# GARMIN.

# echoMAP™ 40/50 Series Installation Instructions

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

Read all installation instructions before proceeding with the installation. If you experience difficulty during the installation, contact Garmin® Product Support.

## Important Safety Information

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

When connecting the power cable, do not remove the in-line fuse holder. To prevent the possibility of injury or product damage caused by fire or overheating, the appropriate fuse must be in place as indicated in the product specifications. In addition, connecting the power cable without the appropriate fuse in place voids the product warranty.

> **⚠ CAUTION**
>
> 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.

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

Read all installation instructions before proceeding with the installation. If you experience difficulty during the installation, contact Garmin Product Support.

## Registering Your Device

Help us better support you by completing our online registration today.

• Go to http://my.garmin.com.
• Keep the original sales receipt, or a photocopy, in a safe place.

## Contacting Garmin Product Support

• Go to www.garmin.com/support for in-country support information.
• 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.

## Tools Needed

• Drill and drill bits
• #2 Phillips screwdriver
• Marine sealant
• $^3/_8$ in. wrench or socket
• Masking tape
• Hardware for the swivel mount (not included)
  ◦ Self-tapping, pan-head wood screws or pan-head bolts, either size #8 or a diameter of $^5/_{32}$ in. (4 mm)
  ◦ Appropriate washers and nuts (if selecting bolts)
  ◦ Appropriate drill bit for drilling the pilot hole

## Mounting Considerations

The device can be mounted using the included bracket, or it can be mounted flush with the dashboard using a flush-mount kit (may be sold separately).

Before permanently installing any part of your device, you should plan the installation by determining the location of the various components.

• The mounting location must provide a clear view of the screen and access to the keys on the device.
• The mounting location must be sturdy enough to support the device and the mount.
• The cables must be long enough to connect the components to each other and to power.
• The cables can be routed under the bail mount or behind the device.
• To avoid interference with a magnetic compass, the device should not be installed closer to a compass than the compass-safe distance value listed in the product specifications.

## Flush Mounting the Device

> **NOTICE**
>
> Be careful when cutting the hole to flush mount the device. There is only a small amount of clearance between the case and the mounting holes, and cutting the hole too large could compromise the stability of the device after it is mounted.
>
> Using a metal pry tool such as a screwdriver can damage the trim caps and the device. Use a plastic pry tool when possible.

A flush-mount template and hardware can be used to mount the device in your dashboard.

1 Trim the template and make sure it fits in the location where you want to mount the device.
2 Secure the template to the selected mounting location.
3 Using a 9.5 mm ($^3/_8$ in.) drill bit, drill one or more of the holes inside the corners of the solid line on the template to prepare the mounting surface for cutting.
4 Using a jigsaw or rotary cutting tool, cut the mounting surface along the inside of the solid line indicated on the template.
5 Place the device into the cutout to test the fit.
6 If necessary, use a file and sandpaper to refine the size of the hole.
7 **NOTE:** Not all devices have trim caps.

   Using a pry tool such as a flat piece of plastic or a screwdriver, carefully pry up the corners of the trim caps ① and slide the pry tool to the center ② to remove the trim caps.
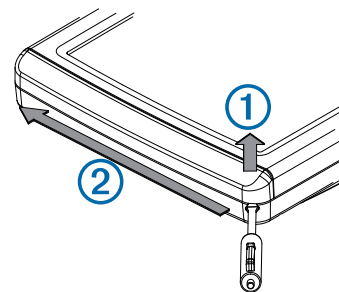


8 Ensure the mounting holes on the device line up with the pilot holes on the template.
9 If the mounting holes on the device do not line up, mark the new pilot-hole locations.
10 Using a 3.2 mm ($^1/_8$ in.) drill bit, drill the pilot holes.
11 Remove the template from the mounting surface.

**12** If you will not have access to the back of the device after you mount it, connect all necessary cables to the device before placing it into the cutout.

**NOTE:** To prevent corrosion of the metal contacts, cover unused connectors with weather caps.

**13** Install the rubber gasket pieces on the back of the device.

The pieces of the rubber gasket have adhesive on the back. Make sure you remove the protective liner before installing them on the device.
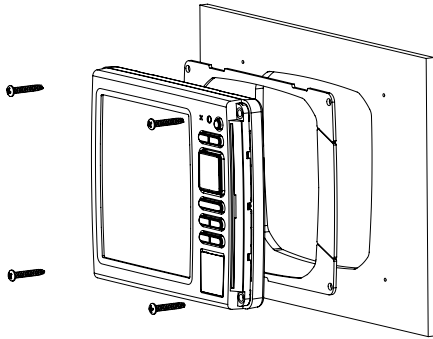


**14** Place the device into the cradle.

**15** Securely connect each cable to a port on the cradle.

**16** Place the locking bracket over the cables.

**17** Place the device into the cutout.

**18** Secure the device to the mounting surface using the included screws.

**19** Install the trim caps by snapping them in place around the edges of the device.

## Installing the Swivel Base

### Preparing to Run Cables under the Mounting Surface

<div align="center">

*NOTICE*

</div>

Use pan-head screws or bolts when securing the swivel-mount base. Screws or bolts with countersunk heads damage the base.

Before you can prepare the swivel-mount base, you must choose the location to install the mount and decide whether to attach the mount using screws or bolts.
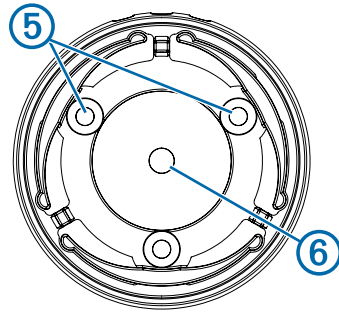
**1** Remove the 10 mm M6x1 Phillips screw ① and separate the swivel mount ② from the base ③.
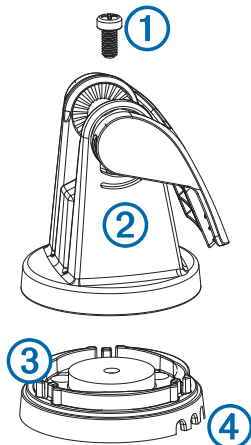


**2** Orient the swivel base so the pass-through holes ④ face the desired direction.

**3** Using the swivel base as a template, mark the pilot hole locations ⑤.

**4** Mark the cable routing hole ⑥.



**5** Using the appropriate drill bit for the hardware, drill the three pilot holes.

**6** Using a $^5/_8$ in. (16 mm) drill, drill a hole through the mounting surface at the location you marked in step 4.

### Fastening the Swivel Mount without the Cables Running through the Mount

You should complete this procedure only if you are not running the power and transducer cables under the mounting surface and through the swivel-mount base.

**1** Place the base ① on the mounting surface, and fasten it using the appropriate screws or bolts ②.
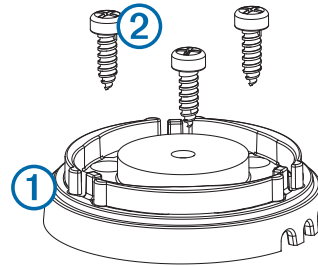


**2** Place the swivel mount on the base, and replace the 10 mm M6×1 Phillips screw.

**3** Seal the cable pass-through holes with marine sealant.

### Fastening the Swivel Mount with the Cables Running through the Mount

You should complete this procedure only when running the power and transducer cables under the mounting surface and through the swivel-mount base.

**1** Feed the cables through the 16 mm ($^5/_8$ in.) center hole you drilled when preparing to run cables beneath the mounting surface.

**2** Place the base on the mounting surface.

**3** Route the cables through the cable pass-through holes.

**4** Loosely fasten the base using the appropriate screws or bolts.

**5** Place the swivel mount on the base, but do not fasten it.

**6** Place the cradle or device into the swivel mount (*Installing the Device in the Cradle*, page 3).

**7** Pull out enough slack from the power and transducer cables so the mount can fully swivel to the desired positions when the cables are connected.

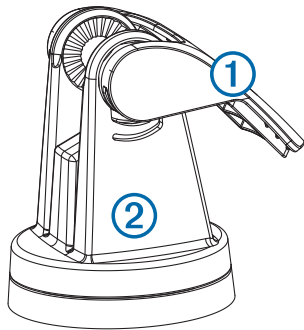**8** Remove the cradle and the swivel mount from the base.

**9** Apply marine sealant to the 16 mm ($^5/_8$ in.) center hole and to the cable pass-through holes.

**10** Securely fasten the base with the appropriate screws or bolts.

**11** Place the swivel mount on the base, and fasten it using the included 10 mm M6×1 Phillips screw.

## Installing the Cradle in the Mount

1 Pull up the locking arm ①.



2 Place the cradle into the swivel mount ②.
3 Tilt the mount to the desired viewing angle.
4 Press down the locking arm.

# Installing the Cables and Connectors

## Wiring to Power

1 Route the power cable from the swivel mount to the boat battery or fuse block.
2 If necessary, extend the wires using .52 mm$^2$ (20 AWG) or larger wire.
3 Connect the red wire to the positive terminal on the battery or fuse block, and connect the black wire to the negative terminal.

## Connecting the Device to a Transducer

**NOTE:** The device goes into simulator mode if the connection is not secure between the device and transducer.

Go to www.garmin.com or contact your local Garmin dealer to determine the appropriate type of transducer for your needs.

1 Follow the instructions provided with your transducer to correctly install it on your boat.
2 Route the transducer cable to the back of your device, away from sources of electrical interference.
3 Connect the transducer cable to the appropriate port on your device.

## Connecting the Cables to the Cradle

The connectors on the cables are keyed to fit only in the correct ports on the device or cradle. The connected cables are held in place by a locking bracket.

1 Remove the cable locking bracket from the cradle.
2 Compare the divots ① on each cable connector to the keying on each port to determine which cable corresponds to each port.
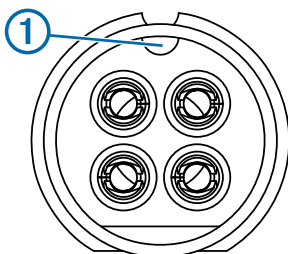


3 Securely connect each cable to a port.
4 Place the locking bracket ② over the cables and slide the bracket down to lock the cables in place.
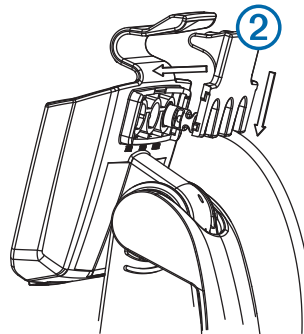


There is an audible click when the locking bracket is installed correctly.

## Installing the Device in the Cradle

If your device uses a cradle and you have connected the cables to the cradle, you can quickly place the device in the cradle without plugging in any cables.

1 Place the base of the device in the bottom of the cradle.
2 Tilt the device toward the cradle until it fastens in place.

There is an audible click when the device is secured in the cradle.

## Removing the Device from the Cradle

1 Press the release lever ① on the cradle until the device is released.
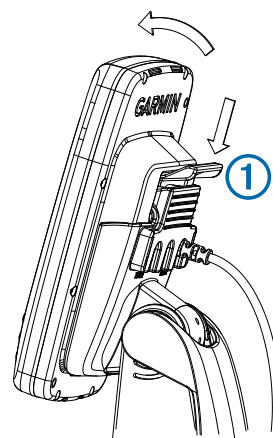


2 Tilt the device forward, and lift it out of the cradle.

## Wiring Harness

- The wiring harness connects the device to power and NMEA® 0183 devices.
- The device has one internal NMEA 0183 port that is used to connect to NMEA 0183 compliant devices.
- If it is necessary to extend the power and ground wires, you must use .52 mm$^2$ (20 AWG) or larger wire.
- If it is necessary to extend the NMEA 0183 or alarm wires, you must use .33 mm$^2$ (22 AWG) wire.
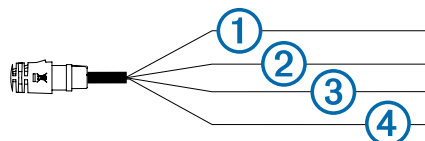


| Item | Wire Function | Wire Color |
|------|---------------|------------|
| ① | NMEA 0183 internal port Rx (in) | Brown |
| ② | NMEA 0183 internal port Tx (out) | Blue |

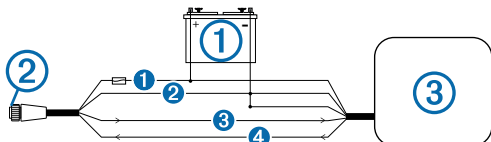| Item | Wire Function | Wire Color |
|------|---------------|------------|
| ③ | Ground (power and NMEA 0183) | Black |
| ④ | Power | Red |

## Connecting the Wiring Harness to Power

1 Route the wiring harness to the power source and to the device.
2 Connect the red wire to the positive (+) battery terminal, and connect the black wire to the negative (-) battery terminal.

## NMEA 0183 Connection Considerations

- The installation instructions provided with your NMEA 0183 compatible device should contain the information you need to identify the transmitting (Tx) and receiving (Rx) A (+) and B (-) wires.

### NMEA 0183 Connection Diagram



| Item | Description |
|------|-------------|
| ① | 12 Vdc power source |
| ② | Wiring harness |
| ③ | NMEA 0183-compliant device |

| Item | Garmin Wire Function | Garmin Wire Color | NMEA 0183 Device Wire Function |
|------|----------------------|-------------------|--------------------------------|
| ❶ | Power | Red | Power |
| ❷ | Ground | Black | Data ground |
| ❸ | Tx | Blue | Rx/A (+) |
| ❹ | Rx | Brown | Tx/A (+) |

## 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.
   The device returns to normal operation after the software update process is complete.
5 Remove the memory card.
   **NOTE:** If the memory card is removed before the device restarts fully, the software update is not complete.

## Specifications

| Device | Specification | Measurement |
|--------|---------------|-------------|
| echoMAP 40 | Dimensions (W x H x D) | 10.2 x 16.8 x 4.6 cm (4 x 6.6 x 1.8 in.) |
| | Display size (W x H) | 5.4 x 9.5 cm (2.1 x 3.7 in.) |
| | Weight | 0.4 kg (0.9 lbs.) |
| | Power input | From 10 to 18 Vdc |
| | Max. power usage | 5 W |
| | Compass-safe distance | 20 cm (8 in.) |

| Device | Specification | Measurement |
|--------|---------------|-------------|
| echoMAP 50 | Dimensions (W x H x D) | 17.3 x 13.5 x 4.4 cm (6.81 x 5.35 x 1.73 in.) |
| | Display size (W x H) | 9 x 9 cm (3.54 x 3.54 in.) |
| | Weight | 0.58 kg (1.28 lbs.) |
| | Power input | From 10 to 20 Vdc |
| | Max. power usage | 7.1 W |
| | Compass-safe distance | 75 cm (29.5 in.) |
| All Models | Temperature range | From -15 to 55°C (from 5 to 131°F) |
| | Material | Polycarbonate plastic |
| | Water rating | IEC 60529 IPX7 |
| | Transmit power (RMS)** | 500 W |
| | Maximum depth*** | 701 m (2300 ft) at 77 kHz |
| | Frequencies**** | • Traditional: 50,77, or 200 kHz<br>• DownVü: 260 or 455 kHz. |

*The device withstands incidental exposure to water of up to 1 m for up to 30 min. For more information, go to www.garmin.com/waterrating.

**Dependent upon transducer rating and depth.

***Maximum depth, dependent upon transducer, water salinity, bottom type, and other water conditions.

****Dependent upon echoMAP model.

## NMEA 0183 Information

| Type | Sentence | Description |
|------|----------|-------------|
| Transmit | GPAPB | APB: Heading or track controller (autopilot) sentence "B" |
| | GPBOD | BOD: Bearing (origin to destination) |
| | GPBWC | BWC: Bearing and distance to waypoint |
| | GPGGA | GGA: Global positioning system fix data |
| | GPGLL | GLL: Geographic position (latitude and longitude) |
| | GPGSA | GSA: GNSS DOP and active satellites |
| | GPGSV | GSV: GNSS satellites in view |
| | GPRMB | RMB: Recommended minimum navigation information |
| | GPRMC | RMC: Recommended minimum specific GNSS data |
| | GPRTE | RTE: Routes |
| | GPVTG | VTG: Course over ground and ground speed |
| | GPWPL | WPL: Waypoint location |
| | GPXTE | XTE: Cross track error |
| | PGRME | E: Estimated error |
| | PGRMM | M: Map datum |
| | PGRMZ | Z: Altitude |
| | SDDBT | DBT: Depth below transducer |
| | SDDPT | DPT: Depth |
| | SDMTW | MTW: Water temperature |
| | SDVHW | VHW: Water speed and heading |
| Receive | DPT | Depth |
| | DBT | Depth below transducer |
| | MTW | Water temperature |
| | RMC/GGA/GLL | GPS position |
| | VHW | Water speed and heading |
| | WPL | Waypoint location |

| Type | Sentence | Description |
|------|----------|-------------|
| | DSC | Digital selective calling information |
| | DSE | Expanded digital selective calling |
| | HDG | Heading, deviation, and variation |
| | HDM | Heading, magnetic |
| | MWD | Wind direction and speed |
| | MDA | Meteorological composite |
| | MWV | Wind speed and angle |
| | VDM | AIS VHF data-link message |
| You can purchase complete information about National Marine Electronics Association (NMEA) format and sentences from: NMEA, Seven Riggs Avenue, Severna Park, MD 21146 USA (www.nmea.org) | | |

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www.garmin.com/support