FURUNO

Installation Manual
NETWORK FISH FINDER
Model DFF1UHD+

装備要領書ダウンロードリンク（For Japanese Manual）

和文の装備要領書は、 公式ウェブサイトで公開しています。

右記の二次元コードからダウンロード可能です。

FURUNO ELECTRIC CO., LTD.

www.furuno.com

⚠ SAFETY INSTRUCTIONS

Follow the safety instructions listed below and throughout this manual to prevent damage to your equipment or vessel and to prevent harm to the operator or other personnel on-board. The results of failing to follow the instructions and guidelines outlined herein are listed below.

⚠ 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 technician can work inside the equipment.

Do not disassemble or modify the equipment.

Fire, electrical shock or serious injury can result.

Turn off the power immediately if the equipment 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 hot to the touch 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 connect/disconnect the cables connected to the unit while the power is turned on.

The unit may be damaged.
Electrical shock can result.

Be sure to attach caps to all unused connectors.

The unit may be damaged.
Electrical shock can result.

⚠ WARNING 警告 ⚠

To avoid electrical shock,do not remove cover. No user-serviceable parts inside.
感電の恐れあり。
サービスマン以外の方はカバーを開けないで下さい。
内部には高電圧部分が多くあり、万一さわると危険です。

Warning Label

Safety instructions for the installer

⚠ WARNING

Do not work inside the equipment unless qualified to do so.

Electricla shock can occur.

Turn off the power before beginning the installation.

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

Be sure no water leaks at the mounting location for the transducer and temperature sensor.

Water leakage can sink the vessel. Also, confirm that neither the transducer nor the 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.

The network sounder meets waterproofing standard IPX6. However, do not install the sounder outdoors.

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

⚠ 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.**

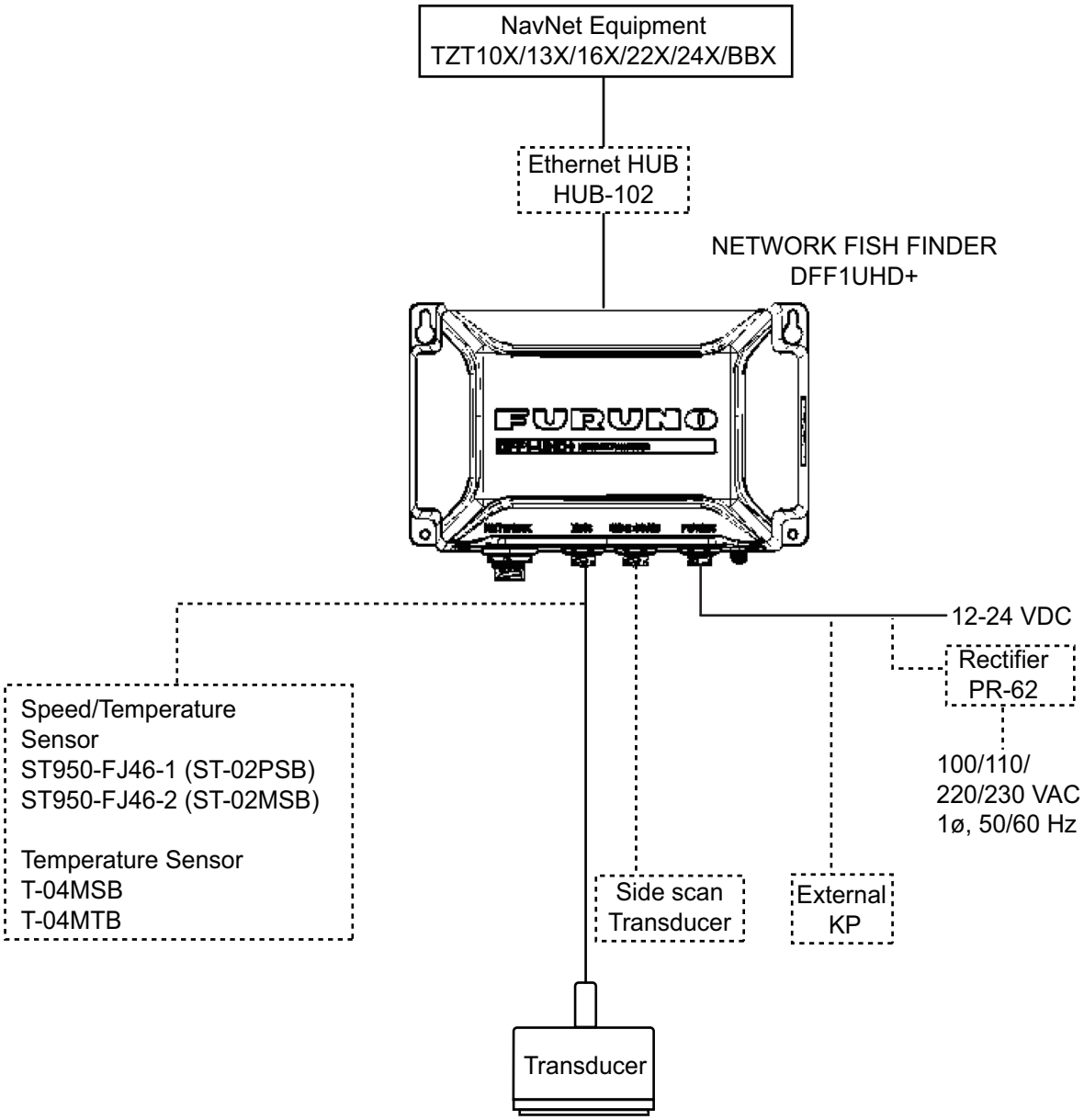
Do not apply the power with the transducer exposed to air.

The transducer may be damaged.

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

A magnetic compass may receive interference if it is placed too close to the network fish finder.

SYSTEM CONFIGURATION



1. INSTALLATION

1.1 Equipment Lists

Standard supply

Name	Type	Qty	Remarks
Network Fish Finder	DFF1UHD+	1	Includes below parts. • 1 × Power Cable (CBC0FS0900) • 1 × Pin Label • 1 × 12-10pin Cable (FRU-CCB12-MJ-01-BU) • 1 × LAN Cable (5m, FRU-RZWPNWP-005G) • 1 × Waterproof RJ45 (M) to RJ45 adapter cable (0.5 m, FUSA-RPZG5E-A) • 4 × Self-tapping Screws (#10 3/4")

Optional supply

Name	Type	Remarks
Matching Box	MB-1100	
Extension Cable*	C332 10M	For transducer cable extension
	FRU-CCB12-DA-10M	
Network (LAN) Cable	FRU-RZWPNWP-002G	Waterproofed RJ45 to NON-Waterproofed RJ45
	FRU-RZWPNWP-005G	
	FRU-RZWPNWP-010G	
	FRU-RZWPWP-002G	Waterproofed RJ45 to Waterproofed RJ45
	FRU-RZWPWP-005G	
	FRU-RZWPWP-010G	
Connector	RZCDP08G5E-KLG7001	Waterproofed RJ45 plug
Tank	T-711-FJ12	
Cable Assembly	MOD-Z072-020+	2 m, for HUB-101
	MOD-Z072-100+	10 m, for HUB-101
Cable Assy	02S4147-2	Converter cable (10 pin × 2 - 6 pin,0.2 m), for Speed/Temperature sensor
Transducer Y-Cable	AIR-040-406-10	Converter cable (12pin - 10pin × 2), for combination of two single-frequency transducers.
Speed/Temperature Sensor	ST950-FJ46-1 (ST-02PSB)	Thru-hull mount, plastic
	ST950-FJ46-2 (ST-02MSB)	Thru-hull mount, stainless steel
Temperature Sensor	T-04MSB	Thru-hull mount
	T-04MTB	Transom mount

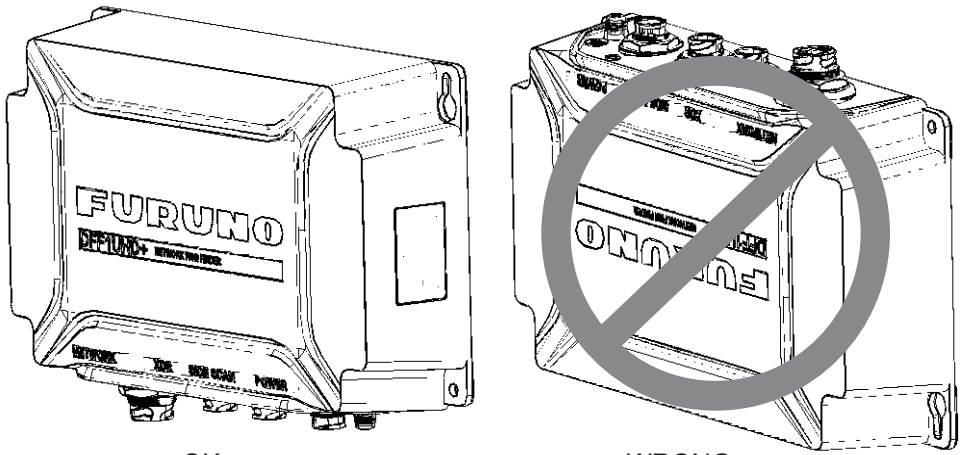
Name	Type	Remarks
Rectifier	PR-62	100 VAC/110 VAC/220 VAC/230 VAC

*: Use of the extension cable may cause the following problems:
- Reduced detection ability
- Wrong ACCU-FISH™ 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 Fish Finder

The network fish finder can be installed on a desktop, deck or on a bulkhead. When selecting a mounting location, keep the following points in mind:

- This unit meets the waterproofing standard IPX6. However, do not install the unit outdoors.
- The operating temperature range of this unit is -20 to 55°C (-4°F to 131°F). Be sure the mounting location satisfies this requirement.
- 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 may receive interference from the network fish finder if it is placed too close to the network fish finder. Observe the compass safe distances to prevent interference to the magnetic compass.
- For mounting on a bulkhead, the connectors must face downward.



OK WRONG

Fasten the network fish finder to the mounting location with four self-tapping screws (#10 3/4").

1.3 Transducer

The performance of the fish finder largely depends upon the transducer position.

- Select a place least affected by air bubbles since turbulence blocks the sounding path.
- Select a place least influenced by engine noise.
- Do not install the transducer inside the hull. Performance cannot be guaranteed.

1.4 Optional Speed/Temperature Sensors ST950-FJ46-1 (ST-02PSB), ST950-FJ46-2 (ST-02MSB)

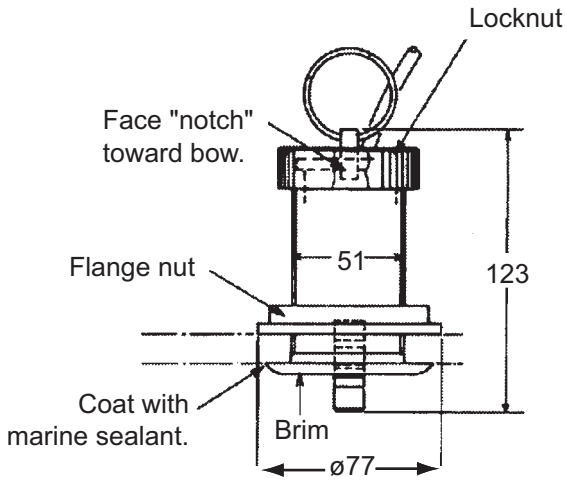
When using a speed/temperature sensors, a conversion cable (02S4147-2, optional supply) is required.

1.4.1 Mounting considerations

- Select a mid-boat flat position. The sensor does not have to be installed perfectly perpendicular. However, the sensor must not be located where it may be damaged in dry-docking operations.
- 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.
- Do not install near the transducer of an echo sounder, to prevent interference to the echo sounder.
- Select a place that remain submerged at all times during operations.

1.4.2 Mounting procedure

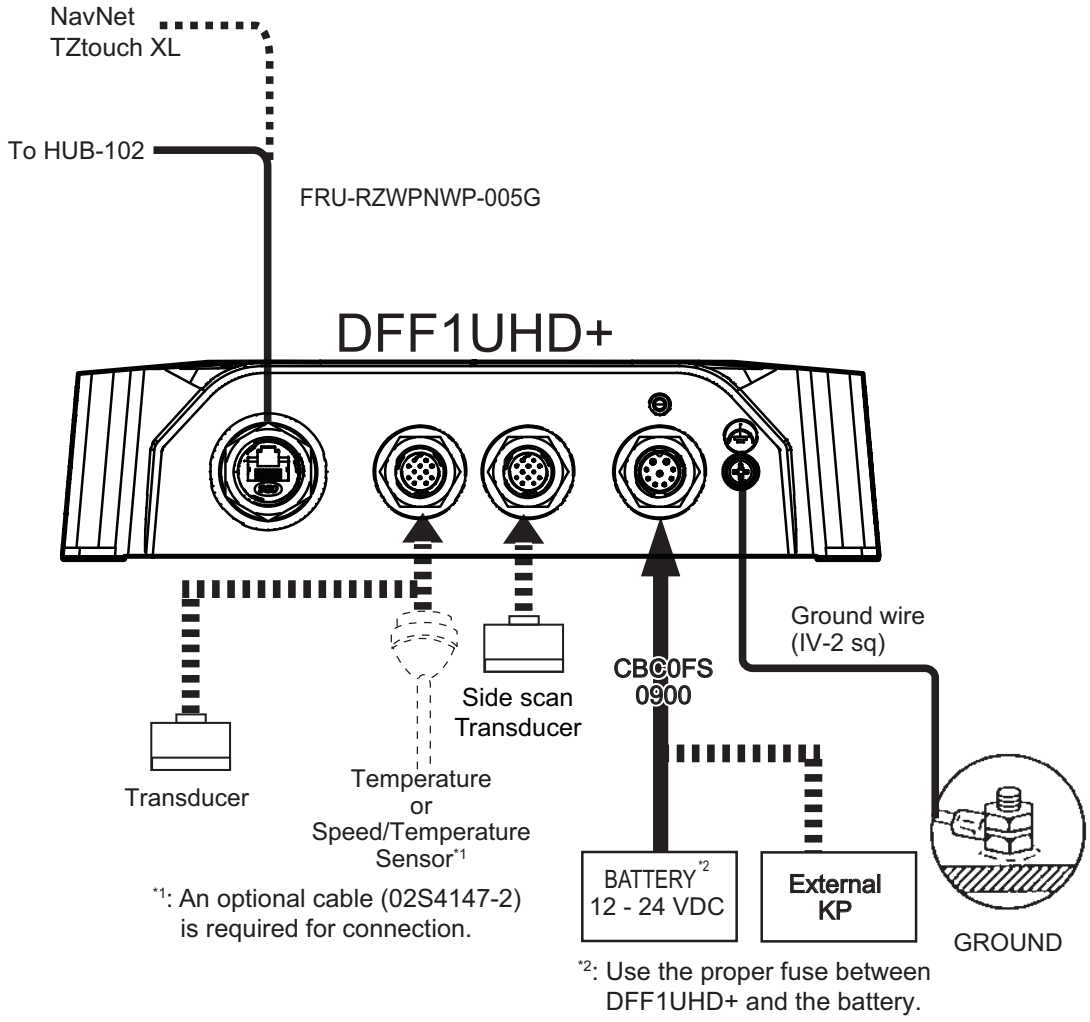
1. Dry dock the boat.
2. Make a hole of approx. 51 mm in diameter in the mounting location.
3. Unfasten the locknut and remove the sensor section.
4. Apply high-grade sealant to the flange of the sensor.
5. Pass the sensor casing through the hole.
6. Face the notch on the sensor toward boat's bow and 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.



2. WIRING

2.1 Wiring Outline

Connect the power cable, transducer cables, sensor cable, network cable and ground wire to their respective locations on the network fish finder (see the interconnection diagram for details).



Grounding

Connect a ground wire (IV-2 sq, local supply) between the ground terminal and ship's ground to prevent interference to the sounder picture. Make the length of the wire as short as possible. For FRP vessels, install a ground plate that measures approx. 20 cm by 30 cm on the outside of the hull bottom and connect the ground wire there.

⚠ CAUTION

Ground the equipment to prevent mutual interference.

Be sure to attach caps to all unused connectors.

The unit may be damaged.
Electrical shock can result.

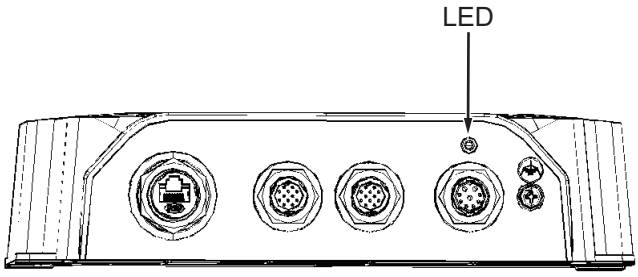
3. INITIAL SETTINGS

3.1 Operation Check (LED state)

For NavNet equipment, the DFF1UHD+ is powered on/off from the ship's switchboard. The LED on the cover of the DFF1UHD+ lights or blinks according to equipment state, as described in the table below.

LED state and meaning

LED state	Meaning
Lit continuously	• Standby state. (If no signal is received via LAN for more than 10 minutes, the equipment automatically goes into standby to lessen power consumption.) • Power on (20 seconds during initialization). • IP address not set.
Blinking every two seconds	Normal operation.
Blinking every 0.4 seconds	Transducer settings at NavNet device not properly set.



4. MAINTENANCE

⚠ WARNING

ELECTRICAL SHOCK HAZARD
Do not open the equipment.

Only qualified technician
can work inside the equipment.

NOTICE

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.

4.1 Maintenance

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

Item	Check point, action	Check interval
Transducer cable	Check that cable is tightly fastened and is not damaged. Refasten if necessary. Replace if damaged.	Once a month
Power cable, sensor cable	Check that these cables are tightly fastened and not damaged. Refasten if necessary. Replace if damaged.	Once a month
Ground terminal, ground wire	Check for corrosion. Clean if necessary. Replace wire if damaged.	Once a month
Power supply voltage	Check voltage. If out of rating correct problem.	Once a month
Cleaning the network fish finder'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 markings and damage the cabinet.	Once a month
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 removed from the water. Carefully remove any marine life with a piece of wood or fine-grade sandpaper.	When vessel is removed from the water

APPX. 1 INSTALLATION OF TRANSDUCERS

This appendix provides a copy of the installation instructions and Installation supplement for the AIRMAR transducers.

OWNER'S GUIDE & INSTALLATION INSTRUCTIONS

Thru-Hull *with* Stem

Depth Transducer

with Temperature Sensor

Models: **B45, B258, B260, B265LH, B265LM, B271W, B275LH-W, SS258, SS260, SS270W, SS505**

U.S. Patent No. 7,369,45; 8,582,393. UK Patent No. 2 414 077

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

WARNING: A High-Performance Fairing must be installed following the installation instructions that accompany the fairing. A High-Performance Fairing requires an anti-rotation bolt to keep the fairing from turning while the boat is underway.

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 may allow considerable water to accumulate.

CAUTION: **CHIRP transducer**—Always operate the transducer in water. Operating in air will allow the transducer to overheat resulting in failure.

CAUTION: **Bronze transducer**—Never mount in a metal hull, because electrolytic corrosion will occur.

CAUTION: **Stainless steel housing in a metal hull** requires using a Fairing Kit to isolate the stainless steel transducer from the metal hull. Failure to do so will cause electrolytic corrosion.

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

CAUTION: Never pull, carry, or hold the transducer by the cable as this may sever internal connections.

CAUTION: Never strike the transducer.

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

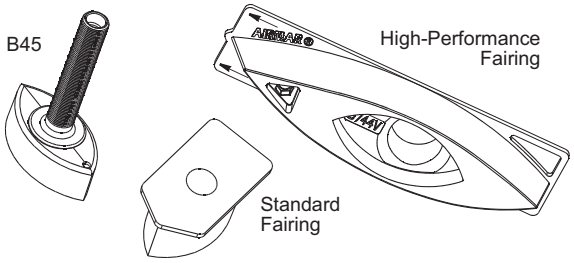
IMPORTANT*:* Read the instructions completely before proceeding with the installation. These instructions supersede any other instructions in your instrument manual if they differ.

Applications

- **Bronze** transducer recommended for fiberglass or wood hull only.
- **Stainless steel** transducer compatible with all hull materials. Recommended for aluminum hulls to prevent electrolytic corrosion provided the stainless steel transducer is isolated from the metal hull.

Record the information found on the cable tag for future reference.

Part No._____Date_____Frequency_____kHz



Identify Your Model

The model name is printed on the cable tag.

Tools & Materials

Safety goggles
Dust mask
Electric drill
Drill bits and hole saws:

Pilot hole	3mm *or* 1/8"
B45, SS505	22mm *or* 7/8"
B258, B271W, SS258	30mm *or* 1-3/16"
B260, B265LH/LM, B275LH-W, SS260, SS270W	33mm *or* 1-5/16"

Sandpaper
Mild household detergent *or* weak solvent (such as alcohol)
File (installation in a metal hull)
Angle finder (installation with a fairing)
Band saw (installation with a fairing)
Rasp *or* power tool (installation with a fairing)
Marine sealant (suitable for below waterline)
Slip-joint pliers
Grommet(s) (some installations)
Cable ties
Water-based anti-fouling paint (**mandatory in salt water**)
Installation in a cored fiberglass hull: (see page 4)
Drill bits and hole saws for hull interior:

B45, SS505	35mm *or* 1-3/8"
B258, B271W, SS258	40mm, 41mm, *or* 1-5/8"
B260, B265LH/LM, B275LH-W, SS260, SS270W	42mm *or* 1-5/8"

Cylinder, wax, tape, and casting epoxy

About Fairings

Most vessels have some deadrise angle at the mounting location. If the transducer is mounted directly to the hull, the sound beam will be tilted to the side at the same angle as the deadrise. A fairing is strongly recommended if the deadrise angle exceeds 10°. Made of a high-impact polymer with an integrated cutting guide, an Airmar fairing is safer and easier to cut with a band saw and shape with hand tools than custom fairings.

- Orients the sound beam straight down by mounting the transducer parallel to the water surface.
- Mounts the transducer deeper in the water for clean flow under the transducer's face.
- **Airmar High-Performance Fairing** has a long streamlined shape, directing water around the transducer to minimize drag. Performance is excellent above 15kn (18MPH). (To order see "Replacement Parts" on page 4.)

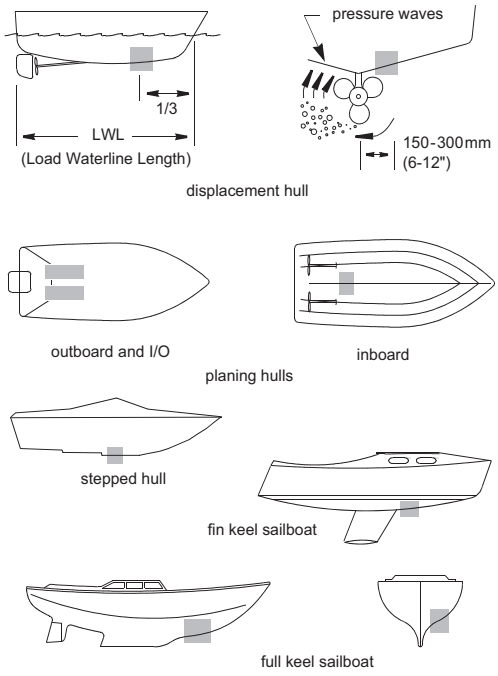


Figure 1. Best location for the transducer

Mounting Location

Boat Types (see Figure 1)

- **Displacement hull powerboat**—Locate 1/3 of the way along the LWL and 150–300mm (6–12") off the centerline. The starboard side of the hull where the propeller blades are moving downward is preferred.
- **Planing hull powerboat**—Mount well aft near the centerline and *well inboard of the first set of lifting strake*s to ensure that it is in contact with the water at high speeds. The starboard side of the hull where the propeller blades are moving downward is preferred.
  Outboard and I/O—Mount just forward and to the side of the engine(s).
  Inboard—Mount well ahead of the propeller(s) and shaft(s).
  Stepped hull—Mount just ahead of the first step.
  Boat capable of speeds above 25kn (29MPH)—Review transducer location and operating results of similar boats before proceeding.
- **Fin keel sailboat**—Mount to the side of the centerline and forward of the fin keel 300–600mm (1–2').
- **Full keel sailboat**—Locate amidships and away from the keel at the point of minimum deadrise angle.

Guidelines

CAUTION: Do not mount in line with or near water intake or discharge openings or behind strakes, struts, fittings, or hull irregularities that will disturb the water flow.

CAUTION: Do not mount the sensor where the boat may be supported during trailering, launching, hauling, or storage to avoid damaging the transducer's face.

- The water flowing under the hull must be smooth with a minimum of bubbles and turbulence (especially at high speeds).
- The transducer must be continuously immersed in water.
- The transducer beam must be unobstructed by the keel or propeller shaft(s).
- Choose a location away from interference caused by power and radiation sources such as: the propeller(s) and shaft(s), machinery, other echosounders, and other cables. The lower the noise level, the higher the echosounder gain setting that can be used.
- Choose a location with a minimal deadrise angle.
- Choose an accessible spot inside the vessel with adequate space for the height of the stem and tightening the nut.
- **CHIRP transducer**—Mount in a cool well-ventilated area away from the engine to avoid overheating.

Installation: No Fairing or Standard Fairing Only

IMPORTANT: If installing the transducer with NO fairing, disregard all references to a fairing and backing block.

Hole Drilling

***Cored fiberglass hull**—Follow separate instructions on page 4.*

1. Drill a 3mm or 1/8" pilot hole perpendicular to the waterline from inside the hull (see Figure 2). If there is a rib, strut, or other hull irregularity near the selected mounting location, drill from the outside.
2. Using the appropriate size drill bit, cut a hole from outside the hull. *Be sure to hold the drill plumb, so the hole will be perpendicular to the water surface.*
3. Sand and clean the area around the hole, inside and outside, to ensure the marine sealant will adhere properly to the hull. If there is any petroleum residue inside the hull, remove it with either a mild household detergent or a weak solvent (alcohol) before sanding.

   Metal hull—Remove all burrs with a file and sandpaper.

Cutting the Standard Fairing

WARNING: High-Performance Fairing—For your safety it is mandatory to follow the Installation Instructions that come with the fairing.

CAUTION: The arrow/pointed end of the fairing points forward toward the bow. Be sure to orient the fairing on the band saw, so the angle cut matches the intended side of the hull and not the mirror image.

1. Measure the deadrise angle of the hull at the selected location (see Figure 2).

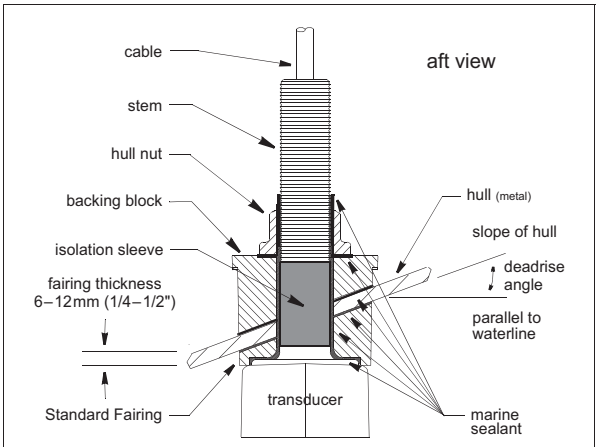


Figure 2. Bedding and installing in a metal hull
(SS258 with Standard Fairing shown)

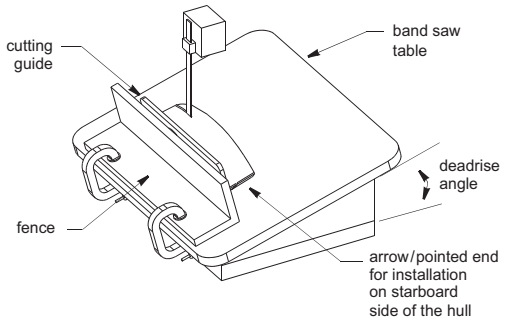


Figure 3. Cutting a Standard Fairing

2. Tilt the band saw table to the measured angle and secure the cutting fence (see Figure 3).
3. Place the fairing on the table, so the cutting guide rests against the fence. The arrow/pointed end will be pointing *toward* you for installation on the starboard side of the boat or *away* from you for installation on the port side (see Figure 4).
4. Adjust the cutting fence, so the fairing will be cut in about two equal parts (see Figure 3). *The section that will become the fairing must be between 6–12mm (1/4–1/2") at its thinnest dimension (see Figure 2)*.
5. Recheck steps 1 through 4. Then cut the fairing.
6. Shape the fairing to the hull as precisely as possible with a rasp or power tool.
7. Use the remaining section of the fairing with the cutting guide for the backing block.

Bedding

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

1. Remove the hull nut (see Figure 5).
2. Thread the transducer cable through the fairing (if used).
3. Apply a 2mm (1/16") thick layer of marine sealant to the surface of the transducer that will contact the hull/fairing and up the stem. The sealant must extend 6mm (1/4") higher than the combined thickness of the hull, fairing and backing block (if used), and the hull nut. This will ensure there is marine sealant in the threads to seal the hull and hold the hull nut securely in place.

   Stainless steel transducer/stem in a metal hull—Slide the isolation sleeve over the bedded transducer stem as far down as possible (see Figure 2). Apply a 2mm (1/16") thick layer of the marine sealant to the outside of the sleeve.
4. Apply a 2mm (1/16") thick layer of marine sealant to the following surfaces (see Figure 5):
   - Fairing that will contact the hull
   - Backing block that will contact the hull interior
   - Hull nut that will contact the hull/backing block
5. **Standard Fairing**—Seat the transducer firmly in/against the fairing with a pushing twisting motion. Be sure the button on the fairing mates with the recess in the transducer housing.

Installing

1. From outside the hull, thread the cable through the mounting hole. Then push the stem of the transducer through the hole using a twisting motion to squeeze out excess sealant. *Take care to align the transducer with the blunt/button/arrow end facing forward toward the bow. The long side must be parallel to the centerline of the boat (see Figure 4)*.

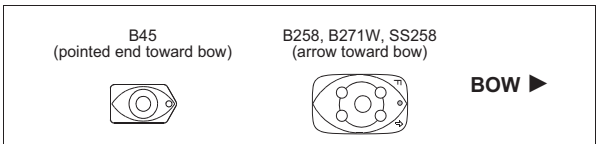


Figure 4. Standard Fairing orientation

   Stainless steel transducer in a metal hull —Be sure the isolation sleeve is between the transducer stem and the hull (see Figure 2). However, the isolation sleeve must be below the hull nut to prevent the sleeve from interfering with tightening the nut.
2. From inside the hull, slide the backing block (if installing with a fairing) and the hull nut onto the cable. Seat any backing block against the hull, being sure the arrow end faces forward toward the bow. Screw the hull nut in place and tighten it with slip-joint pliers (see Figures 4 and 5).

   Cored fiberglass hull—Do not over-tighten, crushing the hull.
   Wood hull—Allow for the wood to swell before tightening the nut.
3. Remove any excess marine sealant on the outside of the hull/fairing to ensure smooth water flow under the transducer.

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.

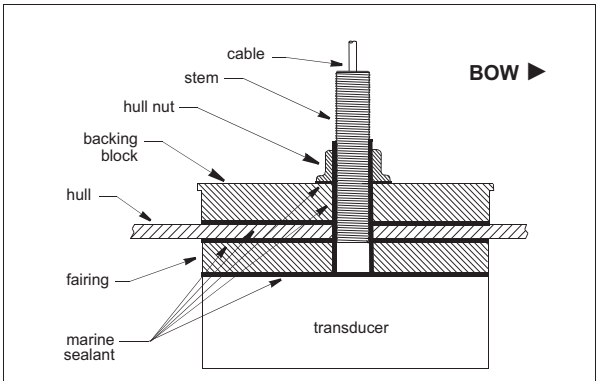


Figure 5. Bedding and installing (B258 with Standard Fairing shown)

Checking for Leaks

When the boat is placed in the water, **immediately** check around the transducer for leaks. Note that very small leaks may not be readily observed. Do not 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 3).

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 transducer to become loose.

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

1. Drill a 3mm or 1/8" pilot hole perpendicular to the waterline from inside the hull (see Figure 6). 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 appropriate size drill bit, cut a hole from outside the hull through the *outer* skin only. *Be sure to hold the drill plumb, so the hole will be perpendicular to the water surface.*
3. The optimal interior hole diameter is affected by the hull’s thickness and deadrise angle. It must be large enough in diameter to allow the core to be completely sealed.

   Using the appropriate size drill bit for the hull interior, cut through the *inner* skin and most of the core from inside the hull keeping the drill perpendicular to the hull. The core material can be very soft. Apply only light pressure to the drill bit 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. Sand and clean the inner skin, core, and the outer skin around the hole.

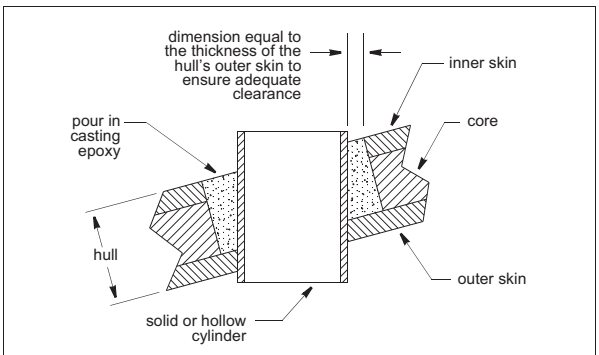


Figure 6. Preparing a cored fiberglass hull

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 “Cutting the Standard Fairing” on page 2.

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 transducer. Reapply anti-fouling paint every 6 months or at the beginning of each boating season.

Maintenance, Parts & Replacement

Cleaning

Aquatic growth can accumulate rapidly on the transducer’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.

Replacement Transducer & Parts

The information needed to order a replacement transducer is printed on the cable tag. Do not remove this tag. When ordering, specify the part number, date, and frequency in kHz. For convenient reference, record this information on the top of page 1.

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

Model	Hull Nut	Fairing Type	Fairing
B45	02-031-3	Standard	33-351-01
		High-Performance	33-509-01
B258, B271W	02-222-03	Standard	33-226-01
		High-Performance	33-523-01
B260	02-036-2	High-Performance	33-391-01
B265LH/LM, B275LH-W	02-036-2	High-Performance	33-391-01
SS258	02-539-01	Standard	33-226-01
		High-Performance	33-523-01
SS260	02-036-03	High-Performance	33-391-01
SS270W	02-036-03	High-Performance	33-391-01
SS505	02-111-01	High-Performance	33-355-01

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

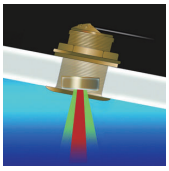
Airmar Technology Corporation D-17-573-01-rev.11 17-573-01-rev.11 06/04/19

AVOID OVERHEATING

Installation Supplement: *Chirp Transducers*

CAUTION: Follow the instructions that came with your transducer. To install a Chirp transducer in a way other than intended by the manufacturer may lead to the transducer overheating, resulting in transducer failure.

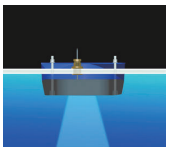
Due to the nature of Chirp technology, Chirp transducers generate more heat than traditional tone-burst transducers operating at the same frequency. Chirp transducers have heat sinks in their construction to dissipate heat. Airmar's Chirp transducers have been designed to be installed in specific ways according to the number and placement of these heat sinks.



Thru-Hull Mount: Low-Profile

Models: B75L/M/H, B150M, B175L/M/H, B175HW, SS75L/M/H, SS175L/M/H, SS175HW

Transducer is installed in a hole drilled through the hull at a cool location away from the engine compartment. During operation, the active face of the transducer is in contact with water.



Thru-Hull Mount: External, Stem

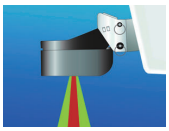
Models: B265LH/LM, B275LHW, B285HW, B285M, B765LH/LM, B785M, M188LH, R109LH/LM, R109LHW, R409LWM, R509LH/LM, R509LHW

Transducer is installed entirely outside of the hull. A stem or stuffing tube hole is drilled through the hull for the transducer cable. The active face and sides of the transducer are immersed in water.

In-Hull Mount

Models: M135M, M265LH/LM, M285HW, P75M, P95M, P155M, R111LH/LM, R599LH/LM

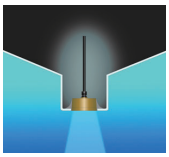
Transducer is installed within a wetbox/yellow plastic tank affixed inside the hull at a cool location. It must be away from the engine compartment and other hot places. No holes are drilled in the hull, however this installation is suitable for a solid fiberglass hull only. The active face and the sides of the transducer are immersed in propylene glycol (non-toxic marine/RV anti-freeze).



Transom Mount

Models: IC-TM90M, TM150M, TM165HW, TM185HW, TM185M, TM265LH/LM, TM275LHW

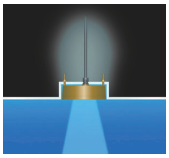
Transducer is bolted to the outside of the boat on the transom. During operation, the active face and sides of the transducer are immersed in water.



Keel Mount

Models: CM599L, CM599LH/LM, CM599LHW, PM111LH/LM, PM111LHW, PM265LH/LM, PM275LHW, PM411LWM

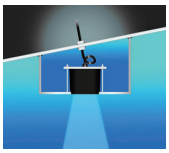
Transducer is fiberglassed into the keel at a cool location away from the engine compartment. The active face of the transducer is flush with the outside of the hull and in contact with water.



Pocket Mount

Models: CM599L, CM599LH/LM, CM599LHW, PM111LH/LM, PM111LHW, PM265LH/LM, PM275LHW, PM411LWM

Transducer is bolted into a fiberglass cavity formed in the hull at a cool location away from the engine compartment. The active face of the transducer is flush with the outside of the hull and in contact with water.



Welded-tank Mount

Models: CM265LH/LM, CM275LHW, CM599LH/LM, CM599LHW

Transducer is installed within a water-filled, welded tank outside of the hull. A stem or stuffing tube hole is drilled through the hull for the transducer cable. The active face and sides of the transducer are immersed in water.

APPX. 2 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

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.

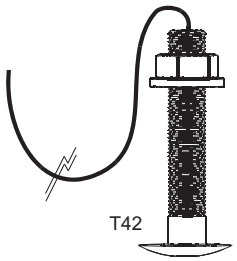
Applications

- 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.

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



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.

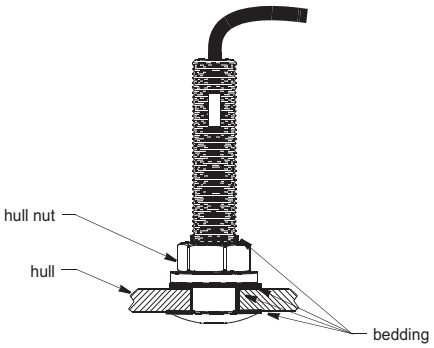


Figure 1. Bedding and installing

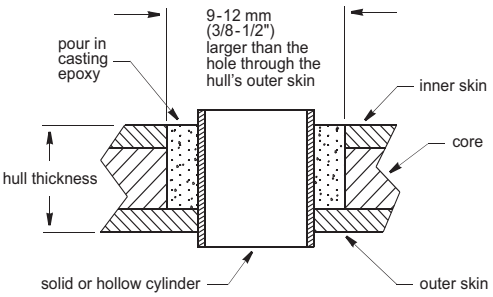


Figure 2. Preparing a cored fiberglass hull

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).

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

APPX. 3 TRANSDUCER LIST

The tables below show all available transducers, whether they are compatible with the functions listed, and connection port.

Standard transducers (CW narrow band)

Model	ACCU-FISH™	Bottom Discrimination	Port	Remarks
520-5PSD	Yes	Yes	XDR (Blue)*1	600 W
520-5MSD	Yes	Yes		
525-5PWD	Yes	Yes		
525STID-MSD	Yes	Yes		
525STID-PWD	Yes	Yes		
520-PLD	Yes	Yes		
525T-BSD	Yes	Yes		
525T-PWD	Yes	Yes		
525T-LTD/12	Yes	Yes		
525T-LTD/20	Yes	Yes		
SS60-SLTD/12	Yes	Yes		
SS60-SLTD/20	Yes	Yes		
526TID-HDD	Yes	Yes		1 kW
TM260	Yes	Yes		
50/200-1T	Yes	Yes	XDR (Blue) *1,*2	
50B-6	No	No		
50B-6B	No	No		
200B-5S	No	No		

*1: Connect with the cable assembly FRU-CCB12-MJ-01-BU (standard supply).

*2: Connect with the matching box MB-1100 (optional supply).

CHIRP transducers (single frequency)

Model	ACCU-FISH™	Bottom Discrimination	Port	Remarks
B75L	No	No	XDR (Blue)*3	300 W
B150M	No	No		
P95M	No	No		
SS75L	No	No		
TM150M	No	No		

Model	ACCU-FISH™	Bottom Discrimination	Port	Remarks
B75H	No	No	XDR (Blue)*3	600 W
B75HW	No	No		
B75M	No	No		
B785M	No	No		
P75M	No	No		
SS75H	No	No		
SS75M	No	No		
TM165HW	No	No		
B-175H	No	No		1 kW
B-175HW	No	No		
B-175L	No	No		
B-175M	No	No		
B-175MW	No	No		
B285M	No	No		
M285HW	No	No		
SS175H	No	No		
SS175HW	No	No		
SS175L	No	No		
SS175M	No	No		
SS175MW	No	No		
TM185HW	No	No		
TM185M	No	No		
TM185MW	No	No		

*3: Connect with the cable assembly FRU-CCB12-MJ-01-BU (standard supply).

CHIRP transducers (dual frequency)

Model	ACCU-FISH™	Bottom Discrimination	Port	Remarks
B265LH-FJ12	Yes	No	XDR (Blue)*4,*5	1 kW
B265LM-FJ12	No	No		
B275LHW-FJ12	No	No		
B275MWHW	No	No		
CM265LH-FJ12	Yes	No		
CM265LM-FJ12	No	No		
CM275LHW-FJ12	No	No		
M265LH	No	No		
M265LM	No	No		
TM265LH-FJ12	Yes	No		
TM265LM-FJ12	No	No		
TM275LHW-FJ12	No	No		
TM275MWHW	No	No		

*4: Connect directly to the XDR port.

*5: Cannot be used simultaneously with the CHIRP Side Scan transducers.

Side Scan transducers

Model	ACCU-FISH™	Bottom Discrimination	Port	Remarks
225T-TM904	No	No	SIDE SCAN (Yellow)*6	150 W
225T-SS904	No	No		
225T-PR904	No	No		
455T-TM903	No	No		
455T-SS903	No	No		
455T-PR903	No	No		

*6: Connect directly to the SIDE SCAN port.

Combined transducers (dual frequency)

Model	ACCU-FISH™	Bottom Discrimination	Port	Remarks
165T-50/200-SS260	No	No	XDR (Blue)*7	1 kW
165T-50/200-TM260	No	No		
165T/265LH-PM488-12P	Yes	No	XDR (Blue)*8,*9	
165T/275LHW-12P	No	No		

*7: Connect with the cable assembly FRU-CCB12-MJ-01-BU (standard supply).

*8: Connect directly to the XDR port.

*9: Cannot be used simultaneously with the CHIRP Side Scan transducers.

SPECIFICATIONS

1 POWER SUPPLY

1.1 Network fish finder
DFF1UHD+ 12-24 VDC (10.8-31.2V): 1.0 - 0.5 A

1.2 Rectifier
PR-62 (option) 100/110/220/230 VAC, 1 phase, 50/60Hz

2 ENVIRONMENTAL CONDITIONS

2.1	Ambient temperature	-20 °C to +55 °C
2.2	Relative humidity	93% or less at +40 °C
2.3	Degree of protection	IPX6
2.4	Vibration	IEC60645 Ed.4

3 SOUNDER FUNCTION

3.1	Frequency	CW: 50/200 kHz, CHIRP: 40 to 225 kHz,Side scan: 230/455 kHz
3.2	Transducer	300/600 W, 1 kW
3.3	Depth range	1200 m max.
3.4	Display mode	ACCU-FISH™, A-scope, Estimation for bottom composition, Temperature graph
3.5	Alarm (Option)	School of fish, School of fish for bottom lock

4 INTERFACE

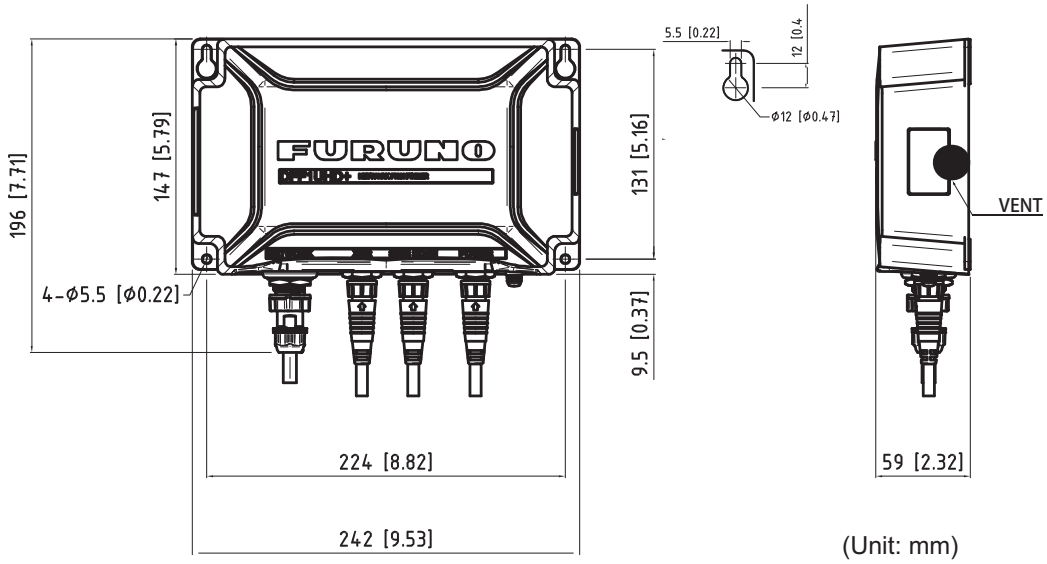
4.1 Number of ports

Network	1 port, Ethernet 100BASE-TX
External KP input	1 port, 5-12V (positive)
External KP output	1 port, 12V (positive)

5 MECHANICAL

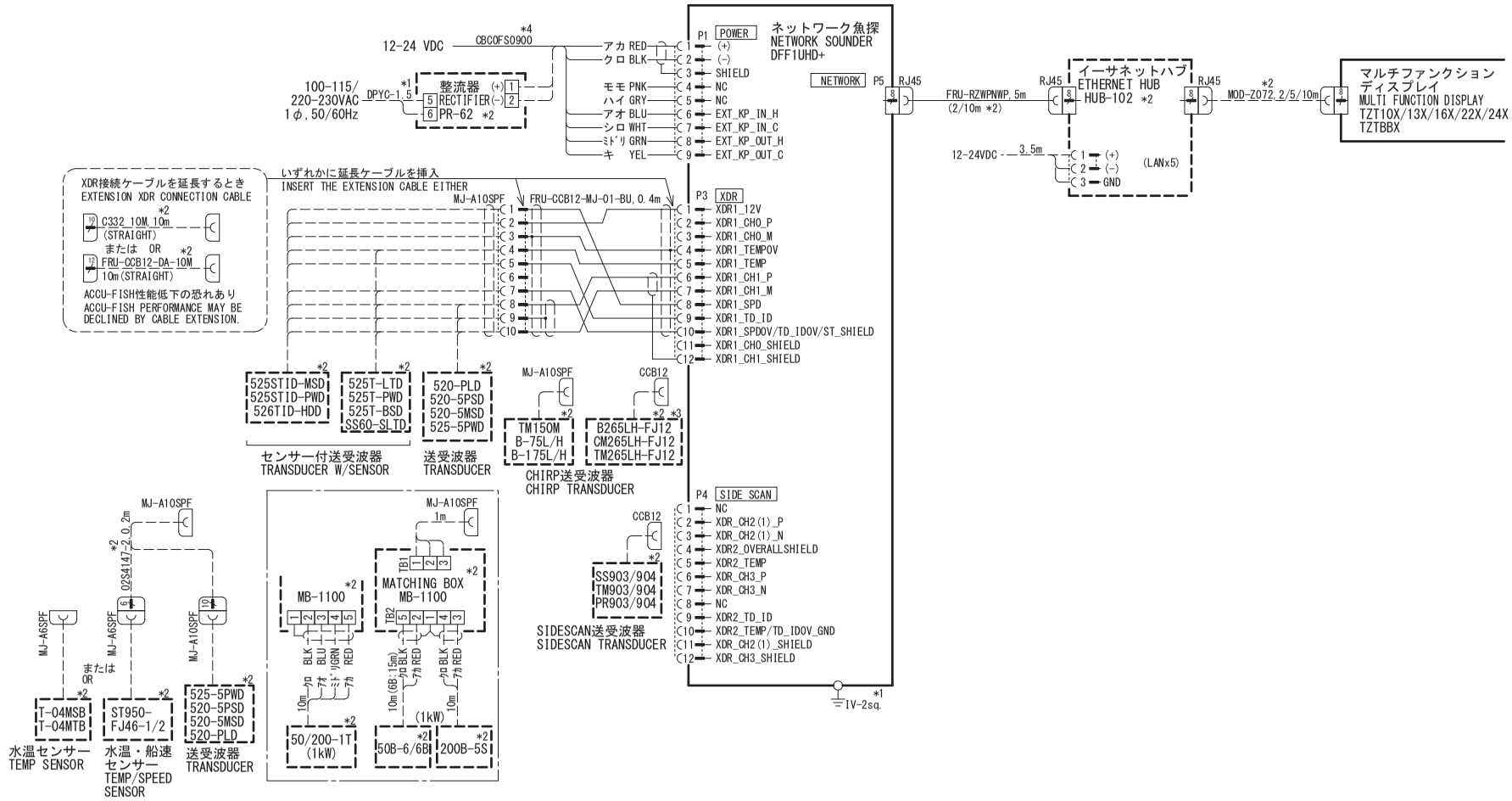
5.1	Unit Color	N1.0
5.2	Weight	0.79 kg

5.3 Dimension



(Unit: mm)

FURUNO



注記
＊１）造船所手配。
＊２）オプション。
＊３）サイドスキャン送受波器との同時使用は不可。
＊４）ヒューズ５Ａは造船所手配。

NOTE
*1: SHIPYARD SUPPLY.
*2: OPTION.
*3: DO NOT USE WITH SIDESCAN TRANDUCER SIMULTANEOUSLY.
*4: FUSE 5A IS SHIPYARD SUPPLY.

DRAWN 22/Aug/2025 S.HAN			TITLE DFF1UHD+
CHECKED 2/Sep/2025 A.Murao			名称 ネットワーク魚探
APPROVED 2/Sep/2025 A.Murao			相互結線図
SCALE	MASS kg		NAME NETWORK FISH FINDER
DWG No. C2042-C01- A	REF.No.		INTERCONNECTION DIAGRAM

FURUNO ELECTRIC CO., LTD.

S-1

FURUNO ELECTRIC CO., LTD.

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

·FURUNO Authorized Distributor/Dealer

A: AUG. 2025
A2: NOV. 26, 2025

Pub. No. IME-20420-A2
(TEHI) DFF1UHD+

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