FURUNO

OPERATOR'S MANUAL

NETWORK SOUNDER

Model **DFF1**

FURUNO ELECTRIC CO., LTD.

www.furuno.com

IMPORTANT NOTICES

General

- This manual has been authored with simplified grammar, to meet the needs of international users.
- The operator of this equipment must read and follow the descriptions in this manual. Wrong operation or maintenance can cancel the warranty or cause injury.
- Do not copy any part of this manual without written permission from FURUNO.
- If this manual is lost or worn, contact your dealer about replacement.
- The contents of this manual and equipment specifications can change without notice.
- The example screens (or illustrations) shown in this manual can be different from the screens you see on your display. The screens you see depend on your system configuration and equipment settings.
- Save this manual for future reference.
- Any modification of the equipment (including software) by persons not authorized by FURUNO will cancel the warranty.
- The following concern acts as our importer in Europe, as defined in DECISION No 768/2008/EC.
  - Name: FURUNO EUROPE B.V.
  - Address: Ridderhaven 19B, 2984 BT Ridderkerk, The Netherlands
- All brand and product names are trademarks, registered trademarks or service marks of their respective holders.

How to discard this product

Discard this product according to local regulations for the disposal of industrial waste. For disposal in the USA, see the homepage of the Electronics Industries Alliance (http://www.eiae.org/) for the correct method of disposal.

How to discard a used battery

Some FURUNO products have a battery(ies). To see if your product has a battery, see the chapter on Maintenance. Follow the instructions below if a battery is used. Tape the + and - terminals of battery before disposal to prevent fire, heat generation caused by short circuit.

In the European Union

The crossed-out trash can symbol indicates that all types of batteries must not be discarded in standard trash, or at a trash site. Take the used batteries to a battery collection site according to your national legislation and the Batteries Directive 2006/66/EU.

In the USA

The Mobius loop symbol (three chasing arrows) indicates that Ni-Cd and lead-acid rechargeable batteries must be recycled. Take the used batteries to a battery collection site according to local laws.
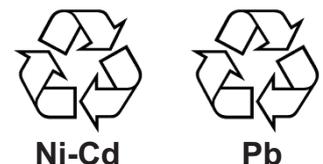
In the other countries

There are no international standards for the battery recycle symbol. The number of symbols can increase when the other countries make their own recycle symbols in the future.

⚠ SAFETY INSTRUCTIONS

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

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

⚠ Warning, Caution	🚫 Prohibitive Action	❗ Mandatory Action

Safety instructions for the operator

⚠ WARNING

Do not open the equipment.

Only qualified personnel should work inside the equipment.

Do not disassemble or modify the equipment.

Fire, electrical shock or serious injury can result.

Turn off the equipment immediately if it is emitting smoke or fire.

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

Turn off the power immediately if water leaks into the equipment or an object is dropped inside the equipment.

Continued use can cause fire or electrical shock.

Turn off the power immediately if you feel the equipment is acting abnormally.

If the equipment is very warm or is emitting strange noises turn off the power immediately and contact your dealer for advice.

⚠ WARNING

Do not operate the equipment with wet hands.

Electrical shock can result.

Do not place liquid-filled containers on the top of the equipment.

Electrical shock can result.

Do not install the network sounder unit where it may be subjected to rain or water splash.

Fire or electrical shock can result if water gets inside the equipment.

Use the proper fuse.

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

A warning label is attached to the equipment. Do not remove these labels. If a label is missing or illegible, contact a FURUNO agent or dealer about replacement.

⚠ WARNING ⚠
To avoid electrical shock, do not remove cover. No user-serviceable parts
⚡   ⚠

Name: Warning Label (1)
Type: 86-003-1011-2
Code No.: 100-236-232

Safety instructions for the installer

⚠ WARNING

⚡	**Do not open the equipment.** Only qualified personnel should work inside the equipment.
🚫	**Turn off the power before beginning the installation.** Fire or electrical shock can result if the power is left on.
❗	**Confirm that is no water leakage at the transducer and temperature sensor.** Water leakage can sink the vessel. Also, confirm that neither the transducer or sensor will loosen by vibration. The installer is solely responsible for the installation.
❗	**Confirm that the power supply voltage is within the rating of this equipment.** Incorrect voltage will damage the equipment and may cause fire.

⚠ CAUTION

❗	**The transducer cable must be handled carefully, following the guidelines below.** • **Keep fuels and oils away from the cable.** • **Locate the cable away from chemicals.** • **Locate the cable away from locations where it might be damaged.**
❗	**Do not turn on the power with the transducer exposed to air.** Damage to the transducer may result.
❗	**Observe the following compass safe distances to prevent interference to a magnetic compass:**

Standard compass	Steering compass
0.30 m	0.30 m

TABLE OF CONTENTS

SYSTEM CONFIGURATION

This sounder can be connected to NavNet/NavNet vx2*, NavNet 3D (MFD8/12/BB) and NavNet TZtouch (TZT9/14).

Network Sounder DFF1	NavNet series Radar Plotter

HUB*

NavNet series
Radar Plotter
Radar Plotter
Radar Plotter

12-24 VDC

Matching Box MB-1100   1 kW

Rectifier PR-62

100/110/220/230 VAC, 1ø, 50/60 Hz

Transducer
520-5PSD
525-5PWD
520-5MSD

Triducer
525STID-MSD
525STID-PWD

Speed/temperature sensor
ST-02MSB
ST-02PSB

Temperature sensor
T-04MSB
T-04MTB

Transducer
50B-6/6B
50B-9B

Transducer
200B-5S

Transducer
50/200-1T

Note: Use only 600 W/1 kW transducer. Use of other types will damage the transducer.

——————— : Standard supply
- - - - - - - - - - : Optional supply
— — — — : External equipment

*: HUB may be connected to 3 sets of NavNet radar or plotter.

* Model 17x2 Series, Model 17x2C Series, Model 17x4 Series, Model 17x4C Series, GD-1720, GD-1720C, Model 18x3C(-BB) Series, Model 18x4C(-BB) Series, Model 19x3C(-BB) Series, Model 19x4C(-BB) Series, GD-1900C(-BB), GD-1920C(-BB)

CE declaration
With regards to CE declarations, please refer to our website (www.furuno.com), for further information about RoHS conformity declarations.

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1. MOUNTING

1.1   Equipment Lists

Standard supply

Name	Type	Code No.	Qty	Remarks
Network Sounder	DFF1	-	1	
Spare Parts	SP02-05201	001-007-860	1 set	Fuse
Installation Materials	CP02-08100	000-010-153	1 set	Power cable, LAN cable, Self-tapping screws

Optional supply

Name	Type	Code No.	Remarks
Matching Box	MB-1100	000-041-353	For 1 kW
Cable Assy.	MJ-A6SPF0017-010C	000-159-704-11	1 m, for NavNet
	MJ-A6SPF0017-100C	000-159-706-11	10 m, for NavNet
	MJ-A6SPF0017-200C	000-159-707-11	20 m, for NavNet
	MJ-A6SPF0017-300C	000-159-708-11	30 m, for NavNet
	MJ-A6SRMD/TM11AP8-005	000-144-463	For HUB
	MOD-Z072-020+	000-167-175-10	2 m, HUB-101
	MOD-Z072-100+	000-167-177-10	10 m, HUB-101
	MOD-Z072-050+	000-167-176-10	50 m, HUB-101
Inner Hull Kit S	22S0191-2	000-802-598	
Triducer	525STID-MSD	000-011-783	Thru-hull mount, metallic
	525STID-PWD	000-011-784	Transom mount, plastic
Transducer	520-5PSD	000-015-204	Thru-hull mount, plastic
	520-5PWD	000-015-126	Transom mount, plastic
	520-5MSD	000-015-212	Thru-hull mount, metallic
	50B-6	000-015-042	10 m, 1 kW
	50B-6B	000-015-043	15 m, 1 kW
	50B-9B	000-015-065	15 m, 1 kW
	200B-5	000-015-027	10 m, 1 kW
	200B-5S	000-015-029	10 m, 1 kW
	50/200-1T	000-015-170	10 m, 1 kW
Speed/Temperature Sensor	ST-02MSB	000-137-986	Thru-hull mount, metallic
	ST-02PSB	000-137-987	Thru-hull mount, plastic
Temperature Sensor	T-04MSB	000-026-893	Thru-hull mount
	T-04MTB	000-026-894	Transom mount
Cable Assy.	02S4147	000-141-082	For Speed/Temp sensor, Temp. sensor
Extension Cable *	C332 10M	000-192-786-10	10m, for transducer
Rectifier	PR-62	000-013-484	100 VAC
		000-013-485	110 VAC
		000-013-486	220 VAC
		000-013-487	230 VAC

Note: Use only 600 W/1 kW transducer. Use of other types will damage the transducer.

*: Use of the extension cable may cause the following problems:

・Reduced detection ability

・Wrong ACCU-FISH^{TM} information (fish length smaller than actual length, fewer
fish detections, error in individual fish detection).
・Wrong speed data
・No TD-ID recognition

1.2   Network Sounder

The network sounder can be installed on a desktop, deck or on a bulkhead. When se-
lecting a mounting location for the network sounder, keep the following in mind:

- The temperature and humidity should be moderate and stable.

- Locate the unit away from exhaust pipes and vents.

- The mounting location should be well ventilated.

- Mount the unit where shock and vibration are minimal.

- Keep the unit away from electromagnetic field-generating equipment such as
  motors and generators.

- Leave slack in cables for maintenance and servicing ease.

- A magnetic compass will be affected if the network sounder is placed too close to it.
  Observe the compass safe distances noted in the safety instructions to prevent dis-
  turbance to the magnetic compass.

- Fasten the network sounder to the mounting location with four self-tapping screws
 (4×20).
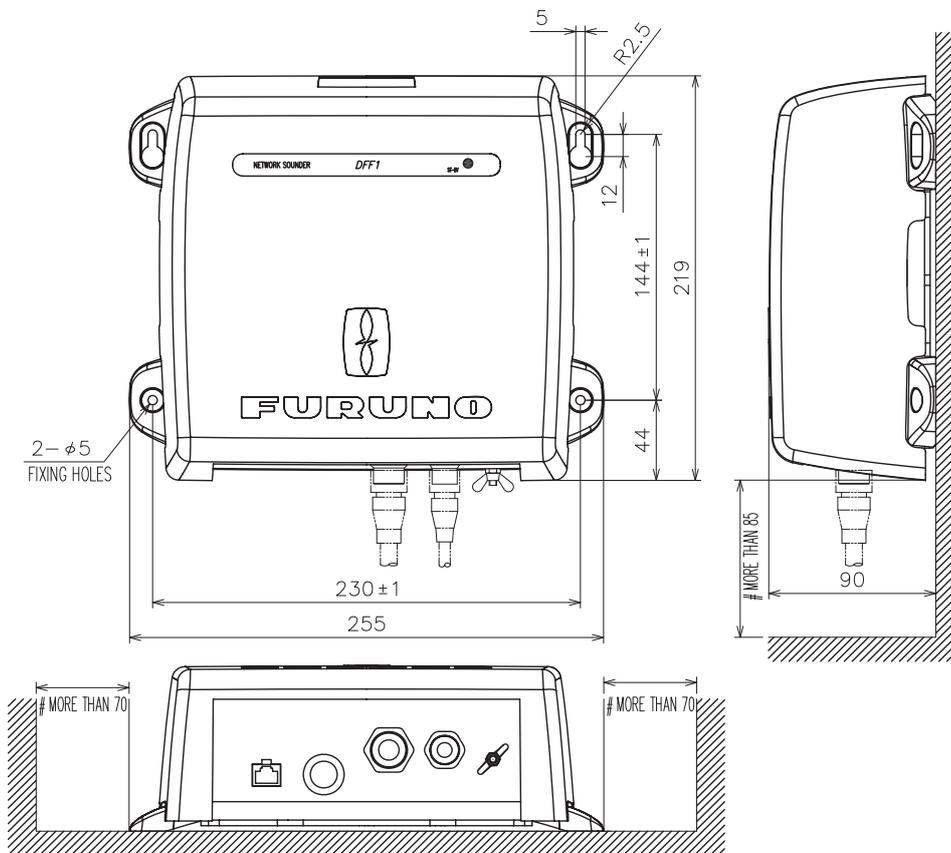
1.3 Transducer 520-5PSD, 520-5MSD

1.3.1 Mounting location

The performance of this sounder is directly related to the mounting location of the transducer, especially for high-speed cruising. The installation should be planned in advance, keeping the standard cable length and the following factors in mind:

• When the boat has a keel, the transducer should be at least 15-30 cm away from it. Typical thru-hull mountings are shown in the figure on the next page.

• Air bubbles and turbulence caused by movement of the boat can seriously degrade the sounding capability of the transducer. The transducer should, therefore, be located in a position where water flow is the smoothest. Noise from the propellers also adversely affects performance and the transducer should not be mounted nearby. The lifting strakes are notorious for creating acoustic noise, and these must be avoided by keeping the transducer inboard of them.

• The transducer must always remain submerged, even when the boat is rolling, pitching or up on a plane at high speed.

• A practical choice would be somewhere between 1/3 and 1/2 of the boat's length from the stern. For planing hulls, a practical location is generally rather far astern, so that the transducer is always in water regardless of the planing attitude.
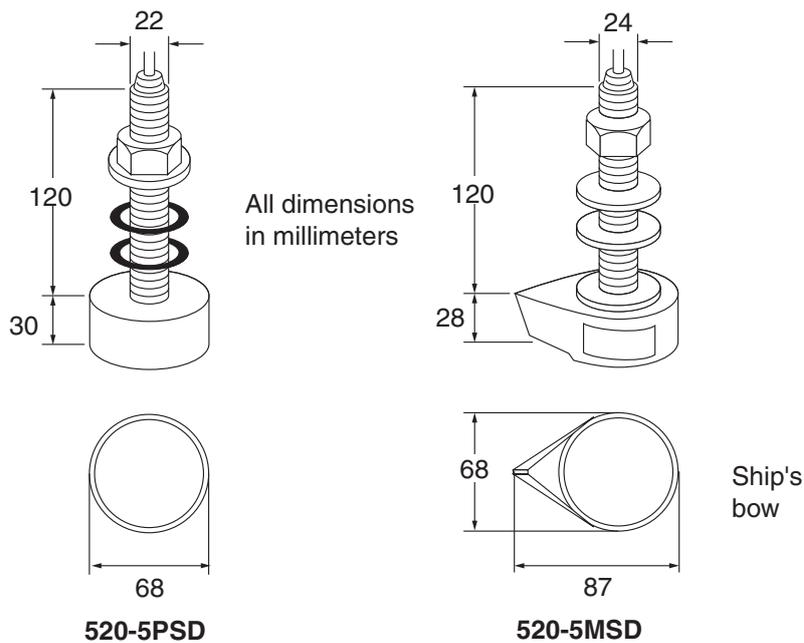
Dimensions of transducers 520-5PSD, 520-5MSD

1.3.2   Acceptable mounting locations

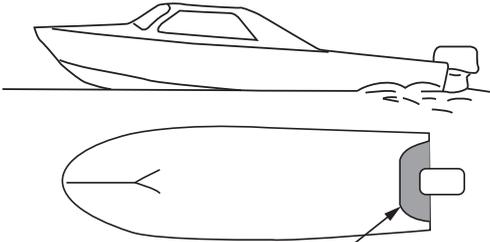<u>**Deep-V hull**</u>
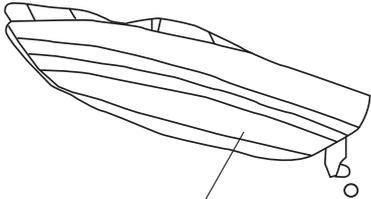
* Position 1/2 to 1/3 length of the hull from stern.
* 15-30 cm from center line (inside first lifting strakes).

Transducer mounting location on deep-V hull

<u>**High speed V-planing hull**</u>

* Within the submerged bottom area
* Deadrise angle within 15°‹

Transducer mounting location on high speed V-planing hull

1.3.3 Installation procedure

1. With the boat hauled out of the water, mark the location selected for mounting the transducer on the bottom of the hull.

   If the hull is not level within 15° in any direction, fairing blocks made out of teak should be used between the transducer and hull, both inside and outside, to keep the transducer face parallel with the water line. Fabricate the fairing block as shown below and make the entire surface as smooth as possible to provide an undisturbed flow of water around the transducer.

   The fairing block should be smaller than the transducer itself to provide a channel to divert turbulent water around the sides of the transducer rather than over its face.
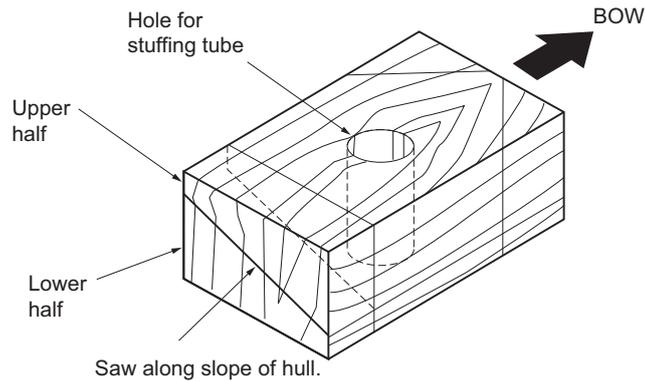
Construction of fairing block

2. Drill a hole just large enough to pass the threaded stuffing tube of the transducer through the hull, making sure it is drilled vertically.

3. Apply a sufficient amount of high quality caulking compound to the top surface of the transducer, around the threads of the stuffing tube and inside the mounting hole (and fairing blocks if used) to ensure watertight mounting.

4. Mount the transducer and fairing blocks and tighten the locking nuts. Be sure that the transducer is properly oriented and its working face is parallel to the water line.

Deep-V Hull   Flat Hull
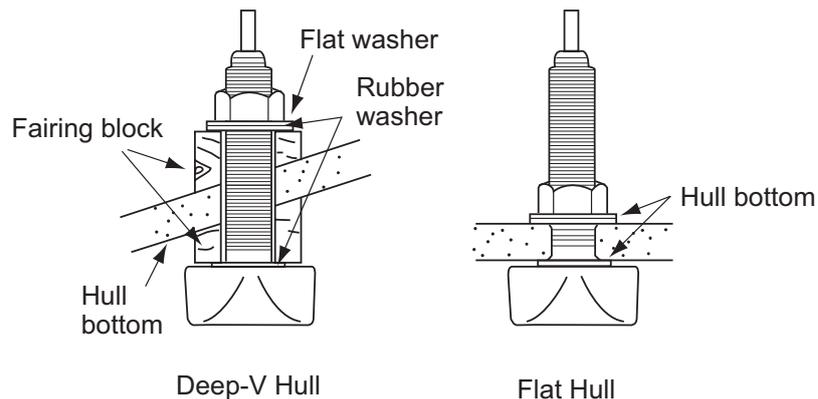
Note: Do not over-stress the stuffing tube and locking nuts through excessive tightening, since the wood block will swell when the boat is placed in the water. It is suggested that the nut be tightened lightly at installation and retightened several days after the boat has been launched.

1.4 Transducer 525-5PWD (transom mount)

This type of mounting is very commonly employed for outboard motor boats. Do not use this method on an inboard motor boat because turbulence is created by the propeller ahead of the transducer.

There are two methods of installation: flush with hull (for flat hulls) and projecting from hull (for deep V-hulls).
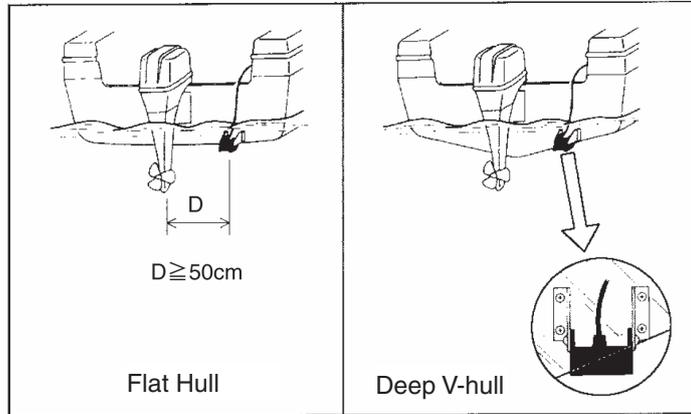
Transom mount transducer mounting locations

1.4.1 Installation for flat hulls

A suitable mounting location is at least 50 cm away from the engine and where the water flow is smooth.

1. Drill four pilot holes in the mounting location.
2. Attach the transducer to the bracket with self-tapping screws (supplied).
3. Adjust the transducer position so the transducer faces right to the seabed.

   Note: If necessary, to improve water flow and minimize air bubbles staying on the transducer face, incline the transducer about 5° at the rear. This may require a certain amount of experimentation for fine tuning at high cruising speeds.

4. Fill the gap between the wedge front of the transducer and transom with epoxy material to eliminate any air spaces.
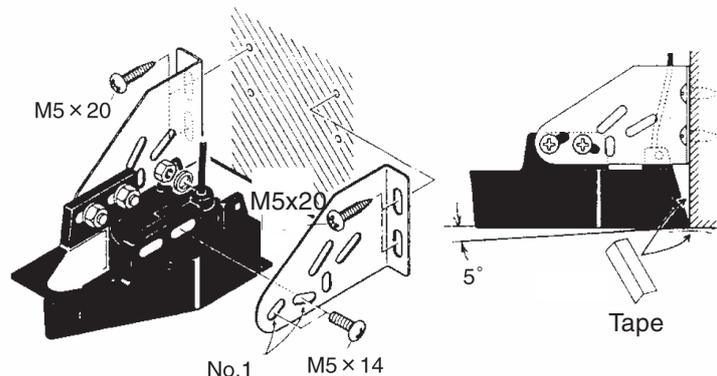
Transom mount transducer, mounting flush with hull

1.4.2   Installation for deep-V hulls

This method is employed on deep-V hulls and provides good performance because the effects of air bubbles are minimal. Install the transducer parallel with water surface; not flush with hull. If the boat is placed on a trailer care must be taken not to damage the transducer when the boat is hauled out of the water and put on the trailer.
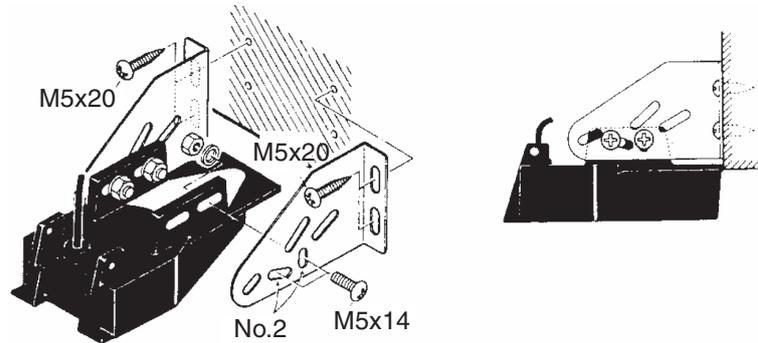
Transom mount transducer, projecting from hull

1.4.3   Transducer preparation

Before putting the boat in water, wipe the face of the transducer thoroughly with a detergent liquid soap. This will lessen the time necessary for the transducer to have good contact with the water. Otherwise the time required for complete "saturation" will be lengthened and performance will be reduced.

Note: Do not paint the transducer. Performance will be affected.

1.5 Inside Hull Mount

This mounting method is available for FRP boats.

1.5.1 Necessary tools

You will need the following tools:

- Sandpaper (#100)
- Marine sealant
- Silicone grease

1.5.2 Remarks on installation

- Turn off the engine and anchor the boat while installing the equipment.
- Install the transducer in the engine room.

1.5.3 Mounting location

Keep the following points in mind when selecting a mounting location:

- The mounting location should be where the hull is of single-hull thickness and is void of air or flotation materials other than solid fiberglass between the transducer face and the water.
- Do not place the transducer over hull struts or ribs which run under the hull.
- Avoid a location where the rising angle of the hull exceeds 15°, to minimize the effect of the boat's rolling.
- You will finalize the mounting location through some trial and error. The procedure for this is shown later.
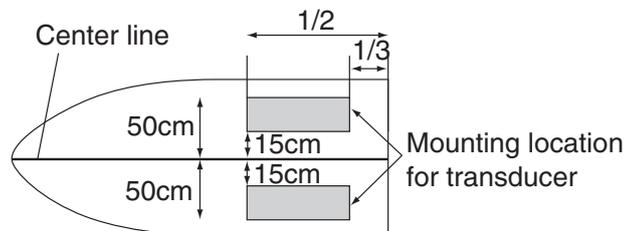
Inside-hull transducer mounting location

1.5.4　Installation procedure

1. Clean the transducer face to remove any foreign material. Lightly roughen the transducer face with #100 sandpaper. Also, roughen the inside of the hull where the transducer is to be mounted.

2. Warm the marine sealant to 40°C before usage to soften it. Coat the transducer face and mounting location with marine sealant.
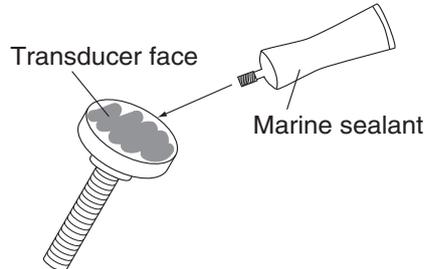
Coating the transducer face with marine sealant

3. Press the transducer firmly down on the hull and gently twist it back and forth to remove any air which may be trapped in the marine sealant.
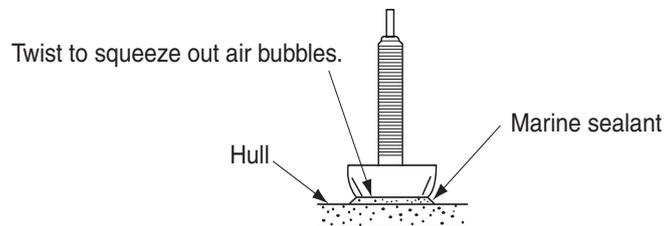
Attaching transducer to hull with marine sealant

4. Connect this unit to NavNet equipment and turn on the NavNet equipment.

5. Set up the NavNet equipment to show "single frequency display".

6. Set the gain to "50".

7. Set the range to "10".

   Case 1

   The installation is proper if the bottom echo is displayed in red and the depth indication is shown. Go to step 9.

   Case 2

   The bottom echo is not displayed in red when ultrasound attenuation is great. Relocate the transducer as shown in step 8

8. Re-locating the transducer.

   1) Turn off the power.
   2) Detach the transducer. Insert a knife or wooden stick under transducer to remove it
   3) Repeat steps 1 thru 7.

9. Fix the transducer.

1.6 Optional Speed/Temperature Sensor ST-02MSB, ST-02PSB

Select a suitable mounting location considering the following points:

• Select a mid-boat flat position. The sensor does not have to be installed perfectly perpendicular. The sensor must not be damaged in dry-docking operation.

• Select a place apart from equipment generating heat.

• Select a place in the forward direction viewing from the drain hole, to allow for circulation of cooling water.

• Select a place free from vibration.

Procedure

1. Dry-dock the boat.
2. Make a hole of approx. 51 mm in diameter in the mounting location.
3. Unfasten locknut and remove the sensor section.
4. Apply high-grade sealant to the flange of the sensor.
5. Pass the sensor casing through the hole.
6. Face the notch on the sensor toward boat's bow and tighten the flange.
7. Set the sensor section to the sensor casing and tighten the locknut.
8. Launch the boat and check for water leakage around the sensor.
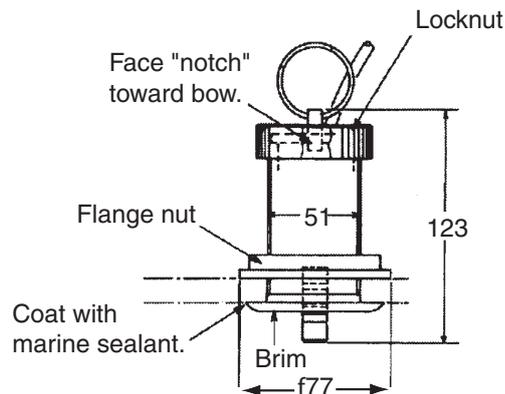
Speed/Temperature sensor ST-02MSB, ST-02PSB

1.7   Optional Triducers

1.7.1   Thru-hull triducer 525STID-MSD

See section 1.2 for how to install the 525STID-MSD.
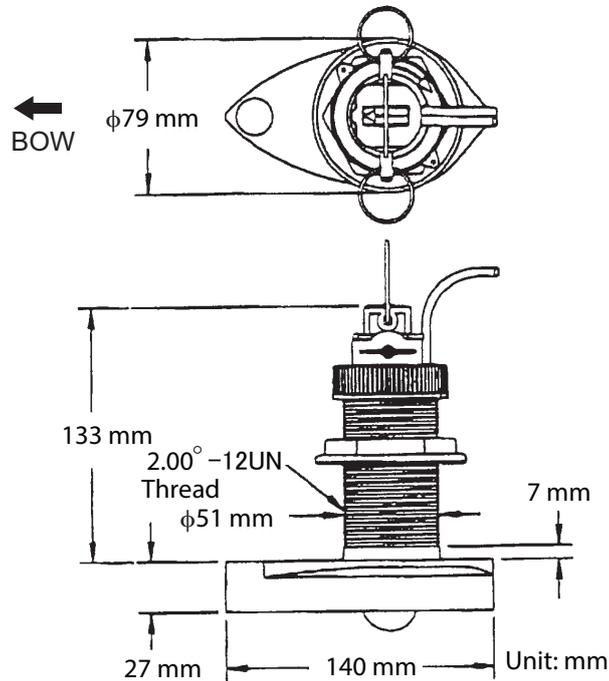
1.7.2   Transom mount triducer 525STID-PWD

Pre-test for speed and temperature

Connect the sensor to the instrument and spin the paddlewheel. Check for a speed reading and the approximate air temperature. If there is no reading, return the sensor to your place of purchase.

Tools and materials needed

- Scissors
- Masking tape
- Safety goggles
- Dust mask
- Electric drill
- Screwdrivers
- Pencil
- Zip-ties

- Drill bit for:
  - Bracket holes: 4mm, #23, or 9/64"
  - Fiberglass hull: chamfer bit (preferred), 6mm, or 1/4"
  - Transom hole: 19mm or 3/4" (optional)
  - Cable clamp holes: 3mm or 1/8"
- Straight edge
- Marine sealant
- Water-based antifouling paint (mandatory in salt water).
- Scissors

Mounting location

To ensure the best performance, the sensor must be submerged in aeration-free and turbulence-free water. Mount the sensor close to the centerline of the boat. On slower heavier displacement hulls, positioning it farther from the centerline is acceptable.

Allow adequate space above the bracket for it to release and rotate the sensor upward.

Height without speed sensor 191mm (7-1/2")

Height with speed sensor 213mm (8-1/2")
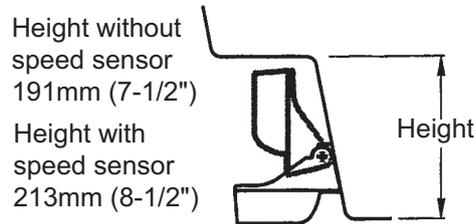
Height

Height required at mounting location

Note 1: Do not mount the sensor in an area of turbulence or bubbles: near water intake or discharge openings; behind strakes, struts, fittings, or hull irregularities; behind eroding paint (an indication of turbulence).

Note 2: Avoid mounting the sensor where the boat may be supported during trailering, launching, hauling, and storage.

Note 3: For single drive boat, mount on the starboard side at least 75 mm (3") beyond the swing radius of the propeller.

75 mm (3") minimum beyond swing radius
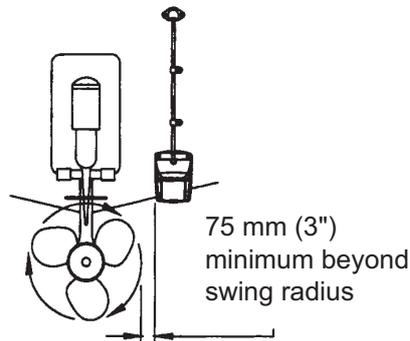
Mounting location on single drive boat

Note 4: For twin drive boat, mount between the drives.

Installation of bracket

1. Cut out the installation template (enclosed with transducer) along the dotted line.

2. At the selected location, position the template, so the arrow at the bottom is aligned with the bottom edge of the transom. Being sure the template is parallel to the waterline, tape it in place.
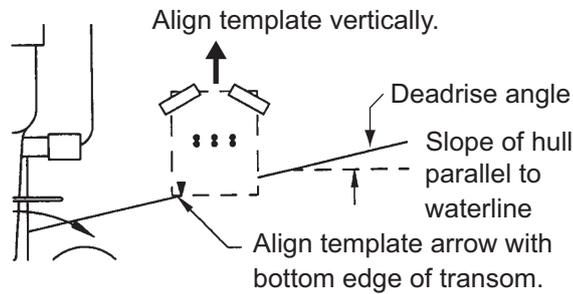
Positioning the template

Warning: Always wear safety goggles and a dust mask.

3. Using a 4 mm, #23, or 9/64" bit, drill three holes 22 mm (7/8") deep at the locations indicated. To prevent drilling too deeply, wrap masking tape around the bit 22 mm (7/8") from the point.
   Fiberglass hull: Minimize surface cracking by chamfering the gelcoat. If a chamfer bit or countersink bit is not available, start drilling with a 6mm or 1/4" bit to a depth of 1 mm (1/16").

4. If you know your transom angle, the bracket is designed for a standard 13° transom angle.
   11° -18° angle: No shim is required. Skip to step 3 in "Adjusting".
   Other angles: The shim is required. Skip to step 2 of "Adjusting".
   If you do not know the transom angle, temporarily attach the bracket and sensor to the transom to determine if the plastic shim is needed.

5. Using the three #10 x 1-1/4" self-tapping screws, temporarily screw the bracket to the hull. DO NOT tighten the screws completely at this time. Follow the step 1-4 in "Attaching the sensor to the bracket", before proceeding with "Adjusting".

Attaching the sensor to the bracket

1. If the retaining cover near the top of the bracket is closed, open it by depressing the latch and rotating the cover downward.
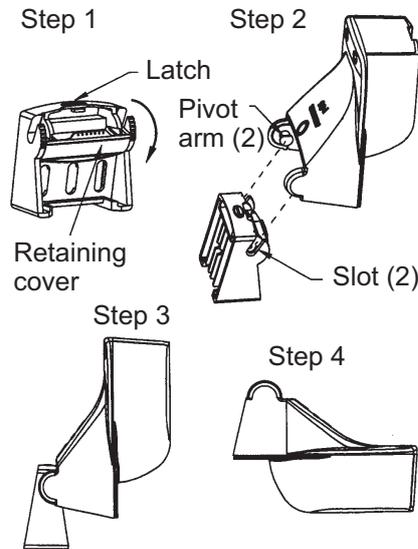
Attaching the sensor to the bracket

2. Insert the sensor's pivot arms into the slots near the top of the bracket.

3. Maintain pressure until the pivot arms click into place.

4. Rotate the sensor downward until the bottom snaps into the bracket.

5. Close the retaining cover to prevent the accidental release of the sensor when the boat is underway.

Adjusting

1. Using a straight edge, sight the underside of the sensor relative to the underside of the hull. The stern of the sensor should be 1-3 mm (1/16-1/8") below the bow of the sensor or parallel to the bottom of the hull.

   Note: Do not position the bow of the sensor lower than the stern because aeration will occur.

2. To adjust the sensor's angle relative to the hull, use the tapered plastic shim provided. If the bracket has been temporarily fastened to the transom, remove it. Key the shim in place on the back of the bracket.
   2° -10° transom angle (stepped transom and jet boats): Position the shim with the tapered end down.

19°-22° transom angle (small aluminum and fiberglass boats): Position the shim with the tapered end up.

2°-10° transom angle	11° transom angle NO SHIM	19°-22° transom angle

shim with taper down   shim with taper up

YES   YES   YES

parallel   parallel   parallel

12°-18° transom angle
NO SHIM

NO   YES   NO

angle reversed   slight angle   angle too steep
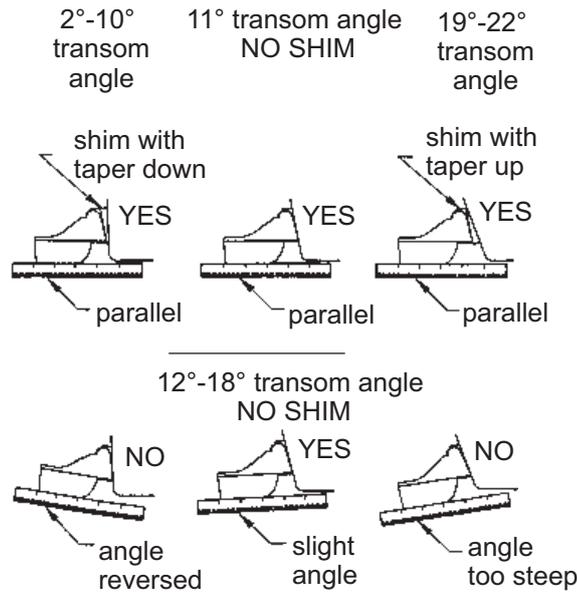
Sensor position and transom angle

3. If the bracket has been temporarily fastened to the transom, remove it. Apply a marine sealant to the threads of the three #10 x 1-1/4" self-tapping screws to prevent water seeping into the transom. Screw the bracket to the hull. Do not tighten the screws completely at this time.

4. Repeat step 1 to ensure that the angle of the sensor is correct.

   Note: Do not position the sensor farther into the water than necessary to avoid increasing drag, spray, and water noise and reducing boat speed.

5. Using the vertical adjustment space on the bracket slots, slide the sensor up or down to provide a projection of 3 mm (1/8"). Tighten the screws.

Cable cover

Cable clamp

50 mm (2")

Hull projection 3 mm (1/8")
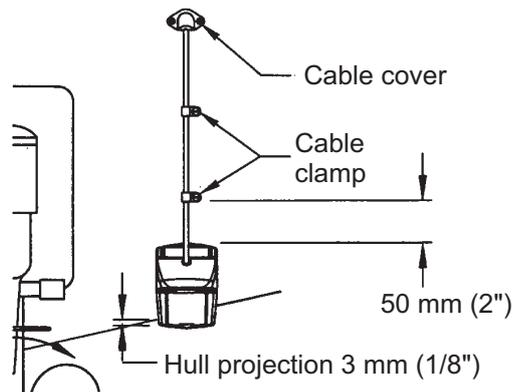
Vertical adjustment and cable routing

15

Cable routing

Route the sensor cable over the transom, through a drain hole, or thorough a new hole drilled in the transom above the waterline.

Never cut the cable or remote the connector; this will void the warranty. Always wear safety goggles and a dust mask.

1. If a hole must be drilled, choose a location well above the waterline. Check for obstructions such as trim tabs, pumps, or wiring inside the hull. Mark the location with a pencil. Drill a hole through the transom using a 19 mm or 3/4" bit (to accommodate the connector).
2. Route the cable over or through the transom.
3. On the outside of the hull secure the cable against the transom using the cable clamps. Position a cable clamp 50 mm (2") above the bracket and mark the mounting hole with a pencil.
4. Position the second cable clamp halfway between the first clamp and the cable hole. Mark this mounting hole.
5. If a hole has been drilled in the transom, open the appropriate slot in the transom cable cover. Position the cover over the cable where it enters the hull. Mark the two mounting holes.
6. At each of the marked locations, use a 3 mm or 1/8" bit to drill a hole 10 mm (3/8") deep. The prevent drilling too deeply, wrap masking tape around the bit 10 mm (3/8") from the point.
7. Apply marine sealant to the threads of the #6 x 1/2" self-tapping screw to prevent water from seeping into the transom. If you have drilled a hole through the transom, apply marine sealant to the space around the cable where it passes through the transom.
8. Position the two cable clamps and fasten them in place. If used, push the cable cover over the cable and screw it in place.
9. Route the cable to the instrument being careful not to tear the cable jacket when passing it though the bulkhead(s) and other parts of the boat. To reduce electrical interference, separate the sensor cable from other electrical wiring and "noise" sources. Coil any excess cable and secure it in place with zip-ties to prevent damage.

2. WIRING

Connect the power cable, transducer cable, external equipment and ground wire as shown in the figure below.
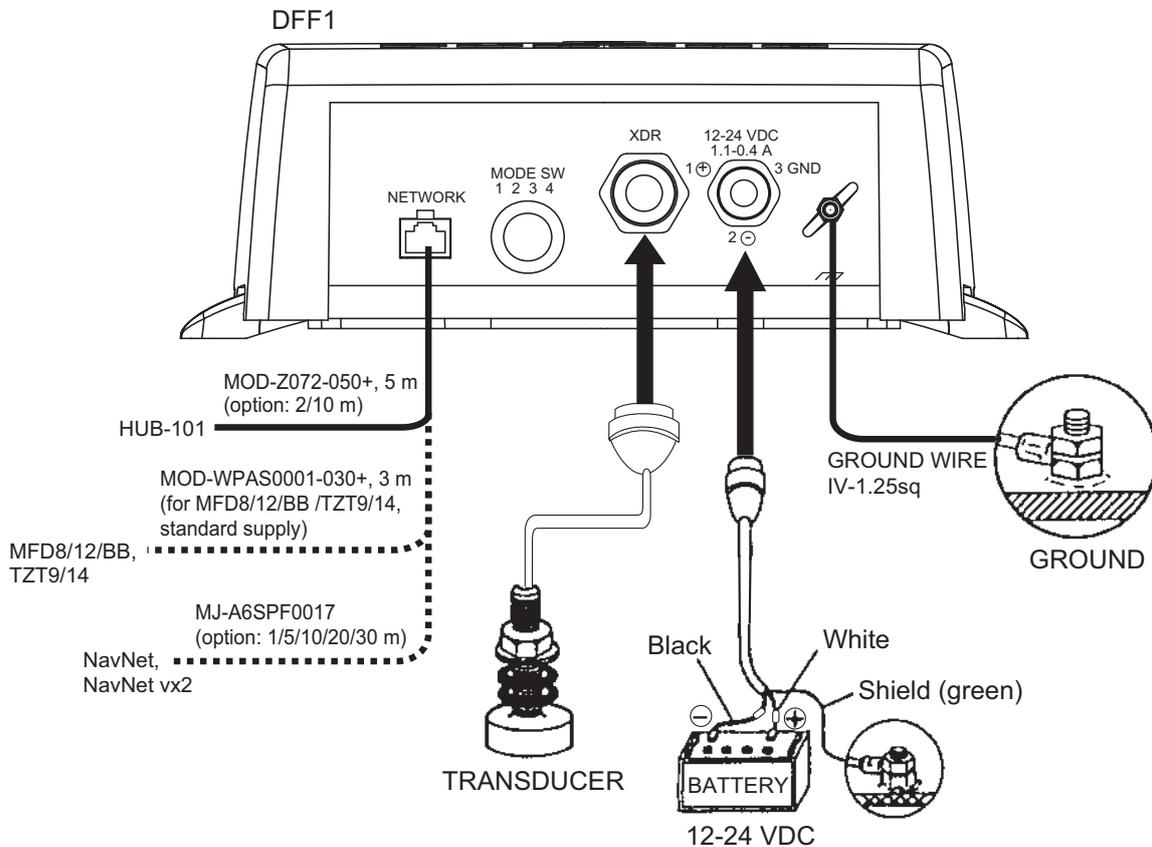
DFF1, rear view

Ground

Connect the ground wire (1.25sq) to ship's ground to prevent interference to the picture. Shorten the ground wire as much as possible. For FRP vessels, install a ground plate that measures about 20 cm by 30 cm on the outside of the hull bottom to provide a ground point.

> ⚠ **CAUTION**
>
> **Ground the equipment to prevent mutual interference.**
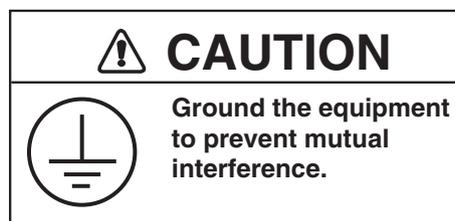
Note: Use a "closed-type" lug (⊂⊃⊚) to make the ground connection at the network sounder. Do not use an "open-type" lug (⊂⊃⊏).

External KP

Consult with your dealer if connection of an external KP is required to reduce interference from another transducer.

2.1 Optional Temperature/Speed Sensor, Temperature Sensor

Connect the temperature/speed sensor or temperature sensor to the XDR port with the converter connector (Type: 02S4147, Code No.: 000-141-082, option).
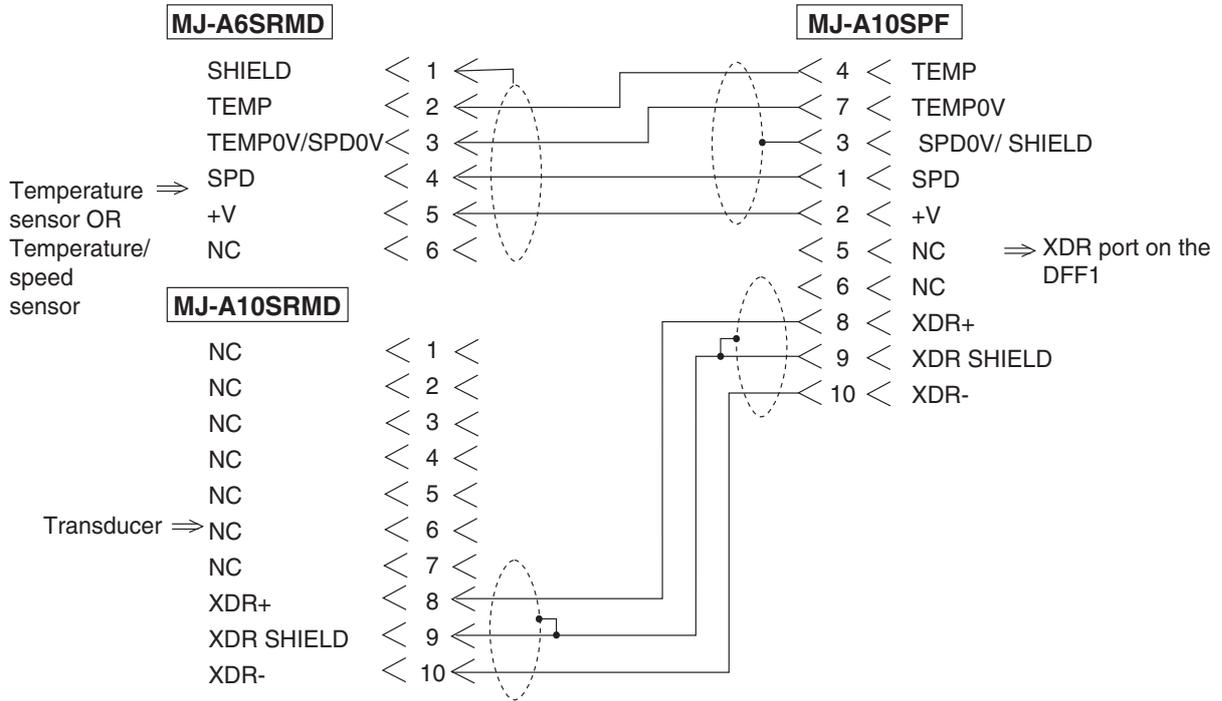
Connection of temperature/speed sensor
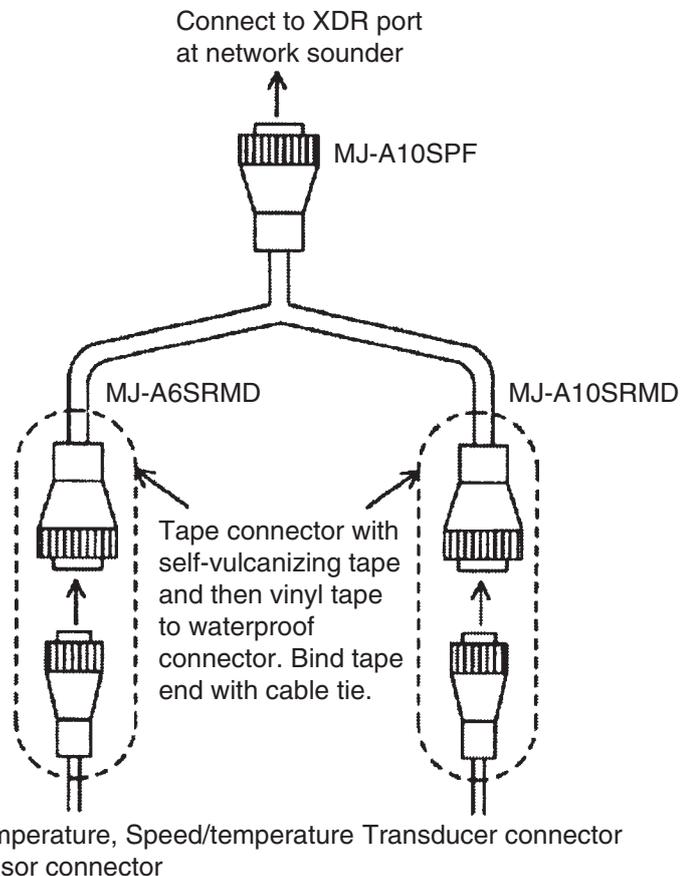
Connection of transducer, temperature sensor, speed/temperature sensor

2.2 Wiring Optional 1 kW Transducer

To connect optional transducer 50B-6, 50B-6B, 50B-9B, 200B-5, 200B-5S, 50/200-1T, the optional Matching Box MB-1100 is required.
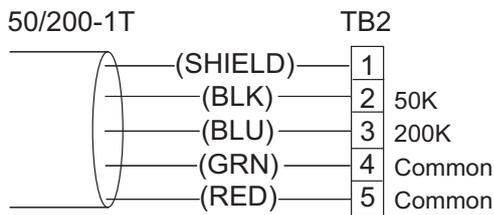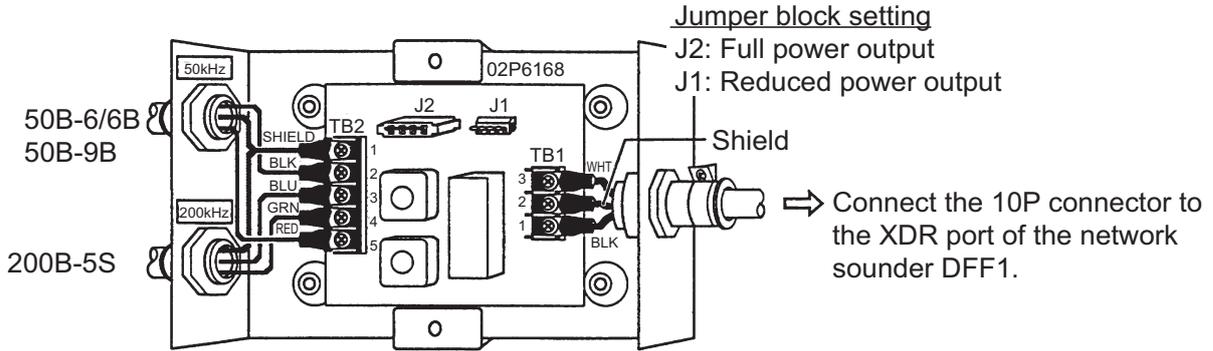
Matching Box MB-1100

Matching Box Kit (Type: MB-1100, Code No.: 000-041-353)

Name	Type	Code No.	Qty	Remarks
Matching Box	MB-1100	000-041-000	1	Cable w/10P connector supplied for connection to network sounder
Crimp-on Lug	FV1.25-3 Red	000-538-113	6	
Cord Lock	NC-1	000-516-650	1	For use with separate transducer

Fabrication of transducer cable

Fabricate the transducer cable as illustrated below to connect it to the Distribution Box.
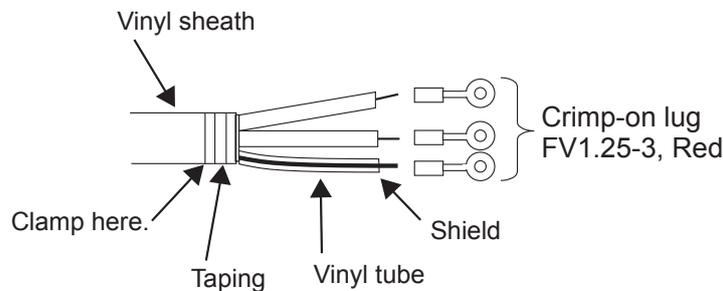
Fabrication of transducer cable

3. INITIAL SETTINGS, OPERATION

```
┌─────────────────────────────────────────┐
│           ⚠ WARNING                      │
├─────────┬───────────────────────────────┤
│   ⚡    │ Do not open the equipment      │
│  ⚠     │ unless totally familiar with   │
│         │ electrical circuits and        │
│         │ service manual.                │
│         │                                │
│         │ Only qualified personnel       │
│         │ should work inside the         │
│         │ equipment.                     │
└─────────┴───────────────────────────────┘
```

3.1 Selecting the Transmission Power

The default transmission power is 600 W. If the 1 kW transducer is installed, turn on the #1 segment of DIP SW S2 on the pcb 02P6353 inside the network sounder.

For NavNet/NavNet vx2

1. Detach the power cable.
2. Detach the cover of the DFF1; grasp the cover at opposing sides with hands, pull outward slightly and lift up to detach.
3. Loosen three screws fixing the inside cover, and slide cover forward to detach it.
4. Set the #1 segment of DIP SW S2 according to transducer connected.
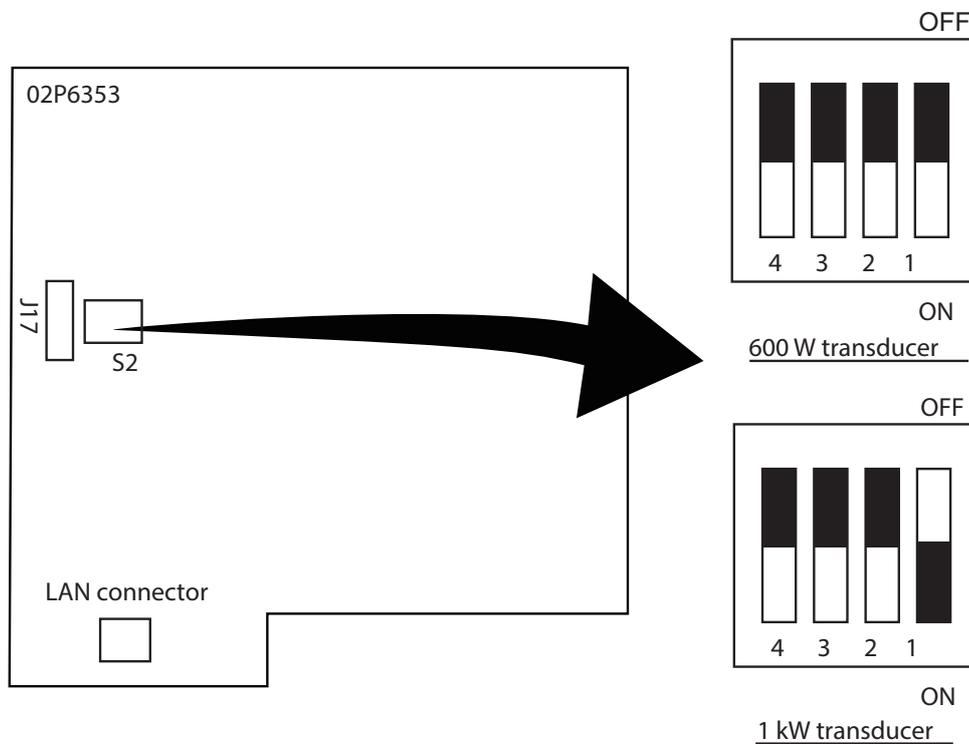
PCB 02P6353

5. Reattach the inside and outside covers and reconnect the power cable.

For NavNet 3D/TZtouch: Set the transducer type at the NavNet 3D/TZtouch. See respective installation manual for the procedure.

3.2   MODE SW

The MODE switch provides the functions described in the table below. Remove the rubber cap to access the switch and set switches with a plastic screwdriver or the like.

NavNet/NavNet vx2/NavNet
TZtouch/TZtouch2 MODE switch settings

#1: ON
#2: OFF
#3: OFF
#4: ON

NavNet 3D MODE switch settings
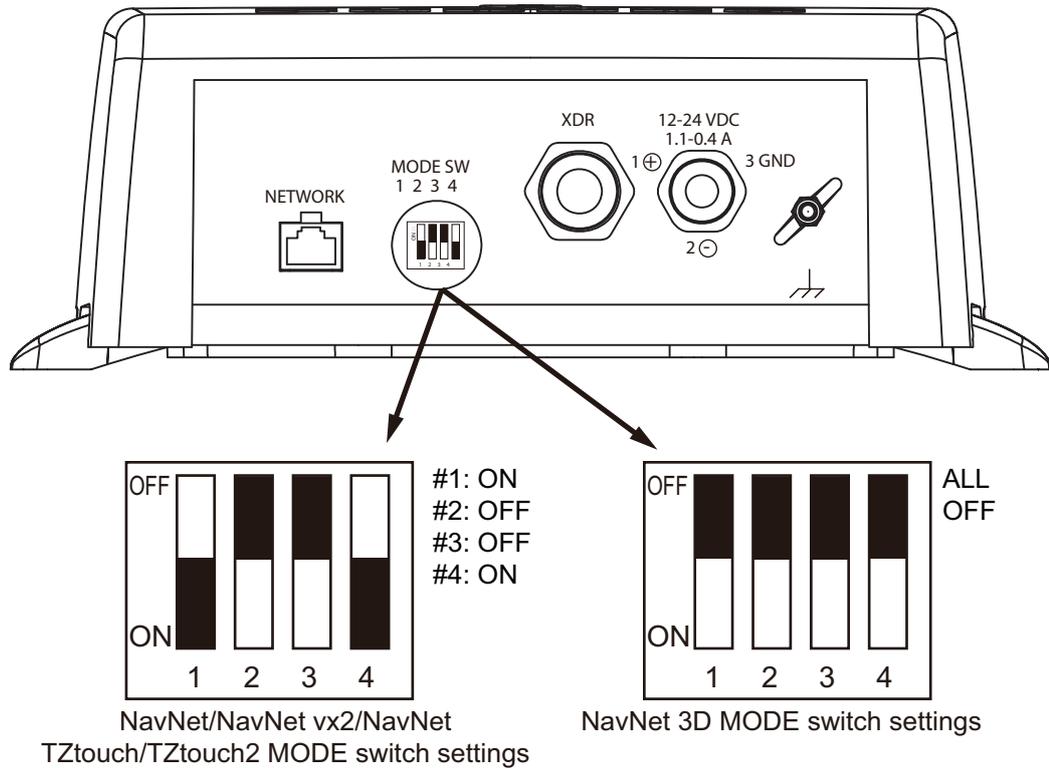
Description of MODE SW

SW No.	Function, description	Setting content
1 (Default:ON)	Power from NavNet	OFF: Sounder powered on/off by NavNet ON: Sounder not powered on/off by NavNet
2 (Default: OFF)	IP number (Currently no use)	OFF: IP0 ON: IP1
3 (Default: OFF)	Factory testing	OFF: Testing OFF ON: Testing ON
4 (Default: ON)	Automatic IP setting (Currently no use)	OFF: Automatic IP enabled ON: Automatic IP disabled

For NavNet 3D, turn off all switches.

3.3 Operation Check (LED)

The network sounder is powered on/off from ship's switchboard. The LED on the network sounder lights or flashes according to equipment state, as described in the table below.

LED state	Meaning
Lit continuously*	NavNet is not showing the sounder display, or sounder is not connected to NavNet
Flashing every two seconds	Normal operation
Flashing every four seconds	Factory test mode

* The LED lights for approximately 20 seconds after turning on the power while the equipment is being initialized.
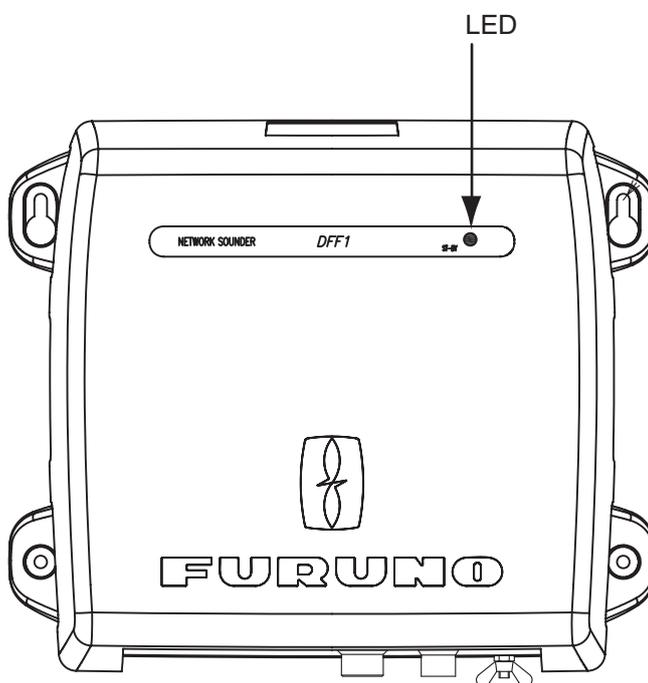
DFF1, top view

4. MAINTENANCE

> ## ⚠ WARNING
>
> **Do not open the equipment unless totally familiar with electrical circuits and service manual.**
>
> Only qualified personnel should work inside the equipment.

4.1   Maintenance

Regular maintenance is essential for good performance. Check the items listed in the table below monthly to help keep your equipment in good shape for years to come.

Item	Action
Transducer cable	Check that cable is tightly fastened and is not damaged. Replace if damaged.
Power cable, transducer cable plug	Check that they are tightly fastened and not damaged. Refasten if necessary. Replace if damaged.
Ground	Check for corrosion. Clean if necessary.
Power supply voltage	Check voltage. If out of rating correct problem.
Cleaning the network sounder's cabinet	Dust or dirt on the cabinet may be removed with a dry cloth. Do not use chemical-based cleaners to clean the cabinet; they can remove paint and markings.
Transducer	Marine life on the transducer face will result in a gradual decrease in sensitivity. Check the transducer face for cleanliness each time the boat is dry-docked. Carefully remove any marine life with a piece of wood or fine-grade sandpaper.

4.2   Replacing the Fuse

The two 3 A fuses (Type: FGBO-A 125V 3A PBF, Code No. 000-155-850-10) in the snap-in fuse holder on the power cable protect the equipment from equipment fault and reverse polarity of the ship's mains. If the equipment cannot be powered, a fuse may have blown. Find out the cause for blown fuse before replacing a fuse.

> ## ⚠ WARNING
>
> **Use the proper fuse.**
>
> Use of a wrong fuse can result in damage to the equipment or cause fire.

If a fuse blows again after replacement, contact a FURUNO agent or dealer for advice.

APPENDIX 1 INSTALLATION OF TEMPERATURE SENSORS

The installation instructions in this chapter are copied from the manufacturer's (AIRMAR Technology Corporation) installation guide, which is included with your sensor.

The model numbers mentioned within the documentation should be read as follows:
T42 => T-04MSB
T80 => T-04MTB

OWNER'S GUIDE & INSTALLATION INSTRUCTIONS

Thru-Hull, Analog

High-Precision Temperature Sensor

Model **T42**

05/28/14

17-437-02 rev. 01

T42

Follow the precautions below for optimal product performance and to reduce the risk of property damage, personal injury, and/or death.

WARNING: Always wear safety goggles and a dust mask when installing.

WARNING: Immediately check for leaks when the boat is placed in the water. Do not leave the boat unchecked for more than three hours. Even a small leak can allow considerable water to accumulate.

CAUTION: Never install a bronze sensor in a metal hull because electrolytic corrosion will occur.

CAUTION: Never install a metal sensor on a vessel with a positive ground system.

CAUTION: Never pull, carry, or hold the sensor by its cable; this may sever internal connections.

CAUTION: Never use solvents. Cleaner, fuel, sealant, paint, and other products may contain solvents that can damage plastic parts, especially the sensor's face.

IMPORTANT: Read the instructions completely before proceeding with the installation. These instructions supersede any other instructions in your instrument manual if they differ.
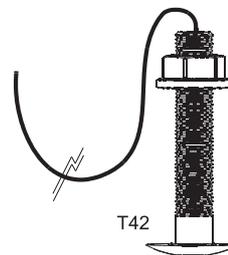
Tools & Materials

Safety goggles
Dust mask
Electric drill
Drill bit/hole saw/spade bit:

Pilot hole	3mm or 1/8"
T42	22mm or 7/8"

Sandpaper
Mild household detergent *or* weak solvent (alcohol)
Marine sealant (suitable for below waterline)
Slip-joint pliers
Installation in a cored fiberglass hull (see page 2)

Hole saw for hull interior: 30mm *or* 1-1/4"

Cylinder, wax, tape, and casting epoxy
Water-based anti-fouling paint (**mandatory in salt water**)

Sensor Installation

Hole Drilling

Cored fiberglass hull — *Follow separate instructions on page 2.*

1. Drill a 3mm or 1/8" pilot hole from inside the hull. If there is a rib, strut, or other hull irregularity near the selected mounting location, drill from the outside.

2. Using the appropriate drill bit, cut a hole perpendicular to the hull from outside the boat.

3. Sand and clean the area around the hole, inside and outside, to ensure that the marine sealant will adhere properly to the hull. If there is any petroleum residue inside the hull, remove it with either mild household detergent or a weak solvent (alcohol) before sanding.

Applications

• Bronze sensor recommended for fiberglass or wood hull only.

• The hull must be a minimum of 8mm (5/16") thick at the mounting location.

Mounting Location

Choose a location where the temperature sensor will be in contact with the water at all times.

Figure 1. Bedding and installing
Copyright © 2005 - 2010 Airmar Technology Corp.

Figure 2. Preparing a cored fiberglass hull
Copyright © 2005 Airmar Technology Corp.

Bedding

CAUTION: Be sure all surfaces to be bedded are clean and dry.

1. Remove the hull nut (see Figure 1).

2. Apply a 2 mm (1/16") thick layer of marine sealant around the flange of the sensor that will contact the hull and up the stem. The sealant must extend 6 mm (1/4") higher than the combined thickness of the hull and the hull nut. This will ensure that there is marine sealant in the threads to seal the hull and hold the hull nut securely in place.

3. Apply a 2 mm (1/16") thick layer of marine sealant to the flange of the hull nut that will contact the hull.

Installing

1. From outside the hull, thread the cable through the mounting hole.

2. Push the sensor into the mounting hole using a twisting motion to squeeze out excess marine sealant (see Figure 1).

3. From inside the hull, slide the hull nut onto the cable. Screw the hull nut in place. Tighten it with slip-joint pliers.
   Cored fiberglass hull—Do not over tighten, crushing the hull.
   Wood hull—Allow for the wood to swell before tightening.

4. Remove any excess marine sealant on the outside of the hull to ensure smooth water flow over the sensor.

Checking for Leaks

When the boat is placed in the water, immediately check around the thru-hull sensor for leaks. Note that very small leaks may not be readily observed. Do not to leave the boat in the water for more than 3 hours before checking it again. If there is a small leak, there may be considerable bilge water accumulation after 24 hours. If a leak is observed, repeat "Bedding" and "Installing" immediately (see page 2).

Cable Routing & Connecting

CAUTION: If the sensor came with a connector, do not remove it to ease cable routing. If the cable must be cut and spliced, use Airmar's splash-proof Junction Box No. 33-035 and follow the instructions supplied. Removing the waterproof connector or cutting the cable, except when using a water-tight junction box, will void the sensor warranty.
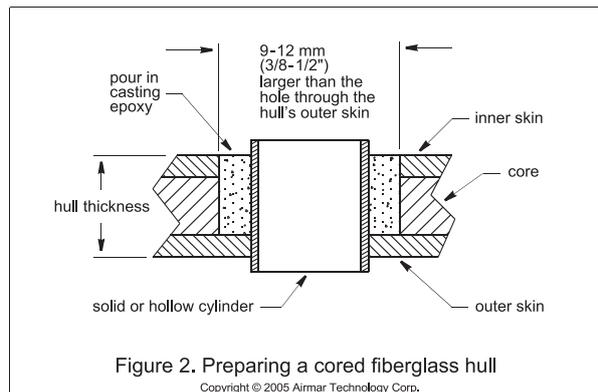
1. Route the cable to the instrument being careful not to tear the cable jacket when passing it through the bulkhead(s) and other parts of the boat. Use grommet(s) to prevent chafing. To reduce electrical interference, separate the transducer cable from other electrical wiring and the engine. Coil any excess cable and secure it in place with cable ties to prevent damage.

2. Refer to the instrument owner's manual to connect the transducer to the instrument.

Installation in a Cored Fiberglass Hull

The core (wood or foam) must be cut and sealed carefully. The core must be protected from water seepage, and the hull must be reinforced to prevent it from crushing under the hull nut allowing the sensor to become loose.

CAUTION: Completely seal the hull to prevent water seepage into the core.

1. Drill a 3 mm or 1/8" pilot hole from inside the hull. If there is a rib, strut, or other hull irregularity near the selected mounting location, drill from the outside. (If the hole is drilled in the wrong location, drill a second hole in a better location. Apply masking tape to the outside of the hull over the incorrect hole and fill it with epoxy.)

2. Using the 21 mm or 7/8" drill bit, cut a hole from outside the hull through the outer skin only (see Figure 2).

3. From inside the hull using the 30 mm or 1-1/4" hole saw, cut through the inner skin and most of the core. The core material can be very soft. Apply only light pressure to the hole saw after cutting through the inner skin to avoid accidentally cutting the outer skin.

4. Remove the plug of core material so the inside of the outer skin and the inner core of the hull is fully exposed. Clean and sand the inner skin, core, and the outer skin around the hole.

5. Coat a hollow or solid cylinder of the correct diameter with wax and tape it in place. Fill the gap between the cylinder and hull with casting epoxy. After the epoxy has set, remove the cylinder.

6. Sand and clean the area around the hole, inside and outside, to ensure that the sealant will adhere properly to the hull. If there is any petroleum residue inside the hull, remove it with either mild household detergent or a weak solvent (alcohol) before sanding.
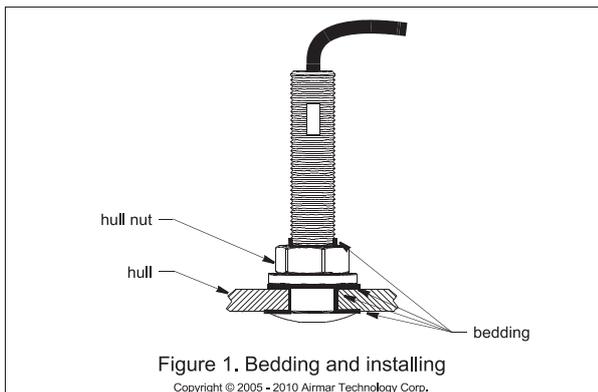
7. Proceed with "Bedding" and "Installing" (see page 2).

2

Maintenance & Replacement

Aquatic growth can accumulate rapidly on the sensor's surface reducing its performance within weeks. Clean the surface with a Scotch-Brite® scour pad and mild household detergent taking care to avoid making scratches. If the fouling is severe, lightly wet sand with fine grade wet/dry paper.

Anti-fouling Paint

Surfaces exposed to salt water must be coated with anti-fouling paint. *Use water-based anti-fouling paint only.* Never use ketone-based paint since ketones can attack many plastics possibly damaging the sensor. Reapply anti-fouling paint every 6 months or at the beginning of each boating season.

Replacement Sensor & Parts

The information needed to order a replacement sensor is printed on the cable tag. Do not remove this tag. When ordering, specify the part number and date. For convenient reference, record this information at the top of page one.

Lost, broken, or worn parts should be replaced immediately.

Hull nut	02-031-3

Obtain parts from your instrument manufacturer or marine dealer.

Gemeco	Tel:	803-693-0777
(USA)	Fax:	803-693-0477
	email:	sales@gemeco.com
Airmar EMEA	Tel:	+33.(0)2.23.52.06.48
(Europe, Middle East, Africa)	Fax:	+33.(0)2.23.52.06.49
	email:	sales@airmar-emea.com

3

AP-3

OWNER'S GUIDE & INSTALLATION INSTRUCTIONS

Surface Mount, Analog

Temperature Sensor

Model **T80**

05/28/14

17-584-01 rev. 01

Record the information found on the cable tag for future reference.
Part No._____Date_____

T80

Follow the precautions below for optimal product performance and to reduce the risk of property damage, personal injury, and/or death.

WARNING: Always wear safety goggles and a dust mask when installing.

WARNING: **Below the waterline mount**—When the boat is placed in the water, immediately check for leaks around the screws and any other holes drilled in the hull.

CAUTION: **Installation on a metal hull**—The stainless steel housing must be isolated from a metal hull to prevent electrolytic corrosion. Use marine sealant.

CAUTION: Never install a metal sensor on a vessel with a positive ground system.

IMPORTANT: Read the instructions completely before proceeding with the installation. These instructions supersede any other instructions in your instrument manual if they differ.

Tools & Materials

Safety goggles
Dust mask
Pencil
Electric drill
Drill bit/hole saw/spade bit:
    Pilot holes   3mm *or* 1/8"
    Transom hole (some installations)   18mm *or* 3/4"
2 Stainless steel, self-tapping screws   4 x 18mm *or* #8 x 3/4"
Marine sealant (suitable for below waterline)
Screwdriver(s)
Cable clamp(s) (some installations)
Grommet(s) (some installations)
Cable ties

Installation

Mounting on the transom

CAUTION: Mount the sensor as close to the centerline (keel) of the boat as possible to ensure the sensor remains in the water when the boat is turning (see Figure1).

CAUTION: Fiberglass hull—Minimize surface cracking by running the drill in reverse until the gelcoat is penetrated.

CAUTION: If the sensor came with a connector, do not remove it to ease cable routing. If the cable must be cut and spliced, use Airmar's splash-proof Junction Box No. 33-035 and follow the instructions provided. Removing the waterproof connector or cutting the cable, except when using a water-tight junction box, will void the sensor warranty.

Applications

• Measures air or water temperature.

• Stainless steel sensor is compatible with all hull materials. Recommended for aluminum hulls to prevent electrolytic corrosion, provided the stainless steel sensor is isolated from the metal hull by using marine sealant.

Mounting Location

The sensor can be mounted anywhere that you want to know the temperature. For example, you can mount the sensor on the transom, in the live well, or in the engine compartment.

If you are measuring water temperature, choose a location where the sensor will be in contact with the water at all times.
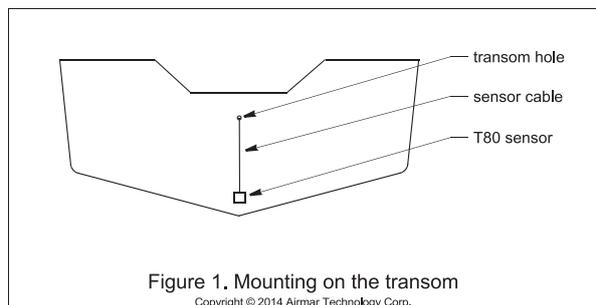

Figure 1. Mounting on the transom
Copyright © 2014 Airmar Technology Corp.

Mount the sensor near the centerline and close to the bottom of the transom.

Route the sensor cable over the transom, through a drain hole, or through a hole that you have drilled in the transom **above the waterline**.

1. Place the sensor against the hull and mark the position of the screw holes with a pencil.
2. Using a 3mm or 1/8" drill bit, drill pilot holes at the marked locations, 10mm (3/8") deep.
3. Apply marine sealant to the threads of the purchased screws to prevent water from seeping into the transom.
4. Screw the temperature sensor to the hull.
5. If a hole must be drilled through the transom, choose a location **well above the waterline**. Check for obstructions such as trim tabs, pumps, or wiring inside the hull. Mark the location with a pencil. Drill a hole through the transom using the appropriate size hole saw or spade bit (to accommodate the connector). Do NOT remove the connector.
6. Route the cable over or through the transom.
7. On the outside of the hull, secure the cable against the transom using a purchased cable clamp(s). Mark the position of the screw hole(s) with a pencil.
8. Using a 3mm or 1/8" drill bit, drill a pilot hole(s) at the marked locations, 10mm (3/8") deep.
9. Apply marine sealant to the threads of the screw(s) to prevent water from seeping into the transom.
10. Fasten the cable clamp(s) in place.
11. If a hole has been drilled through the transom, apply marine sealant to the space around the cable leading through the transom.

Cable Routing & Connecting

1. Route the cable to the instrument, being careful not to tear the cable jacket when passing it through the bulkhead(s) and other parts of the boat. To reduce electrical interference, separate the sensor cable from other electrical wiring and sources of noise. Coil any excess cable and secure it in place with cable ties to prevent damage.
2. Refer to the instrument owner's manual to connect the sensor to the instrument.

Replacement Sensor & Parts

The information needed to order a replacement sensor is printed on the cable tag. Do not remove this tag. When ordering, specify the part number and date. For convenient reference, record this information at the top of page one.

Obtain parts from your instrument manufacturer or marine dealer.

Gemeco	Tel:	803-693-0777
(USA)	Fax:	803-693-0477
	email:	sales@gemeco.com
Airmar EMEA	Tel:	+33.(0)2.23.52.06.48
(Europe, Middle East, Africa)	Fax:	+33.(0)2.23.52.06.49
	email:	sales@airmar-emea.com

AIRMAR®
TECHNOLOGY CORPORATION

35 Meadowbrook Drive, Milford, New Hampshire 03055-4613, USA
•www.airmar.com

4

SPECIFICATIONS OF THE NETWORK SOUNDER
DFF1

1. GENERAL

1.1.	Output Power	600 W/ 1 kW rms nominal, 1 kW requires optional MB-1100
1.2.	TX Frequency	50 kHz or 200 kHz, 50/200 kHz exchangeable
1.3.	Amplifier type	Wide dynamic linear amp (double superheterodyne)
1.4.	Network protocol	Ethernet 100/10BASE-TX
1.5.	Depth Range and Pulse Repetition Rate	

Range (m)	PRR (/min.)
2	3000
5	3000
10	1990
40	485
100	195
200	95
400	65
1200	34

2. POWER SUPPLY

12-24 VDC: 1.1-0.4 A (at 1 kW output)

3. ENVIRONMENTAL CONDITION

3.1.	Ambient Temperature	-15°C to +55°C
3.2.	Relative Humidity	93% at 40°C
3.3.	Dustproofing, waterproofing (IEC60529)	IP20 (not waterproof)
3.4.	Vibration (IEC 60945 Ed4)	

- 2-5 Hz and up to 13.2 Hz with an excursion of ±1 mm ±10 %
  (7 m/s^2 maximum acceleration at 13.2 Hz)
- 13.2-100 Hz with a constant maximum acceleration of 7 m/s^2

4. COATING COLOR

4.1.	Main Unit	N3.0

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット　　　　　　UNIT			
ネットワーク魚探 NETWORK SOUNDER	219　255　90	DFF1 000-010-154-00	1
予備品　　　　　SPARE PARTS		SP02-05201	
ヒューズ GLASS TUBE FUSE	30　φ6	FGBO-A 125V 3A PBF 000-155-850-10	2
工事材料　　　INSTALLATION MATERIALS		CP02-08100	
ケーブル(組品)LAN LAN CABLE ASSEMBLY	L=5M	MOD-Z072-050+ 001-167-890-10	1
ケーブル組品MJ POWER CABLE ASSY.	L=3.5M	MJ-A3SPF0028-035C 000-164-952-10	1
+トラスタッピンネジ　1シュ SELF-TAPPING SCREW	20　φ4	4X20 SUS304 000-158-850-10	4
図書　　　　　　DOCUMENT			
取扱説明書 OPERATOR'S MANUAL	210　297	OM*-20360-* 000-170-908-1*　**	1
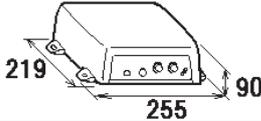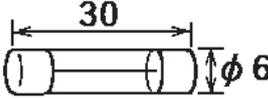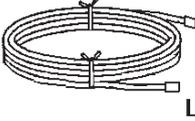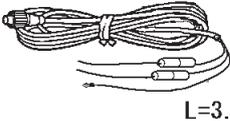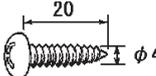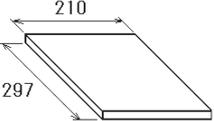
コード番号末尾の[**]は、選択品の代表コードを表します。
CODE NUMBER ENDING WITH "**" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL.

型式/コード番号が2段の場合、下段より上段に代わる過渡期品であり、どちらかが入っています。 なお、品質は変わりません。

TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.

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

C2036-Z01-F

型式銘板
NAMEPLATE

表 1 TABLE 1

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

5

R2.5

NETWORK SOUNDER   DFF1

φ12

12

144 ±1

219

44

2－φ5
取付穴
FIXING HOLES

FURUNO

230 ±1

255

#85

90

#70

#70

LANコネクタ
LAN CONNECTOR

送受波器コネクタ
TRANSDUCER CONNECTOR

電源コネクタ
POWER CONNECTOR

アース端子
GND TERMINAL
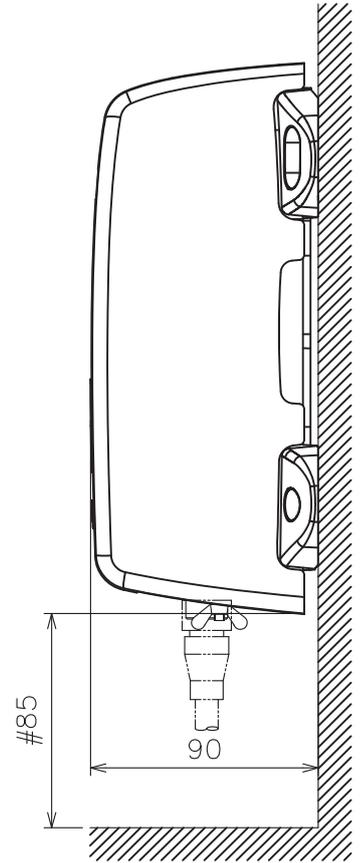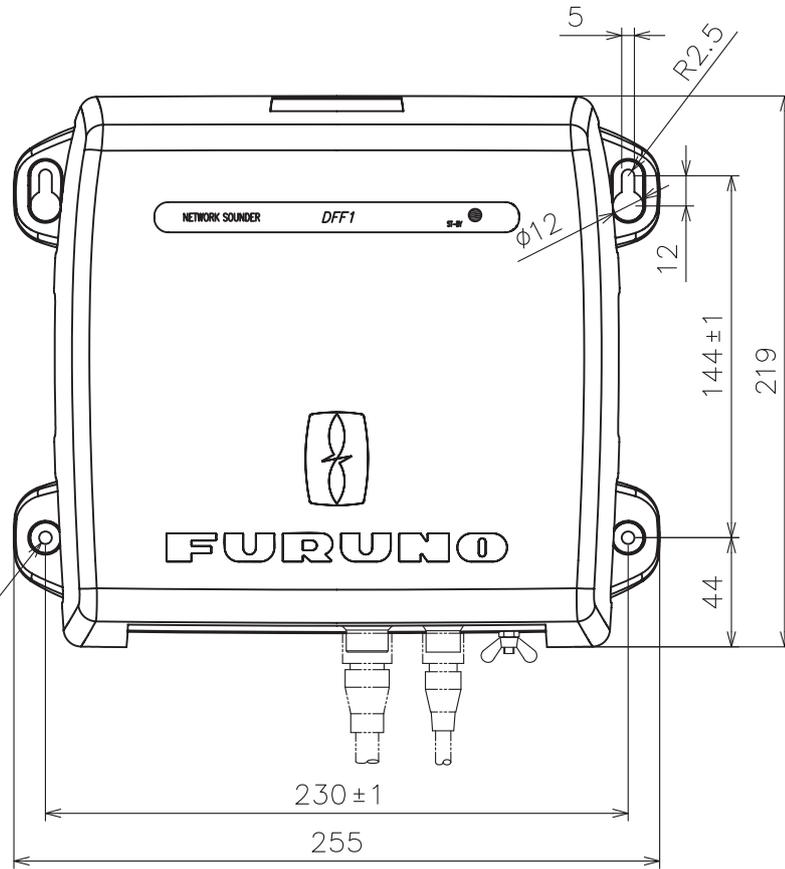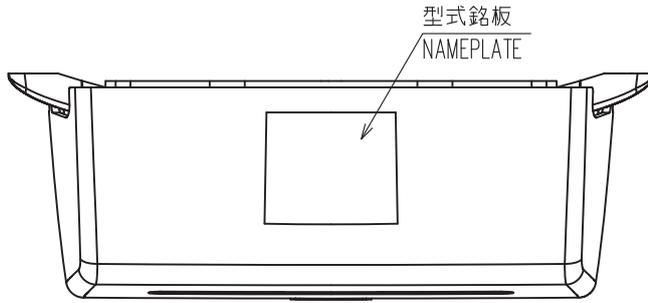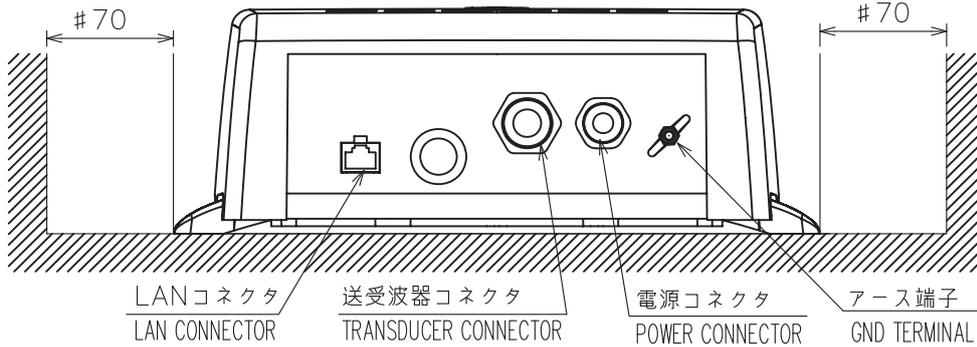
注 記　1)　#印寸法は最小サービス空間寸法とする。
　　　　2)　指定外の寸法公差は表1による。
　　　　3)　取付用ネジは＋トラスタッピンネジ呼び径4x20を使用のこと。
NOTE　1.　#: MINIMUM SERVICE CLEARANCE.
　　　　2.　TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
　　　　3.　USE SELF-TAPPING SCREWS 4x20 FOR FIXING THE UNIT.

DRAWN	Jan. 9, '07 E. MIYOSHI			TITLE	DFF1
CHECKED	TAKAHASHI. T			名称	ネットワーク魚探
APPROVED	Y. Hatai				外寸図
SCALE	1/3	MASS	1.2 ±10% kg	NAME	NETWORK SOUNDER
DWG.No.	C2036-G01-B	REF.No.	02-158-100G-2		OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

ケーブル導入口
CABLE ENTRY

#200

取付穴
4−∅5
FIXING HOLES

型式銘板
NAMEPLATE

22

88±0.5
130
174

21

22

46±0.5

#200

3.2   40

#10   80   #10
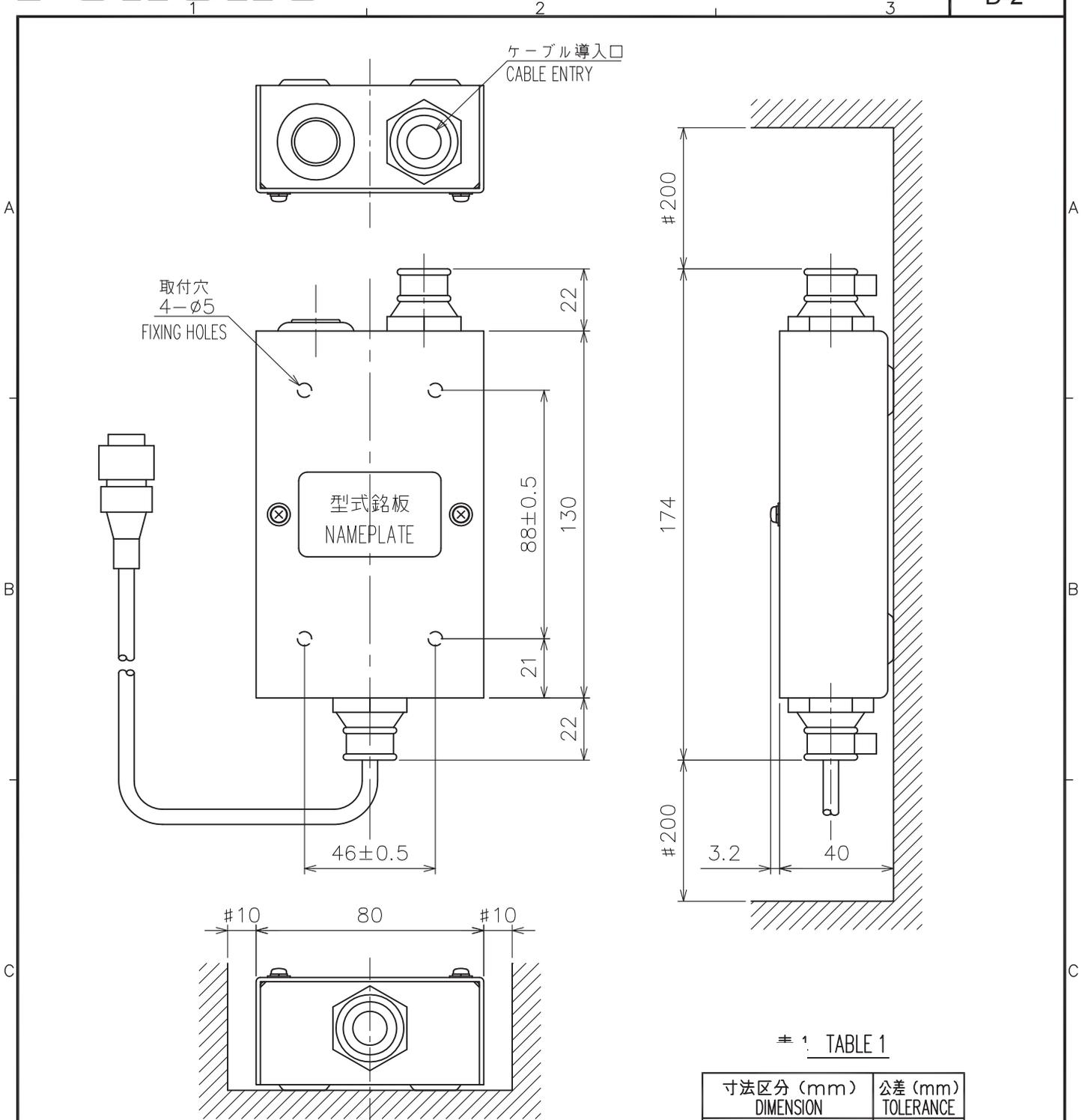
#1 TABLE 1

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

注 記 1) 指定外の寸法公差は表1による。
      2) ♯印寸法は最小サービス空間寸法とする。
      3) 取付にはタッピンネジ呼び4を使用のこと。

NOTE   1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
       2. #: MINIMUM SERVICE CLEARANCE.
       3. USE TAPPING SCREWS ∅4 FOR FIXING THE UNIT.

DRAWN 12/Mar/2015 T.YAMASAKI		TITLE MB-1100
CHECKED 12/Mar/2015 H.MAKI		名称 分配箱
APPROVED 12/Mar/2015 H.MAKI		外寸図
SCALE 1/2	MASS 0.30 kg ±10% 質量はケーブル（1m）を含む。MASS INCLUDES 1 m CABLE.	NAME MATCHING BOX
DWG. No. C2375-G03- C	REF. No. 02-155-200G-2	OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

FURUNO ELECTRIC CO., LTD.

FURUNO

DRAWN	13/Dec/2016	T. YAMASAKI	
CHECKED	13/Dec/2016	H. MAKI	
APPROVED	14/Dec/2016	H.MAKI	
SCALE		MASS	kg
DWG. No.	C2036-C01-N	REF. No.	02-158-1001-3

TITLE DFF1

名称 ネットワーク魚探

相互結線図

NAME NETWORK SOUNDER

INTERCONNECTION DIAGRAM

牧宏員

マルチファンクションディスプレイ
MULTI FUNCTION DISPLAY
MFD8/12/BB

または OR

スイッチングハブ
SWITCHING HUB
HUB-101 *2
(TZT9/14) *5

指示部
DISPLAY UNIT
(NAVNET:NAV1, VX2)

1 E_TD_P
2 E_TD_N
3 E_RD_P
4 SW_P
5 SW_N
6 E_RD_N
7 PWR_SW_P
8 PWR_SW_N

1 E_RD_P
2 E_RD_N
3 E_TD_P
4 E_TD_N
5 NC
6 SHIELD

*3 RJ-45

*3 MJ-A6SPF

MJ-A6SPF0017-050C, φ6 *2
1/10/20/30m, φ6

J5
TXP 1
TXN 2
RXP 3
P_SW_P 4
P_SW_N 5
RXN 6
NC 7
NC 8

*3 RJ-45

RJ-45 1 TXP
2 TXN
3 RXP
4 P_SW_P
5 P_SW_N
6 RXN
7 NC
8 NC

*3 RJ-45 MOD-Z072, 5m, φ6 (2/10m: OPTION)

NETWORK
J5
TXP 1
TXN 2
RXP 3
P_SW_P 4
P_SW_N 5
RXN 6
NC 7
NC 8

ネットワーク魚探
NETWORK SOUNDER
DFF1

12-24VDC
J1
1 (+)
2 (-)
3 SHIELD

*3 MJ-A3SPF
WHT シロ
BLK クロ
GRN ミドリ

12-24VDC
MJ-A3SPF0028-035C
3.5m

100/110/
220/230VAC,
1φ, 50/60Hz

DPYC-1.5
*1

FUSE 3A
シロ
クロ
ミドリ

*1
1V-2sq.

5 6 1 2 3
GND
整流器 (+) (-)
RECTIFIER
PR-62 *2

1V-1.25sq. *1

XDR J4
1 SPD_XDR
+12V
SPD/TD_1D_0V
TD_1D_XDR
TEMP_XDR
NC
TEMP_0V
XDR_P
XDR SHIELD
XDR_M

C332 10M,10S *2

*3 MJ-A10SPF

8m

送受波器
TRANSDUCER
520-5PSD
520-5MSD
520-5PWD *2

XDR
MJ-A10SPF *3

MB-1100
TB1 3 2 1
XDR-M 10
XDR-SHIELD 6
XDR-P 8
1

3 2 1 1 4 3
MB-1100
TB2

RED 赤
BLK 黒
RED 赤
BLK 黒

200B-5S
200B-6/6B
50B-6/6B (1kW)
50B-9B

MB-1100
1 2 3 4 5
TB2

RED 赤
GRN 緑
BLU 青
BLK 黒

50/200-1T
50/200-1T

XDR J4
1 SPD_XDR
+12V
SPD/TD_1D_0V
TD_1D_XDR
TEMP_XDR
NC
TEMP_0V
XDR_P
XDR SHIELD
XDR_M

MJ-A10SPF *3

02S4147 *2

MJ-A10SRMD

520-5PSD
520-5MSD
520-5PWD *2

送受波器
TRANSDUCER

水温・船速センサー
TEMP/SPEED SENSOR

ST-02MSB *2
ST-02PSB

MJ-A6SPF *3

T-04MSB *2 または OR
T-04MTB

水温センサー
TEMP SENSOR

MJ-A6SPF *3

520ST-PWD
524ST-MSD
525STID-MSD
525STID-PWD *2

水温・船速センサー付
送受波器
TRANSDUCER W/ SENSOR

XDR J4 *3 MJ-A10SPF

注記
*1) 造船所手配。
*2) オプション。
*3) 工場にて取付済み。
*4) DFF1のジャンパー設定変更が必要。
*5) DFF1のDIPスイッチ設定変更が必要。

NOTE
*1: SHIPYARD SUPPLY.
*2: OPTION.
*3: FITTED AT FACTORY.
*4: CHANGE JUMPER SETTING OF DFF1.
*5: CHANGE DIP SWITCH SETTING OF DFF1.

FURUNO Worldwide Warranty for Pleasure Boats (Except North America)

This warranty is valid for products manufactured by Furuno Electric Co. (hereafter FURUNO) and installed on a pleasure boat. Any web based purchases that are imported into other countries by anyone other than a FURUNO certified dealer may not comply with local standards. FURUNO strongly recommends against importing these products from international websites as the imported product may not work correctly and may interfere with other electronic devices. The imported product may also be in breach of the local laws and mandated technical requirements. Products imported into other countries as described previously shall not be eligible for local warranty service.

For products purchased outside of your country please contact the national distributor of Furuno products in the country where purchased.

This warranty is in addition to the customer´s statutory legal rights.

1. Terms and Conditions of Warranty

FURUNO guarantees that each new FURUNO product is the result of quality materials and workmanship. The warranty is valid for a period of 2 years (24 months) from the date of the invoice, or the date of commissioning of the product by the installing certified dealer.

2. FURUNO Standard Warranty

The FURUNO standard warranty covers spare parts and labour costs associated with a warranty claim, provided that the product is returned to a FURUNO national distributor by prepaid carrier.

The FURUNO standard warranty includes:

- Repair at a FURUNO national distributor
- All spare parts for the repair
- Cost for economical shipment to customer

3. FURUNO Onboard Warranty

If the product was installed/commissioned and registered by a certified FURUNO dealer, the customer has the right to the onboard warranty.

The FURUNO onboard warranty includes

- Free shipping of the necessary parts
- Labour: Normal working hours only
- Travel time: Up to a maximum of two (2) hours
- Travel distance: Up to a maximum of one hundred and sixty (160) KM by car for the complete journey

4. Warranty Registration

For the Standard Warranty - presentation of product with serial number (8 digits serial number, 1234-5678) is sufficient. Otherwise, the invoice with serial number, name and stamp of the dealer and date of purchase is shown.

For the Onboard Warranty your FURUNO certified dealer will take care of all registrations.

5. Warranty Claims

For the Standard Warranty - simply send the defective product together with the invoice to a FURUNO national distributor.
For the Onboard Warranty – contact a FURUNO national distributor or a certified dealer. Give the product´s serial number and describe the problem as accurately as possible.

Warranty repairs carried out by companies/persons other than a FURUNO national distributor or a certified dealer is not covered by this warranty.

6. Warranty Limitations

When a claim is made, FURUNO has a right to choose whether to repair the product or replace it.

The FURUNO warranty is only valid if the product was correctly installed and used. Therefore, it is necessary for the customer to comply with the instructions in the handbook. Problems which result from not complying with the instruction manual are not covered by the warranty.

FURUNO is not liable for any damage caused to the vessel by using a FURUNO product.

The following are excluded from this warranty:

a. Second-hand product

b. Underwater unit such as transducer and hull unit

c. Routine maintenance, alignment and calibration services.

d. Replacement of consumable parts such as fuses, lamps, recording papers, drive belts, cables, protective covers and batteries.

e. Magnetron and MIC with more than 1000 transmitting hours or older than 12 months, whichever comes first.

f. Costs associated with the replacement of a transducer (e.g. Crane, docking or diver etc.).

g. Sea trial, test and evaluation or other demonstrations.

h. Products repaired or altered by anyone other than the FURUNO national distributor or an authorized dealer.

i. Products on which the serial number is altered, defaced or removed.

j. Problems resulting from an accident, negligence, misuse, improper installation, vandalism or water penetration.

k. Damage resulting from a force majeure or other natural catastrophe or calamity.

l. Damage from shipping or transit.

m. Software updates, except when deemed necessary and warrantable by FURUNO.

n. Overtime, extra labour outside of normal hours such as weekend/holiday, and travel costs above the 160 KM allowance

o. Operator familiarization and orientation.

FURUNO Electric Company, March 1, 2011

FURUNO Warranty for North America

FURUNO U.S.A., Limited Warranty provides a twenty-four (24) months LABOR and twenty-four (24) months PARTS warranty on products from the date of installation or purchase by the original owner. Products or components that are represented as being waterproof are guaranteed to be waterproof only for, and within the limits, of the warranty period stated above. The warranty start date may not exceed eighteen (18) months from the original date of purchase by dealer from Furuno USA and applies to new equipment installed and operated in accordance with Furuno USA's published instructions.

Magnetrons and Microwave devices will be warranted for a period of 12 months from date of original equipment installation.

Furuno U.S.A., Inc. warrants each new product to be of sound material and workmanship and through its authorized dealer will exchange any parts proven to be defective in material or workmanship under normal use at no charge for a period of 24 months from the date of installation or purchase.

Furuno U.S.A., Inc., through an authorized Furuno dealer will provide labor at no cost to replace defective parts, exclusive of routine maintenance or normal adjustments, for a period of 24 months from installation date provided the work is done by Furuno U.S.A., Inc. or an AUTHORIZED Furuno dealer during normal shop hours and within a radius of 50 miles of the shop location.

A suitable proof of purchase showing date of purchase, or installation certification must be available to Furuno U.S.A., Inc., or its authorized dealer at the time of request for warranty service.

This warranty is valid for installation of products manufactured by Furuno Electric Co. (hereafter FURUNO). Any purchases from brick and mortar or web-based resellers that are imported into other countries by anyone other than a FURUNO certified dealer, agent or subsidiary may not comply with local standards. FURUNO strongly recommends against importing these products from international websites or other resellers, as the imported product may not work correctly and may interfere with other electronic devices. The imported product may also be in breach of the local laws and mandated technical requirements. Products imported into other countries, as described previously, shall not be eligible for local warranty service.

For products purchased outside of your country please contact the national distributor of Furuno products in the country where purchased.

WARRANTY REGISTRATION AND INFORMATION

To register your product for warranty, as well as see the complete warranty guidelines and limitations, please visit www.furunousa.com and click on "Support". In order to expedite repairs, warranty service on Furuno equipment is provided through its authorized dealer network. If this is not possible or practical, please contact Furuno U.S.A., Inc. to arrange warranty service.

FURUNO U.S.A., INC.
Attention: Service Coordinator
4400 N.W. Pacific Rim Boulevard
Camas, WA 98607-9408
Telephone: (360) 834-9300
FAX: (360) 834-9400

Furuno U.S.A., Inc. is proud to supply you with the highest quality in Marine Electronics. We know you had several choices when making your selection of equipment, and from everyone at Furuno we thank you. Furuno takes great pride in customer service.

FURUNO

FURUNO ELECTRIC CO., LTD.
9-52 Ashihara-cho, Nishinomiya, 662-8580, Japan
Tel: +81 (798) 65-2111   Fax: +81 (798) 65-1020
www.furuno.com

Publication No. DOCQA0986

EC Declaration of Conformity

CE

We   FURUNO ELECTRIC CO., LTD.

(Manufacturer)

9-52 Ashihara-Cho, Nishinomiya City, 662-8580, Hyogo, Japan

(Address)

declare under our sole responsibility that the product

NETWORK SOUNDER DFF1

(Model name, type number)

to which this declaration relates is in conformity with the following standard(s) or other normative document(s)

IEC 60945 Ed.4.0: 2002, clauses 9.2, 9.3, 10.3, 10.4, 10.5, 10.8 and 10.9
IEC 60945 Ed.3.0: 1996, clauses 10.2 and 10.3

(title and/or number and date of issue of the standard(s) or other normative document(s))

For assessment, see

• EMC Test Report FLI 12-06-062, December 11, 2006 prepared by Furuno Labotech International Co., Ltd.

This declaration is issued according to the Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility.

On behalf of Furuno Electric Co., Ltd.

Yoshitaka Shogaki
Department General Manager
Quality Assurance Department

Nishinomiya City, Japan
April 20, 2016

(Place and date of issue)

(name and signature or equivalent marking of authorized person)

NAVnet 3D/TZtouch Connect

ECF
(Elemental Chlorine Free)
The paper used in this manual
is elemental chlorine free.

FURUNO ELECTRIC CO., LTD.

9-52, Ashihara-cho,
Nishinomiya, 662-8580, JAPAN

·FURUNO Authorized Distributor/Dealer

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