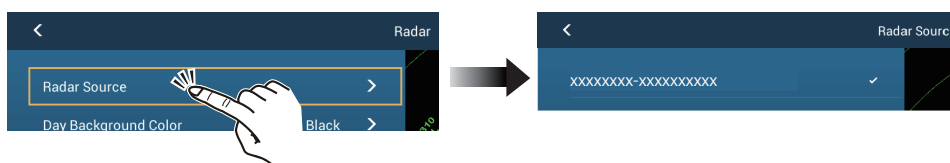
2.3 Initial Setup

Turn on the multi function display device, and do the initial setup for the antenna unit.

2.3.1 Initial setup for NavNet TZtouch2 (TZTL12F/TZTL15F)

1. Tap the [Home] icon to show the home screen and display mode settings.
2. Tap [Radar] from the [Settings] menu.
3. Tap [Radar Source], then select the appropriate antenna unit.

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




4. Drag the [Radar] menu display the menu item [Radar Initial Setup], then tap [Radar Initial Setup].
5. Referring to the tables below, set up the radar.

[Radar] menu - [Radar Initial Setup]

Menu item	Description
[Antenna Rotation]	Select the speed of antenna rotation.
[Antenna Heading Align]	See "How to align the antenna heading" on page 10.
[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.
[Enable Sector Blanking]	Up to two sectors may be selected for blanking (no transmission). Select [ON] to enable this feature. Set the start and end angles (0° to 359°).
[Enable Sector 2 Blanking]	

[Radar] menu - [Antenna Position]

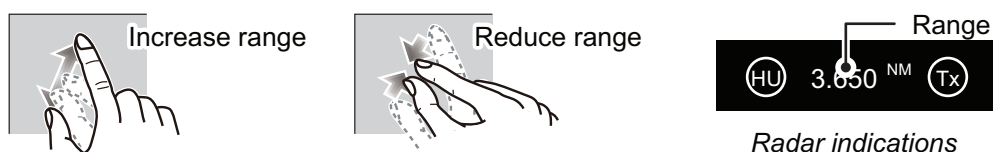
Menu item	Description
[Longitudinal (from bow)] [Lateral (-Port)]	Referring to the figure on the right, enter the radar antenna positioning bow-stern (Longitudinal) and port-starboard (Lateral) position from the origin. 
[Antenna Height]	Select the height of the antenna above the waterline.
[Radar Monitoring]	Display various information regarding the connected radar.
[ARPA Advanced Settings]	Do not change these settings.
[Set Hardware To Factory Default]	Resets the radar selected at [Radar Source] to factory default.
[Reset Default Settings]	Resets [Radar] menu settings to default.

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. Set your radar with 0.125 and 0.25 NM range and the head up mode. You can select a range by using the pinch action. The range appears at the bottom right of the screen. Range may also be selected using the slide bar displayed on the right-hand side of the radar display area. Drag the bar up to zoom in, or down to zoom out.



2. Turn the vessel's bow toward a target.
3. Tap the [Home] icon to show the home screen and display mode settings.
4. Tap [Radar] to show the [Radar] menu.
5. Drag the [Radar] menu to show the [RADAR INITIAL SETUP] menu.
6. Tap [Antenna Heading Align].
7. Key in the offset value so that the target is displayed at the very top of the screen (setting range: +179.9° to -180°, +: clockwise direction, -: counterclockwise direction), then tap the ✓ icon.
8. Confirm that the target echo is displayed at correct bearing on the screen.

2.3.2 Initial setup for NavNet TZtouch (TZT9/TZT14/TZTBB)

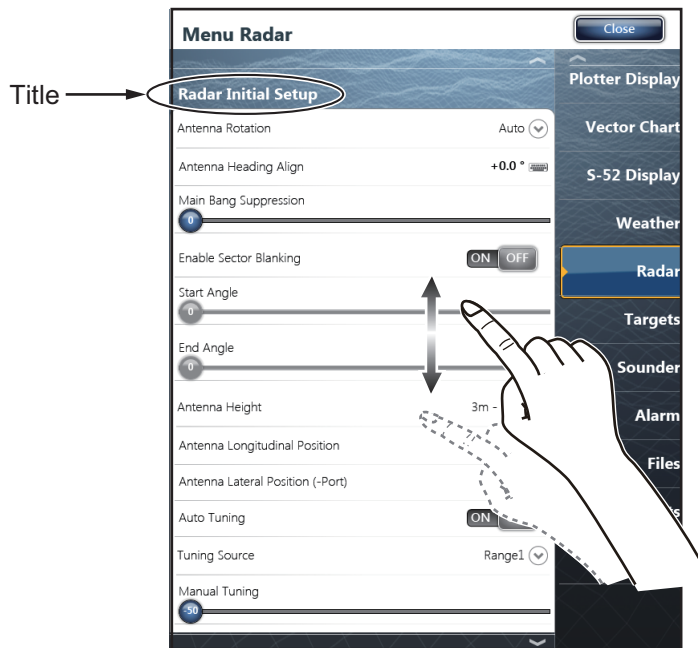
1. Press the **Home** key (or tap the **Home** icon).
2. Select [Menu] on the menu icon bar to open the main menu.
3. Select [Radar].
4. Select [Radar Source] on the [Menu Radar] sub menus, then select the radar type connected.

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

2. WIRING

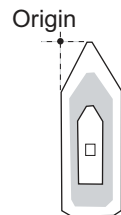


5. Drag the [Menu Radar] sub menus to find the menu item [Radar Initial Setup].



Menu Radar (Radar Initial Setup)

Menu item	Description
[Antenna Rotation]	Select the speed of antenna rotation.
[Antenna Heading Align]	See the topic of "How to align the antenna heading" on page 2-12.
[Main Bang Sup-pression]	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.
[Antenna Height]	Select the height of the antenna above the waterline.
[Antenna Longitu-dinal Position]	Enter the antenna positioning bow-stern (Longitudi-nal) and port-starboard (lateral) position from the ori-gin.
[Antenna Lateral Position (-Port)]	
Others	See Operator' Manual for TZT9/14/BB.

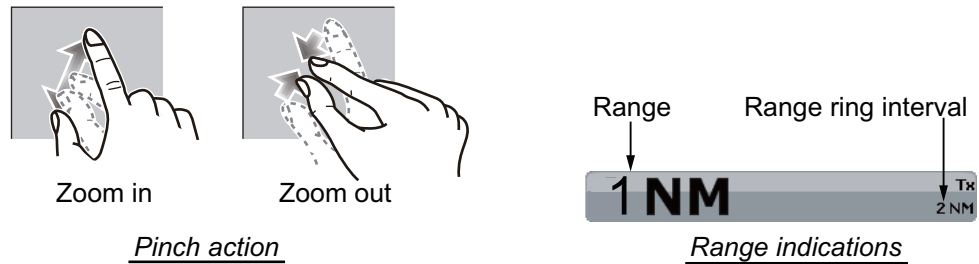


How to align the antenna heading

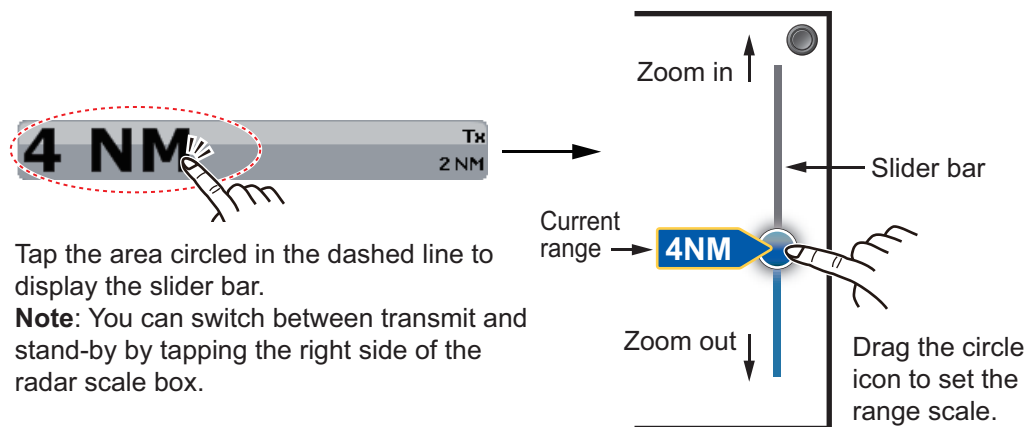
You have mounted the antenna unit facing straight ahead in the direction of the bow. Therefore, a small but conspicuous target dead ahead visually should appear on the heading line (zero degrees).

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.



For TZTBB, you can also control the range in the operation as follows. 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) Press the **Home** key (or 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. MAINTENANCE, TROUBLE-SHOOTING

⚠

WARNING

⚠

DO NOT OPEN THE SENSOR.
Electrical shock hazard

There are no user-serviceable parts inside. Only qualified personnel are allowed to work inside the equipment.

3.1 Maintenance

Regular maintenance is important for good performance. Check the points mentioned below every 3 to 6 months to keep the radar sensor in good working order. Observe the safety instructions at the front of this manual when working on the mast.

Check point	Action
Fixing bolts <ul style="list-style-type: none"> • Corrosion • If they are tightened 	<ul style="list-style-type: none"> • Replace corroded bolts. • Tighten loosened bolts. • Coat new bolts with marine sealant.
Radome <ul style="list-style-type: none"> • Cracks • Foreign material 	<p>If a crack is found, repair it temporarily with a small amount of sealing compound or adhesive. Bring the unit to your dealer for permanent repairs.</p> <p>Foreign material on the radome can cause a considerable drop in sensitivity. Remove foreign material with a freshwater-moistened cloth. Do not use commercial cleaners to clean the sensor; they can remove paint and markings or deform the plastic.</p>

3.2 Replacement of Fuse

The 5A fuse (Type: FRU-2P5S-FU-5A-A, Code No.: 000-168-869-10) in the fuse holder on the power/Network cable protects the radar sensor from overcurrent and equipment fault. If you cannot turn on the power, check the fuse to see if it has blown. If the fuse has blown, find the reason before you replace the fuse. If the fuse blows again after the replacement, contact your dealer for advice.

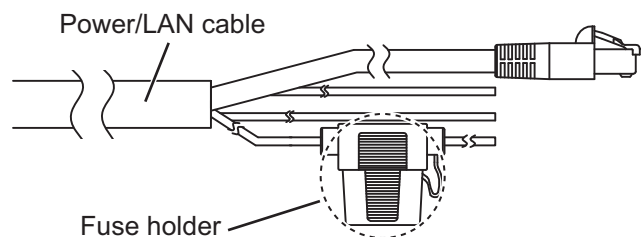
⚠

WARNING

⚠

Use the proper fuse.

Use of a wrong fuse can cause fire or damage the equipment.



How to replace the fuse
Open the fuse holder cover and replace the fuse. Then close the cover.

3.3 Troubleshooting

The table below provides simple troubleshooting procedures to restore normal operation. If you cannot restore normal operation, contact your dealer for advice.

Trouble	Remedy
The radar type does not appear on the multi function display device.	<ul style="list-style-type: none"> • Check if the power/Network cable is connected to the power source and the power source is on. • Check the power cable for damage. • Check if the fuse has blown. • Check the voltage of ship's main. • Check the software version of the multi function display device.
The radar type appears on the multi function display device, but the radar display does not appear or transmission does not start.	Check the software version of multi function display device.
The radar appears on the multi function display device, but disappears when the transmission started or continue rebooting.	Check the power voltage is sufficient.
Transmission starts, but echoes do not appear or weak echoes occur	Check the settings of GAIN/SEA/RAIN.
Too many interferences	<ul style="list-style-type: none"> • Turn the interference rejector on. • Turn on/off the transmission. • Change the transmission channel.
Marks and characters appear on the display, but echoes do not appear.	Check that the power/Network cable is fastened.
You changed the range, but the radar picture does not change.	<ul style="list-style-type: none"> • Try to zoom in or out the radar display. • Turn the power off and on.
Signal strength is too low.	Have a technician check the radar.

4. PROCEDURE FOR RETROFIT

4.1 Required Tools and a Part for Retrofit

Below tools are required for retrofit. A rubber gasket is required for retrofit.

- Positive and negative screwdrivers
- Rubber gasket (two holes) provided as an optional kit
- A fuse with below characteristics is required for retrofit. Local supply.
Current rating: 5A, Voltage rating: 32V, Cable Diameter 12AWG (2.053 mm)
- Refer to the below table about the limitation of cable length according to the ship's main supply.

Ship's Main Supply	Limitation on Cable Length
10.8 VDC	Unavailable
12 VDC	Less than 10 m only
24 VDC	No limitation

4.2 Retrofit Procedures

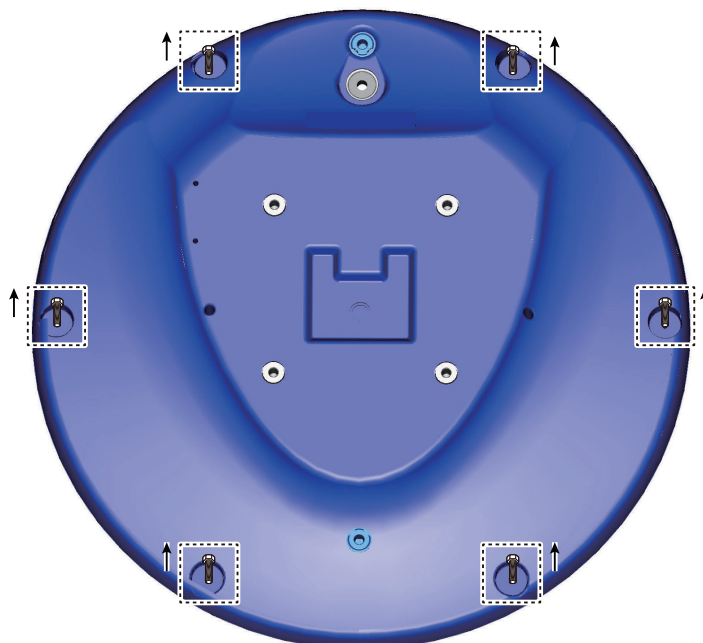
Note 1: Retrofit from DRS2D, DRS4D and DRS6A is available with below procedures.

Note 2: Below procedures are for using a 5A fuse.

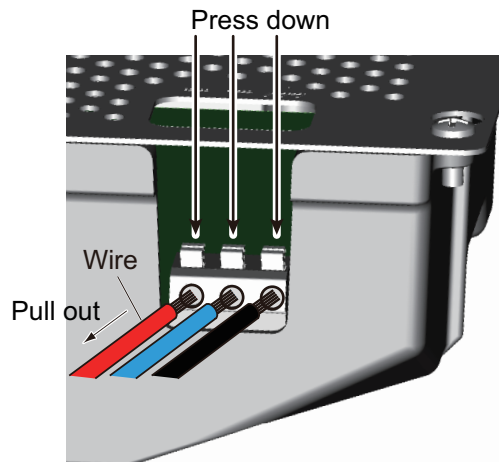
Note 3: Make sure that the multi function display device is turned off and the two-way cable MOD-ASW0001 is unplugged from the multi function display device and the power supply unit before starting below procedures.

Procedures for the radome

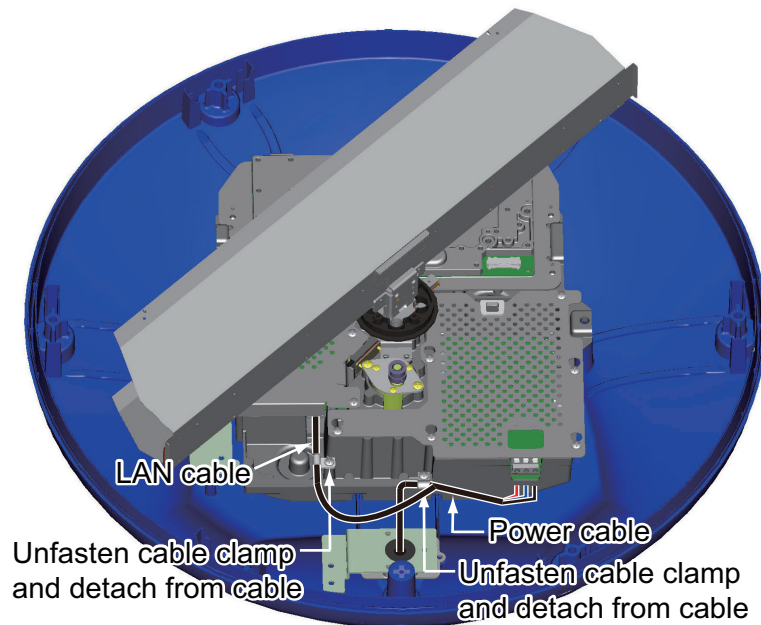
1. Put the radome upside down.
2. Unfasten six retaining screws at the bottom of radome and open it.



3. Press down the button of WAGO of power terminal from the top small window with using the negative screwdriver and pull out the power cable.



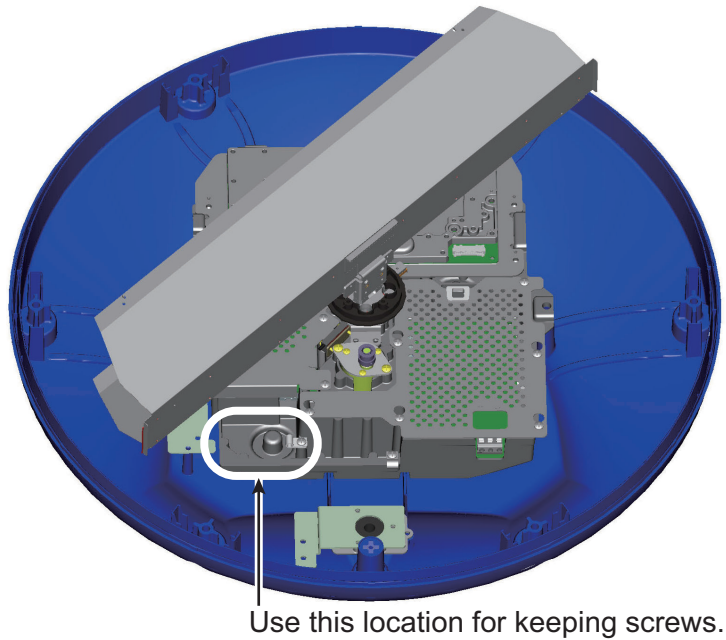
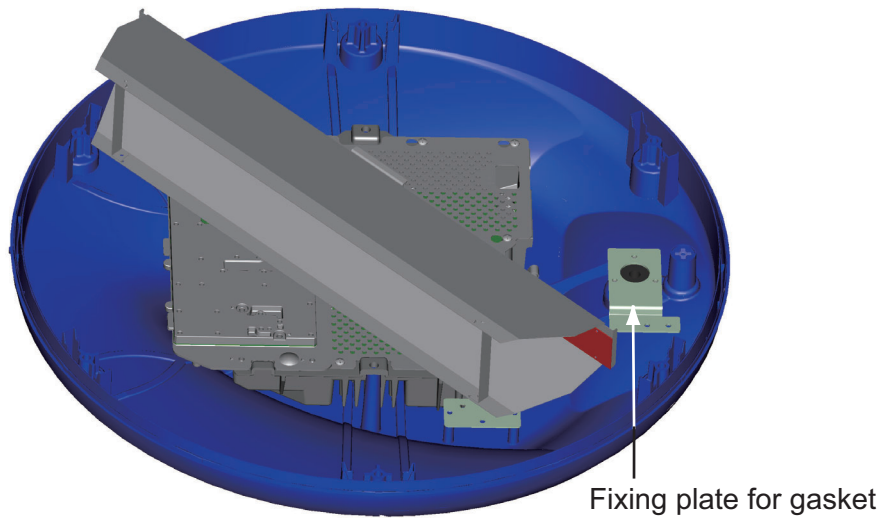
4. Unfasten two screws of cable clamps of power cable and Network cable.
5. Detach the cable clamps from power cable and Network cable and keep a Network cable clamp for later use.



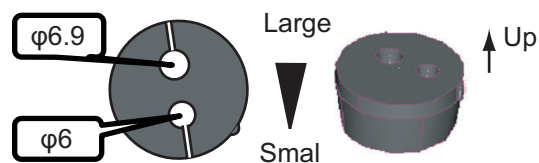
6. Unplug the Network cable from the port. Note that the Network cable port is upside down.

4. PROCEDURE FOR RETROFIT

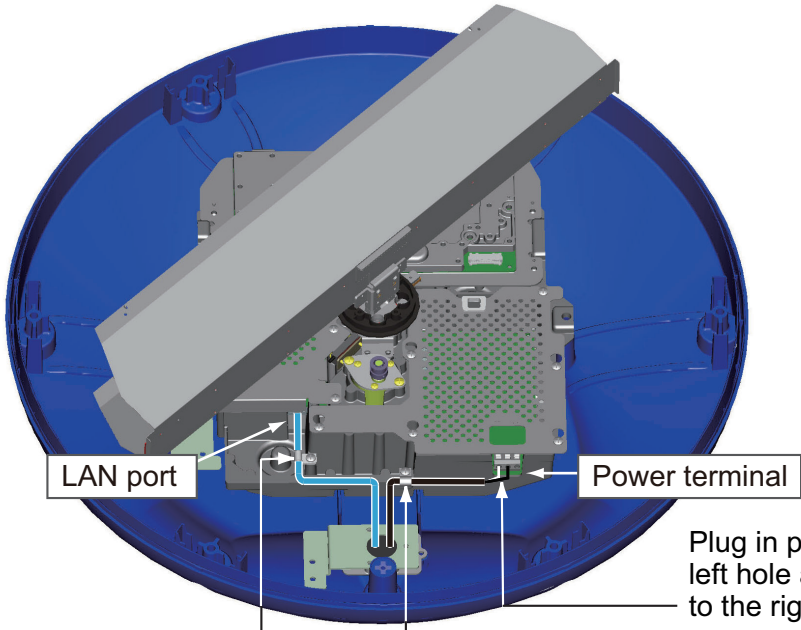
7. Unfasten three screws at the bottom of the mounting base to remove the fixing plate for the gasket and keep screws and fixing plate for later use.



8. Remove the pre-attached cable and a pre-attached gasket.
9. Insert the existing power cable and Network cable to the radome from the bottom of radome.
10. Attach the clamps to the existing power cable and Network cable with the cable clamps detached in step 4.
11. Push these two cables into the slits of the provided gasket. The sizes of holes on a gasket differ according to the diameter of cables.
Note: The ends of the gasket are different. Larger end should be up.

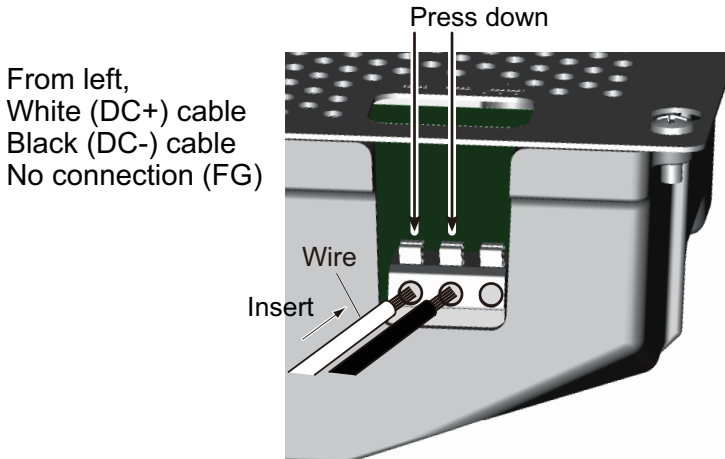


- 12. Connect the power cable to the power terminal.
- 13. Plug the Network connector to the port.



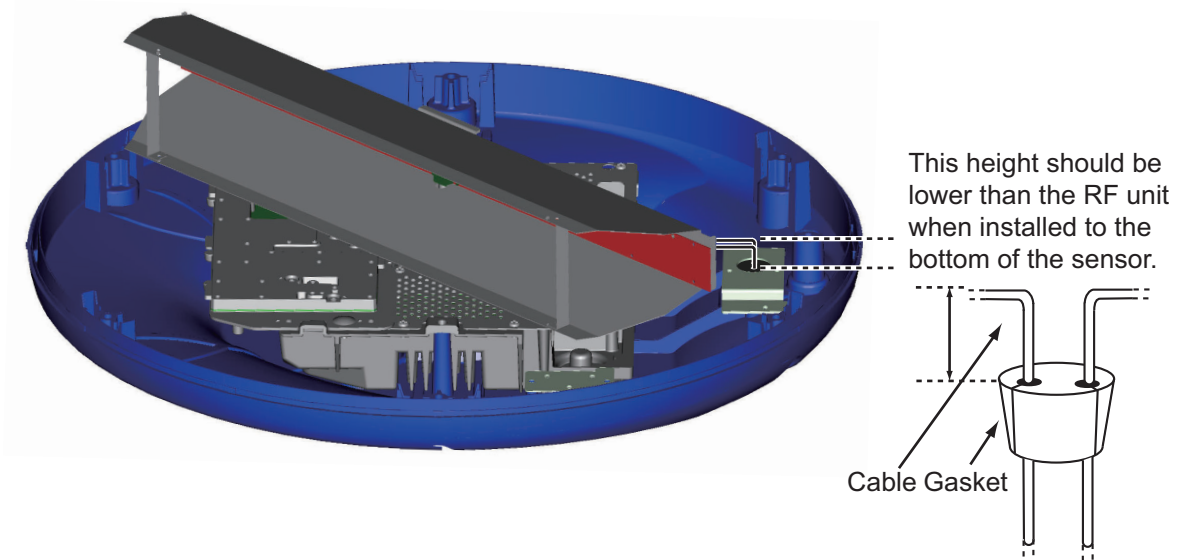
Insert the cable (LAN) with this locking saddle.

Insert the shield cable (power) with this clamp.

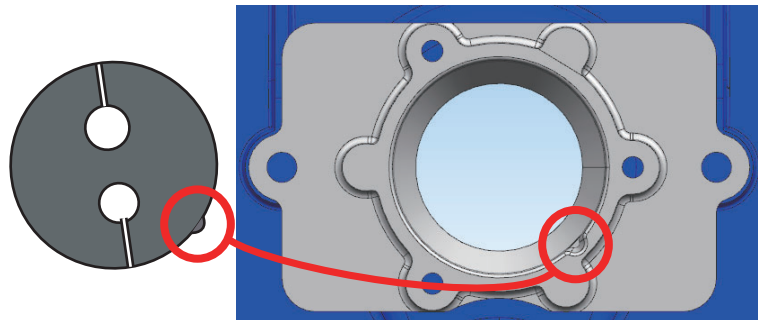


4. PROCEDURE FOR RETROFIT

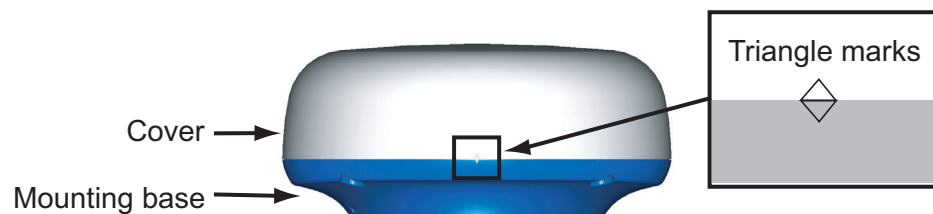
- Slide the gasket on cables so that the amount of cable above the gasket is lower than the RF chassis.



- Note 1:** If the two-way cable touches the platform near the mounting base, wind vinyl tape around the cable at the point where it is bent.
- Note 2:** The gasket has a protruding point and a radome chassis has a dent where these points matches as below illustration.



- Fasten the clamps of power cable and Network cable.
- Screw down the clamps to the location according to the above illustration.
- Confirm that the rubber gasket is properly positioned and that the triangle mark on the cover is aligned with the triangle mark on the mounting base, then fasten the fixing screws for the cover.



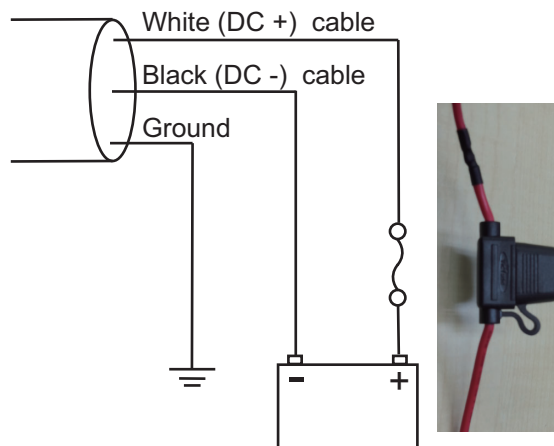
There two ways to attach the fuse box to the existing cable MOD-ASW0001 as below.

Procedures for Attaching the Fuse Box to Existing Cables 1

1. Detach the power cable from PSU-012 or PSU-017.
2. Cut the power cable of two-way cable MOD-ASW0001 so that the cable can be connected to a fuse box (local supply) and ship's main supply.
3. Connect the white cable to the fuse box and solder the both sides of power cable to it.
4. Connect the white cable to the positive side of power supply.
5. Connect the black cable to the negative side of power supply.
6. Connect the Network cable to the multi function display device.

Procedures for Attaching the Fuse Box to Existing Cables 2

1. Detach the power cable from PSU-012 or PSU-017.
2. Cut the power cable of existing two-way cable MOD-ASW0001 so that the cable can be connected to the selectable power/Network cable (CP03-36400, CP03-36410, CP03-36420 or CP03-36430) and ship's main supply.
3. Cut the power cable of the selectable power/Network cable (CP03-36400, CP03-36410, CP03-36420 or CP03-36430) so that the fuse box of it can be used.
4. Connect the white cable of MOD-ASW0001 to the power cable of the selectable power/Network cable with a fuse box and solder the both sides of power cable to it.
5. Connect the white cable to the positive side of power supply.
6. Connect the black cable to the negative side of power supply.
7. Connect the Network cable to the multi function display device.



**SPECIFICATIONS OF RADAR SENSOR
DRS4D-NXT**

1 RADIATOR

- 1.1 Antenna type Patch array antenna
- 1.2 Antenna length 2 ft
- 1.3 Horizontal beam width 4.0° typical (-3dB), Enhanced 1/2/3: 3.2°/2.8°/2.4°
- 1.4 Vertical beam width 20° (-3dB)
- 1.5 Sidelobe attenuation -24 dB
- 1.6 Rotation 24/36/48 rpm coupled with range or 24 rpm fixed (select)

2 RADAR FUNCTION

- 2.1 Tx frequency

Ch #	P0N (MHz)	Q0N (MHz)
1	9380	9400
2	9400	9420
3	9420	9440

- 2.2 Output power 20 W nominal (equivalent to 4kW magnetron radar)
- 2.3 Intermediate frequency 83.75/103.75 MHz
- 2.4 Range, Pulse length and Pulse Repetition Rate (PRR)

Range (NM)	Pulse length (μs) (non-modulated/modulated)	PRR (Hz approx.)
0.0625 to 0.5	0.08/5.0	2000
0.75 to 1	0.15/7.5	2000
1.5 to 2	0.3/11	2000
3 to 4	0.6/13	2000
6 to 12	1.2/15	2000
16 to 36	1.2/18	1400

- 2.5 Minimum range 25 m
- 2.6 Range resolution 20 m
- 2.7 Bearing accuracy ±1°
- 2.8 Warm-up time Null

3 INTERFACE

- 3.1 Number of port LAN: 1 port, Ethernet, 100Base-TX, RJ45
- 3.2 Data sentences IEC61162-1/2
Input GGA, GLL, GNS, HDG, HDM, HDT, RMA, RMC, THS, VHW, VTG

4 POWER SUPPLY

12-24 VDC: 2.5-1.3 A

5 ENVIRONMENTAL CONDITIONS

- 5.1 Ambient temperature -25°C to +55°C (storage: -30°C to +70°C)
- 5.2 Relative humidity 93% or less at +40°C
- 5.3 Degree of protection IP26
- 5.4 Vibration IEC 60945 Ed.4

6 UNIT COLOR

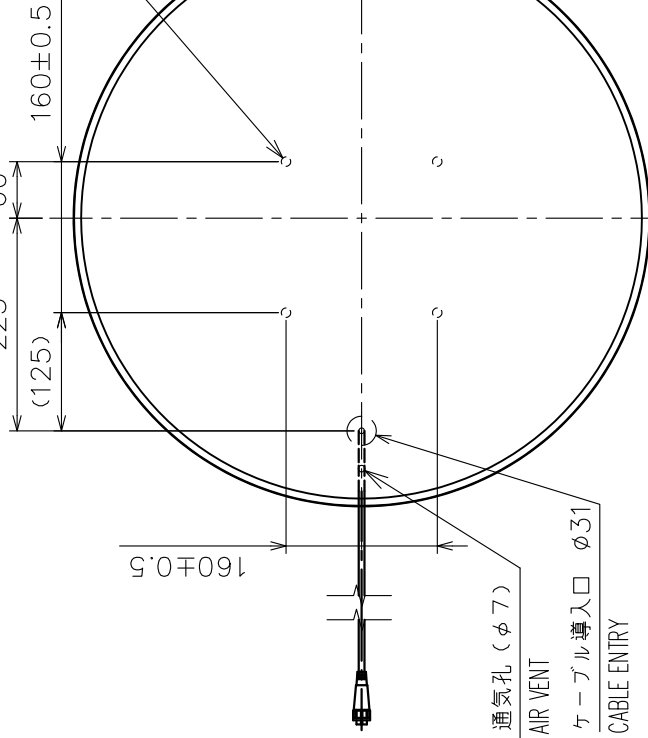
N9.5 (cover), PANTONE2945C (bottom)

Page for Packing List
(Not ready on July 23.)

表1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
$L \leq 50$	± 1.5
$50 < L \leq 100$	± 2.5
$100 < L \leq 500$	± 3
$500 < L \leq 1000$	± 4

取付穴 (有効ネジ深さ15)
4-M10
FIXING HOLES (THREAD DEPTH: 15)



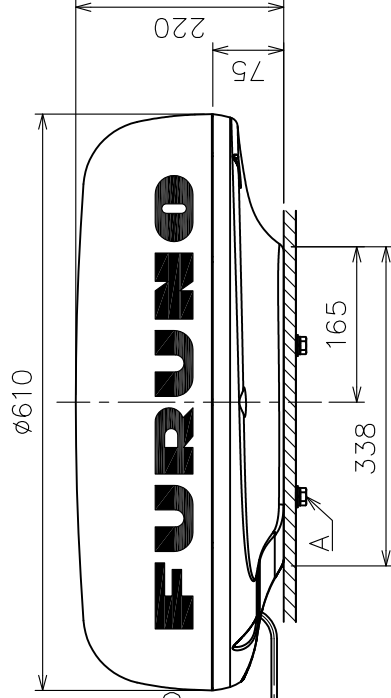
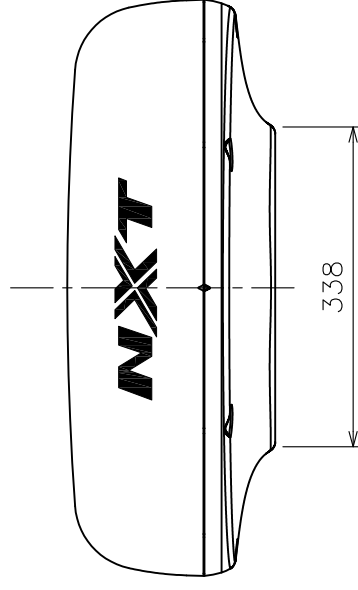
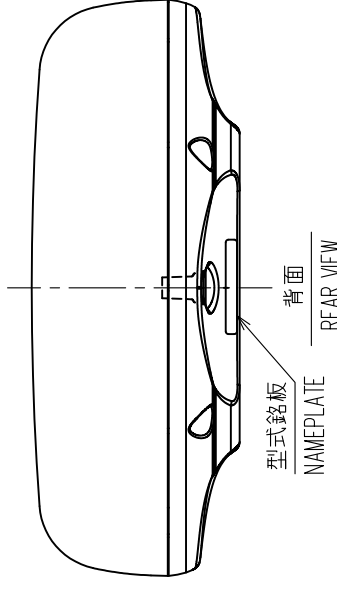
船首方向
BOW

通気孔 ($\phi 7$)
AIR VENT
ケーブル導入口 $\phi 31$
CABLE ENTRY

空中線部底部
BOTTOM OF ANTENNA UNIT
プラットフォーム
P.W.
S.W.

ケーブル (1m)
CABLE

六角ボルト
M10
HEX. BOLT
A部 詳細 (尺度: 1/2)
DETAIL FOR A (SCALE: 1/2)



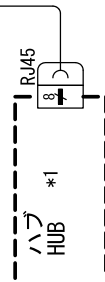
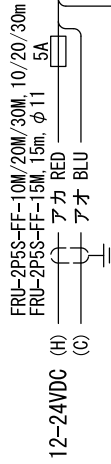
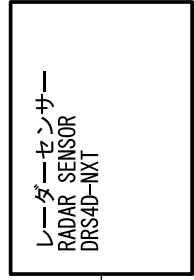
注 記

- 1) 指定外の寸法公差は表1による。
 - 2) 取付にはM10ボルトを使用のこと。
- 取付部ネジ深さ15 mmに合ったネジ長さを選定のこと。

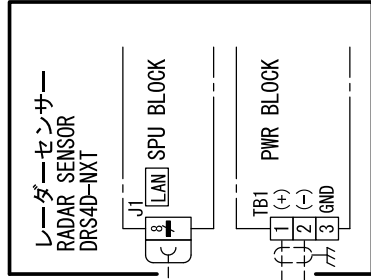
NOTE

1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
 2. USE M10 BOLTS FOR FIXING THE UNIT.
- SELECT THREAD LENGTH ACCORDING TO THREAD DEPTH 15 mm.

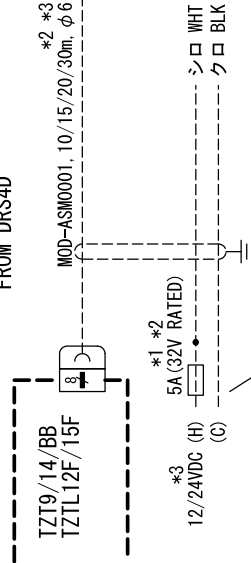
DRAWN	15/Jan/2015	T.YAMASAKI	TITLE	DRS4D-NXT
CHECKED	15/Jan/2015	H.MAKI	名称	レーダーセンサー
APPROVED	17/Jan/2015	H.MAKI	外寸図	
SCALE	1/8	WSS 7.3 kg	NAME	RADAR SENSOR
DWG.No.	C3649-G01-A	REF.No.	03-187-300G-2	OUTLINE DRAWING



または OR
 マルチファンクションディスプレイ
 MULTI FUNCTION DISPLAY
 TZTL9/14/BB
 TZTL12F/15F



DRS4Dから換装時の接続
 CONNECTION FOR EXCHANGE
 FROM DRS4D



コネクタを取り外して芯線を電源につなぐ。
 CONNECT CORES TO DC POWER AFTER REMOVING THE PLUG.

注記

- * 1) 現地手配。
 - * 2) DRS4Dからの換装時、改造が必要。
 - * 3) 12V電源に対しては10mケーブルのみ可。
- NOTE
- *1: LOCAL SUPPLY.
 - *2: FOR EXCHANGE FROM DRS4D SERIES, MODIFICATION IS REQUIRED.
 - *3: 10m CABLE ONLY AVAILABLE FOR 12V SOURCE.

DRAWN	30/Jun/2015	T. YAMASAKI	TITLE	DRS4D-NXT
CHECKED	30/Jun/2015	H. MAKI	名称	レーダーセンサー
APPROVED	3/Jul/2015	H. MAKI		相互結線図
SCALE	MASS	kg	NAME	RADAR SENSOR
DWG. No.	C3649-C01-A			INTERCONNECTION DIAGRAM
			REF. No.	

ECF

(Elemental Chlorine Free)

The paper used in this manual
is elemental chlorine free.

FURUNO ELECTRIC CO., LTD.

9-52 Ashihara-cho,
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Pub. No. IME-36490-Z

(TASU) DRS4D-NXT

A : 0000
Z : JUL. 02, 2015



00019108210