



Panoptix™ PS51-TH FrontVü/LiveVü Thru- hull Transducer



Installation Instructions

Important Safety Information

⚠ WARNING

See the *Important Safety and Product Information* guide in the chartplotter product box for product warnings and other important information.

The device must be installed with at least one of the included anti-rotation bolts. Failure to do so could result in the device rotating while the boat is moving and could cause damage to your vessel.

You are responsible for the safe and prudent operation of your vessel. Sonar is a tool that enhances your awareness of the water beneath your boat. It does not relieve you of the responsibility of observing the water around your boat as you navigate.

⚠ CAUTION

Failure to install and maintain this equipment in accordance with these instructions could result in damage or injury.

Always wear safety goggles, ear protection, and a dust mask when drilling, cutting, or sanding.

NOTICE

When drilling or cutting, always check what is on the opposite side of the surface.

This equipment should be installed by a qualified marine installer.

To obtain the best performance and to avoid damage to your boat, you must install the Garmin® device according to these instructions.

Read all installation instructions before proceeding with the installation. If you experience difficulty during the installation, go to support.garmin.com for more information.

Registering Your Device

Help us better support you by completing our online registration today. Keep the original sales receipt, or a photocopy, in a safe place.

- 1 Go to my.garmin.com.
- 2 Sign in to your Garmin account.

Contacting Garmin Support

- Go to support.garmin.com for help and information, such as product manuals, frequently asked questions, videos, and customer support.

- In the USA, call 913-397-8200 or 1-800-800-1020.
- In the UK, call 0808 238 0000.
- In Europe, call +44 (0) 870 850 1241.

Loading the New Software on a Memory Card

You must copy the software update to a memory card using a computer that is running Windows® software.

NOTE: You can contact Garmin support to order a preloaded software update card if you do not have a computer with Windows software.

- 1 Insert a memory card into the card slot on the computer.
- 2 Go to www.garmin.com/support/software/marine.html.
- 3 Select the software update bundle that corresponds to the chartplotter to be updated.

NOTE: The software update bundle includes updates for all devices connected to the chartplotter. You can select See All Devices in this Bundle to confirm the devices included in the download.

- 4 Select **Download**.
- 5 Read and agree to the terms.
- 6 Select **Download**.
- 7 Choose a location, and select **Save**.
- 8 Double-click the downloaded file.
- 9 Select **Next**.
- 10 Select the drive associated with the memory card, and select **Next > Finish**.

A Garmin folder containing the software update is created on the memory card. The software update can take several minutes to load onto the memory card.

Updating the Device Software

Before you can update the software, you must obtain a software-update memory card or load the latest software onto a memory card.

- 1 Turn on the chartplotter.
 - 2 After the home screen appears, insert the memory card into the card slot.
- NOTE:** In order for the software update instructions to appear, the device must be fully booted before the card is inserted.
- 3 Follow the on-screen instructions.
 - 4 Wait several minutes while the software update process completes.
 - 5 When prompted, leave the memory card in place and restart the chartplotter manually.
 - 6 Remove the memory card.

NOTE: If the memory card is removed before the device restarts fully, the software update is not complete.

Transducer Settings and Operation

For transducer settings and operation information, see your chartplotter owner's manual.

Mounting Considerations

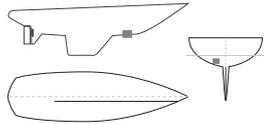
- On a boat with more than a 5° deadrise angle, a fairing block will need to be fabricated (not available for sale).
- On a boat with a 12° deadrise angle, the transducer with a fairing block can accommodate a hull up to 29 mm (1.15 in.) thick.
- On a boat with a 20° deadrise angle, the transducer with a fairing block can accommodate a hull up to 19 mm (3/4 in.) thick.
- On displacement hull vessels, the transducer should be mounted near the centerline.



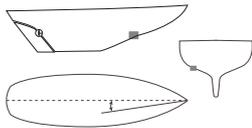
- On planing hull vessels, the transducer should be mounted aft, on or near the centerline, inboard of the first set of lifting strakes.
- On displacement hull and planing hull vessels, the transducer should be mounted on the starboard side of the hull where the propeller blades are moving downward.
- On stepped hull vessels, the transducer should be mounted directly in front of the first step.



- On fin-keel vessels, the transducer should be mounted more than 300 mm (12 in.) and less than 600 mm (24 in.) in front of the keel and on or near the centerline.



- On full-keel vessels, the transducer should be mounted in the center of the ship, away from the keel at the point of minimum deadrise.



- On single-drive vessels, the transducer must not be mounted in the path of the propeller.

- On twin-drive vessels, the transducer should be mounted between the drives, if possible.
- The transducer must be mounted on a flat location at less than 6° of deadrise angle.
- The transducer should be mounted well ahead of the propellers and shafts.
- The transducer should be mounted in a location where it is vertical when the boat is underway. If the transducer leans forward, the marine bottom can appear to slope upward. If the transducer leans aft, some surface clutter may appear.
- The transducer should be mounted more than 600 mm (24 in.) from other transducers.
- The transducer should be mounted in a location that is unobstructed by the keel or propeller shafts.
- The transducer must be mounted in a location where it is continuously immersed in water.
- The transducer should be mounted in a location that allows accessibility to the transducer from the inside of the vessel.
- The transducer should not be mounted behind strakes, struts, fittings, water intake or discharge ports, or anything that creates air bubbles or causes the water to become turbulent.
- The transducer should not be mounted in a location where it might be jarred when launching, hauling, or storing.
- The transducer can cause cavitation that can degrade the performance of the boat and damage the propeller.
- The transducer must be in clean (non-turbulent) water for optimal performance.
- If you have a question about the location of the thru-hull transducer, contact your vessel builder or other owners of similar vessels for advice.

Tools Needed

- Drill and 3 mm ($\frac{1}{8}$ in.) bit
- 51 mm (2 in.) hole saw (fiberglass hulls)
- 57 mm ($2\frac{1}{4}$ in.) hole saw (metal hulls)
- 60 mm ($2\frac{3}{8}$ in.) hole saw (cored-fiberglass hulls)
- Sandpaper
- Band saw (fairing block)
- Marine sealant
- Slip-joint pliers (metal hulls)
- Cable ties
- Metal file (metal hulls)
- Fiberglass cloth and resin (option for sealing a cored-fiberglass hull)
- 51 mm (2 in.) cylinder, wax, tape, and casting epoxy (option for sealing a cored-fiberglass hull)

Fairing Block Angle Cut

A fairing block positions your transducer parallel to the water line for increased sonar accuracy. You must measure the deadrise angle of your boat hull to determine if a fairing block is necessary to mount the transducer. If the deadrise angle of your mounting location exceeds 5°, you should use a fairing block to mount the transducer.

Deadrise Angle

Deadrise is the angle formed between a horizontal line and a boat hull at a single point. You can measure the deadrise angle with a smartphone application, an angle finder, a protractor, or a digital level. You can also ask your boat manufacturer for the deadrise angle of the specific point on your boat hull.

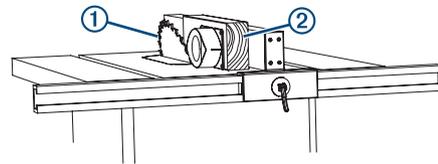
NOTE: A boat may have several deadrise angles depending on the shape of the hull. Measure the deadrise angle only at the location where you plan to install the transducer.

Cutting the Fairing Block

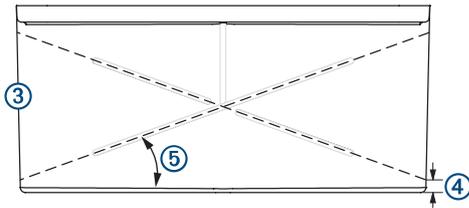
⚠ CAUTION

Always wear safety goggles, ear protection, and a dust mask when drilling, cutting, or sanding.

- 1 Using wood screws, attach the fairing block to a piece of wood.
The wood becomes a cutting guide for the fairing block.
- 2 Measure the deadrise angle of the hull at the mounting location.
- 3 Tilt your table saw blade ① to match the deadrise angle and secure the cutting fence.



- 4 Position the fairing block on the table so the cutting guide rests against the fence ② and the angle matches the angle of the mounting location.
- 5 Adjust the cutting fence to ensure the fairing block ③ has a minimum thickness ④ of 2 mm ($\frac{1}{16}$ in.).



NOTE: The maximum cutting angle ⑤ of the fairing block is 20°.

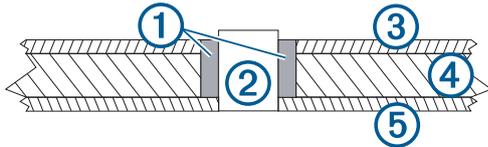
- 6 Cut the fairing block.
- 7 Using a rasp or power tool, shape the fairing block to the hull as precisely as possible.
- 8 Use the remaining section of the fairing block as the backing block inside the hull.

Cored Fiberglass Boat Hull Installation Instructions

Preparing a Cored-Fiberglass Hull

NOTICE

If the core of a cored-fiberglass hull is not sealed properly, water may seep into the core and severely damage the boat.



①	Fiberglass or casting epoxy (not included)
②	Cylinder spacer (included bushing)
③	Inner fiberglass skin
④	Core
⑤	Outer fiberglass skin

- 1 Drill the hole through the hull.
- 2 Seal the core inside the hull using either fiberglass ([Sealing the Core with Fiberglass, page 3](#)) or casting epoxy ([Sealing the Core with Casting Epoxy, page 3](#)).

Sealing the Core with Fiberglass

- 1 From inside the boat, coat a layer of fiberglass cloth with fiberglass resin and place it inside the hole to seal the core.
- 2 Add layers of fiberglass cloth and resin until the hole is the correct diameter of 50 mm (2 in.).
- 3 After the fiberglass has hardened, sand and clean inside and around the hole.

The cored-fiberglass hull is now prepared, and you can complete the transducer installation.

Sealing the Core with Casting Epoxy

To properly seal the core with casting epoxy, you must create a cylinder with a diameter of 50 mm (2 in.) to act as a spacer as the epoxy sets.

- 1 Coat a 50 mm (2 in.) cylinder with wax.
- 2 Insert the cylinder in the hole through the outer skin and tape it in place on the outside of the boat.
- 3 Fill the space between the cylinder and the core with casting epoxy.
- 4 After the epoxy has hardened, remove the cylinder, and sand and clean inside and around the hole.

The cored-fiberglass hull is now prepared, and you can complete the transducer installation.

Drilling a Hole in a Cored-Fiberglass Hull

- 1 From inside the boat, drill a 3 mm ($\frac{1}{8}$ in.) pilot hole completely through the hull.
- 2 Examine the pilot hole on the outside of the boat, and select an option:
 - If the pilot hole is not in the correct location, seal the hole with epoxy, and repeat step 1.
 - If you are not using a fairing block, hold a 51 mm (2 in.) hole saw perpendicular to the hull, and cut a hole from the outside of the boat through the outer fiberglass skin only. Do not cut completely through the hull.
 - If you are using a fairing block, hold a 51 mm (2 in.) hole saw perpendicular to the water surface, and cut a hole from the outside of the boat through the outer fiberglass skin only. Do not cut completely through the hull.
- 3 On the inside of the boat, at the pilot hole location, use a hole saw to cut a hole 9 to 12 mm ($\frac{3}{8}$ to $\frac{1}{2}$ in.) larger than the hole you cut in the outside of the boat in step 2.

You must cut through only the inner fiberglass skin and most of the core, without cutting the outer skin.

NOTE: When cutting the inner fiberglass skin and core, be careful to not cut the outer fiberglass skin, or you will not be able to correctly seal the hull.

- 4 Remove the inner fiberglass skin and core you cut in step 3. You should be able to see the inside of the outer fiberglass skin.
- 5 Sand the inside of the hole and the areas immediately around both the inner and outer fiberglass skin.
- 6 Clean the area using a mild detergent or weak solvent, such as isopropyl alcohol, to remove any dust and dirt.

Applying Marine Sealant to a Thru-hull Fitting

You must apply marine sealant to the water path to ensure a tight, waterproof seal between the fairing block, thru-hull fitting, and hull.

- 1 Apply a 2 mm ($\frac{1}{16}$ in.) layer of marine sealant to the flange of the housing that will contact the hull or fairing, and up the sidewall of the housing.

NOTE: The sealant must extend 6 mm ($\frac{1}{4}$ in.) above the top of the hull to seal the hull and secure the hull nut.

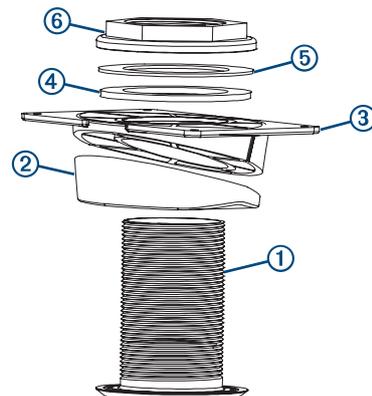
- 2 Fill the cavities in the fairing and the backing block.

Installing the Thru-hull Fitting with a Fairing Block

It is recommended that two installers complete these instructions, with one positioned outside the boat and one inside the boat.

NOTE: When installing the thru-hull fitting in a cored fiberglass hull, avoid over-tightening the nuts to prevent damaging the hull.

- 1 From outside the hull, twist the thru-hull fitting ① through the fairing block ② and the mounting hole to squeeze out excess sealant.



- 2 Align the long side of the fairing block parallel to the centerline of the boat.
- 3 From inside the hull, slide the backing block ③ onto the thru-hull fitting and seat it firmly against the inner hull.
The arrows must point toward the bow of the boat.
- 4 From inside the hull, use slip-joint pliers or a crescent wrench to secure the backing block to the thru-hull fitting with the rubber washer ④, nylon washer ⑤, and hull nut ⑥.
Do not over-tighten the hull nut.
- 5 Before the sealant hardens, remove all excess sealant on the outside of the fairing block and exterior hull to ensure smooth water flow over the transducer.

Installing the Thru-hull Fitting without a Fairing Block

It is recommended that two installers complete these instructions, with one positioned outside the boat and one inside the boat.

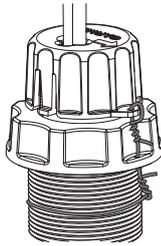
NOTE: When installing a thru-hull fitting in a non-cored fiberglass hull, avoid over-tightening the nuts to prevent damaging the hull.

- 1 From outside the hull, insert the thru-hull fitting through the mounting hole using a twisting motion to squeeze out excess sealant.
- 2 From inside the hull, use slip-joint pliers or a crescent wrench to secure the hull nut, nylon washer, and rubber washer to the thru-hull fitting.
Do not over-tighten the hull nut.
- 3 Before the sealant hardens, remove all excess sealant on the outside of the exterior hull to ensure smooth water flow over the transducer.

Installing the Transducer in the Thru-hull Fitting

Before you install the transducer, you should inspect the O-rings, and replace the O-rings if they are worn or not intact.

- 1 Apply lubricant (included) to the O-rings and the bore of the housing.
- 2 Insert the transducer into the housing, and align the arrow on top of the transducer with the bow.
- 3 Keeping the arrow aligned with the bow, tighten the nut cap.
NOTE: Do not over-tighten the nut cap.
- 4 Insert one end of the safety wire through the nut and nut cap and twist the end around itself.



- 5 Keeping the wire taut, wrap the free end of the safety wire around the housing.
- 6 Insert the wire straight up through the other side of the nut cap.
- 7 Loop the wire through the same hole a second time, and twist the end of the wire around itself.
- 8 If necessary, trim the safety wire.
- 9 Route the transducer cable to the chartplotter.

NOTE: You should use appropriate fasteners to secure the power and network cables. Preventing cable movement prolongs the life of the cables.

Non-cored/Fiberglass Boat Hull Installation Instructions

Drilling a Hole in a Non-Cored Hull

- 1 Select a mounting location (*Mounting Considerations*, page 1).
- 2 Drill a 3 mm ($1/8$ in.) pilot hole from outside the hull.
- 3 If the vessel has a fiberglass hull, place masking tape over the pilot hole and surrounding area outside the hull to prevent damage to the fiberglass.
- 4 If you taped over the pilot hole, use a utility knife to cut out the hole in the tape.
- 5 While holding a 51 mm (2 in.) spade bit plumb, cut a hole from outside the hull at the stem hole location.
- 6 Sand and clean the area around the hole.

Applying Marine Sealant to a Thru-hull Fitting

You must apply marine sealant to the water path to ensure a tight, waterproof seal between the fairing block, thru-hull fitting, and hull.

- 1 Apply a 2 mm ($1/16$ in.) layer of marine sealant to the flange of the housing that will contact the hull or fairing, and up the sidewall of the housing.

NOTE: The sealant must extend 6 mm ($1/4$ in.) above the top of the hull to seal the hull and secure the hull nut.

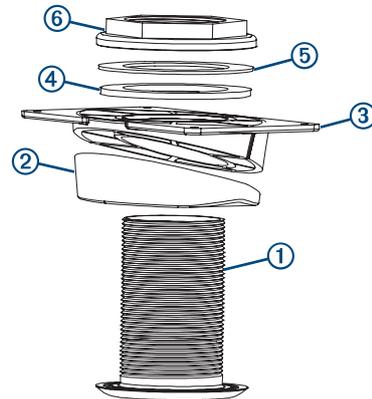
- 2 Fill the cavities in the fairing and the backing block.

Installing the Thru-hull Fitting with a Fairing Block

It is recommended that two installers complete these instructions, with one positioned outside the boat and one inside the boat.

NOTE: When installing the thru-hull fitting in a cored fiberglass hull, avoid over-tightening the nuts to prevent damaging the hull.

- 1 From outside the hull, twist the thru-hull fitting ① through the fairing block ② and the mounting hole to squeeze out excess sealant.



- 2 Align the long side of the fairing block parallel to the centerline of the boat.
- 3 From inside the hull, slide the backing block ③ onto the thru-hull fitting and seat it firmly against the inner hull.
The arrows must point toward the bow of the boat.
- 4 From inside the hull, use slip-joint pliers or a crescent wrench to secure the backing block to the thru-hull fitting with the rubber washer ④, nylon washer ⑤, and hull nut ⑥.
Do not over-tighten the hull nut.
- 5 Before the sealant hardens, remove all excess sealant on the outside of the fairing block and exterior hull to ensure smooth water flow over the transducer.

Installing the Thru-hull Fitting without a Fairing Block

It is recommended that two installers complete these instructions, with one positioned outside the boat and one inside the boat.

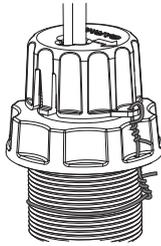
NOTE: When installing a thru-hull fitting in a non-cored fiberglass hull, avoid over-tightening the nuts to prevent damaging the hull.

- 1 From outside the hull, insert the thru-hull fitting through the mounting hole using a twisting motion to squeeze out excess sealant.
- 2 From inside the hull, use slip-joint pliers or a crescent wrench to secure the hull nut, nylon washer, and rubber washer to the thru-hull fitting.
Do not over-tighten the hull nut.
- 3 Before the sealant hardens, remove all excess sealant on the outside of the exterior hull to ensure smooth water flow over the transducer.

Installing the Transducer in the Thru-hull Fitting

Before you install the transducer, you should inspect the O-rings, and replace the O-rings if they are worn or not intact.

- 1 Apply lubricant (included) to the O-rings and the bore of the housing.
- 2 Insert the transducer into the housing, and align the arrow on top of the transducer with the bow.
- 3 Keeping the arrow aligned with the bow, tighten the nut cap.
NOTE: Do not over-tighten the nut cap.
- 4 Insert one end of the safety wire through the nut and nut cap and twist the end around itself.



- 5 Keeping the wire taut, wrap the free end of the safety wire around the housing.
- 6 Insert the wire straight up through the other side of the nut cap.
- 7 Loop the wire through the same hole a second time, and twist the end of the wire around itself.
- 8 If necessary, trim the safety wire.
- 9 Route the transducer cable to the chartplotter.

NOTE: You should use appropriate fasteners to secure the power and network cables. Preventing cable movement prolongs the life of the cables.

Metal Boat Hull Installation Instructions

Drilling a Hole in a Metal Hull

- 1 Select a mounting location (*Mounting Considerations*, page 1).
- 2 From outside the hull, drill a 3 mm ($1/8$ in.) pilot hole through the hull.
The hole must be perpendicular to the water surface.
- 3 Using a 57 mm ($2\ 1/4$ in.) hole saw, cut the stem hole from outside the hull.
- 4 Sand and clean the area around the holes.

Applying Marine Sealant to a Thru-hull Fitting in a Metal Hull

You must apply marine sealant to the water path to ensure a tight, waterproof seal between the fairing block, thru-hull fitting, and hull.

- 1 Apply a 2 mm ($1/16$ in.) layer of marine sealant to the flange of the housing that will contact the hull or fairing, and up the sidewall of the housing.

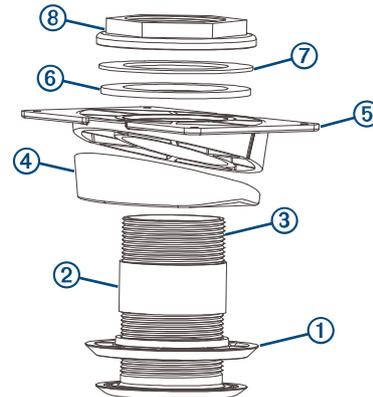
NOTE: The sealant must extend 6 mm ($1/4$ in.) above the top of the hull to seal the hull and secure the hull nut.

- 2 Select an option:
 - If you are not using a fairing block, slide the isolation bushing onto the housing, and apply sealant to the surfaces of the bushing that will contact the hull. Fill the cavities in and around the bushing.
 - If you are using a fairing block, slide the isolation sleeve over the bedded sidewall of the housing as far down as possible, and apply a 2 mm ($1/16$ in.) layer of marine sealant to the outside of the sleeve. Fill the cavities in the fairing and backing block.

Installing the Thru-hull Fitting on a Metal Hull with a Fairing Block

It is recommended that two installers complete these instructions, with one positioned outside the boat and one inside the boat.

- 1 Secure a washer ① and bushing ② to the thru-hull fitting ③.



- 2 From outside the hull, twist the thru-hull fitting through the fairing block ④ and mounting hole to squeeze out excess sealant.
- 3 Align the long side of the fairing block parallel to the centerline of the boat.
- 4 From inside the hull, slide the backing block ⑤ onto the thru-hull fitting and seat it firmly against the inner hull.
The arrows must point toward the bow of the boat.
- 5 From inside the hull, use slip-joint pliers or a crescent wrench to secure the backing block to the thru-hull fitting with the rubber washer ⑥, nylon washer ⑦, and hull nut ⑧.
- 6 Before the sealant hardens, remove all excess sealant on the outside of the fairing block and exterior hull to ensure smooth water flow over the transducer.

Installing the Thru-hull Fitting on a Metal Hull without a Fairing Block

It is recommended that two installers complete these instructions, with one positioned outside the boat and one inside the boat.

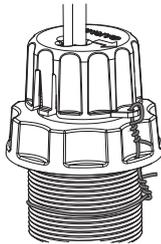
- 1 From outside the hull, insert the thru-hull fitting through the bushing and mounting hole using a twisting motion to squeeze out excess sealant.

- From inside the hull, use slip-joint pliers or a crescent wrench to secure the hull nut, nylon washer, and rubber washer to the thru-hull fitting.
- Before the sealant hardens, remove all excess sealant on the outside of the exterior hull to ensure smooth water flow over the transducer.

Installing the Transducer in the Thru-hull Fitting

Before you install the transducer, you should inspect the O-rings, and replace the O-rings if they are worn or not intact.

- Apply lubricant (included) to the O-rings and the bore of the housing.
- Insert the transducer into the housing, and align the arrow on top of the transducer with the bow.
- Keeping the arrow aligned with the bow, tighten the nut cap.
NOTE: Do not over-tighten the nut cap.
- Insert one end of the safety wire through the nut and nut cap and twist the end around itself.



- Keeping the wire taut, wrap the free end of the safety wire around the housing.
- Insert the wire straight up through the other side of the nut cap.
- Loop the wire through the same hole a second time, and twist the end of the wire around itself.
- If necessary, trim the safety wire.
- Route the transducer cable to the chartplotter.

NOTE: You should use appropriate fasteners to secure the power and network cables. Preventing cable movement prolongs the life of the cables.

Maintenance

Testing the Installation

NOTICE

You should check your boat for leaks before you leave it in the water for an extended period of time.

Because water is necessary to carry the sonar signal, the transducer must be in the water to work properly. You cannot get a depth or distance reading when out of the water. When you place your boat in the water, check for leaks around any screw holes that were added below the water line.

Anti-Fouling Paint

To prevent corrosion on metal hulls and to slow the growth of organisms that can affect a vessel's performance and durability, you should apply a water-based anti-fouling paint to the hull of your vessel every six months.

NOTE: Never apply ketone-based anti-fouling paint to your vessel, because ketones attack many types of plastic and could damage or destroy your transducer.

Cleaning the Transducer

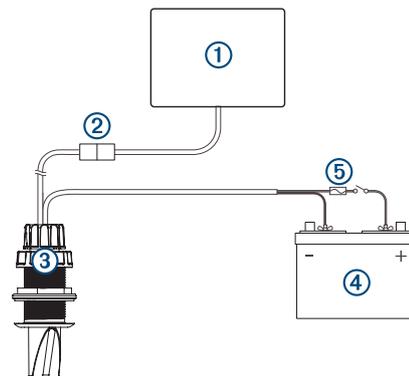
Aquatic fouling accumulates quickly and can reduce your device's performance.

- Remove the fouling with a soft cloth and mild detergent.
- If the fouling is severe, use a scouring pad or putty knife to remove growth.
- Wipe the device dry.

Specifications

Specification	Measurement
Dimensions (W x H)	40 x 192.5 mm (1.58 x 7.58 in.)
Hull thickness (with fairing block)	12-degree deadrise angle: 29 mm (1.15 in.) 20-degree deadrise angle: 19 mm (0.75 in.)
Power input	From 10 to 35 Vdc
Frequency	417 kHz
Operating temperature	From 0° to 50°C (from 32° to 122°F)
Storage temperature	From -40° to 70°C (from -40° to 158°F)
Fuse	4 A

Installation Diagram



Item	Description
①	Chartplotter
②	RJ-45 jack
③	Transducer
④	Power source
⑤	Fuse

© 2017 Garmin Ltd. or its subsidiaries
Garmin® and the Garmin logo are trademarks of Garmin Ltd. or its subsidiaries, registered in the USA and other countries. Panoptix™ is a trademark of Garmin Ltd. or its subsidiaries. These trademarks may not be used without the express permission of Garmin.

