ECHOMAP™ PLUS 60/70/90 SERIES
Installation Instructions

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.

Tools Needed
• Drill
• Drill bits
  ◦ Bail mount: drill bits appropriate for the surface and hardware
  ◦ Swivel mount: 3 mm (1/8 in.) drill bit
  ◦ Flush mount: 3 mm (1/8 in.) and 9.5 mm (3/8 in.) drill bits
• #2 Phillips screwdriver
• Jigsaw or rotary tool
• File and sandpaper
• Marine sealant (optional)

Mounting Considerations
You can mount the device using one of three methods.

Bail mount: You can mount the device using the bail mount, which allows you to tilt the device.

Swivel mount: You can mount the device using the swivel base and bail mount, which allows you to swivel and tilt the device. Not available on the ECHOMAP Plus 90 models.

Flush mount: You can mount the device in the dashboard, which provides a more integrated installation.

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.
• To avoid interference with a magnetic compass, do not install the device closer to a compass than the compass-safe distance value listed in the product specifications.

Fixed-Bail Mounting the Device

NOTICE
If you are mounting the bracket on fiberglass with screws, it is recommended to use a countersink bit to drill a clearance counterbore through only the top gel-coat layer. This will help to avoid cracking in the gel-coat layer when the screws are tightened.

Stainless-steel screws may bind when screwed into fiberglass and overtightened. It is recommended to apply an anti-seize lubricant on the screws before installing them.

1 Select the mounting hardware appropriate for your mounting surface and for the bail-mount bracket.
2 Using the bail-mount bracket as a template, mark the pilot holes through the screw holes.
3 Using a drill bit appropriate for the mounting hardware, drill the four pilot holes.
4 Using the selected mounting hardware, secure the bail-mount bracket to the mounting surface.
5 Install the bail-mount knobs on the sides of the cradle.
6 Place the cradle into the bail-mount bracket, and tighten the bail-mount knobs.
7 Connect each cable to a port on the cradle, using the locking bracket or locking rings to secure the cables to the cradle (Installing the Cables and Connectors, page 2).

Bail Mounting a Device with a Swivel Base

NOTICE
Only pan-head machine bolts or self-tapping screws should be used to secure the swivel base. If you use screws with countersunk heads, you may damage the mounting bracket.

Some models have the option of adding a swivel base to the bail mount, so you can turn the device for a wider range of viewing angles.
NOTE: The ECHOMAP Plus 90 models do not have a swivel option.

1 Using the swivel base ① as a template, mark three pilot holes ②.

2 Using a 3 mm (1/8 in.) drill bit, drill the three pilot holes.

3 Using the included wood screws ③, secure the swivel base to the mounting surface.

4 Place the bail-mount bracket ④ on the swivel base, and secure it using the swivel-mount knob ⑤.

5 Install the bail-mount knobs ⑥ on the sides of the cradle.

6 Place the device in the bail-mount bracket and tighten the bail-mount knobs.

7 Connect each cable to a port on the cradle, using the locking bracket or locking rings to secure the cables to the cradle.

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.

You can mount the device in your dashboard using the flush-mount template and appropriate hardware.

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 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 If your device has trim caps, use a pry tool, such as a flat piece of plastic or a screwdriver, to carefully pry up the corners of the trim caps ①, slide the pry tool to the center ②, and 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 with the pilot holes on the template, mark the new pilot-hole locations on your template.

10 Using a 3 mm (1/8 in.) drill bit, drill the pilot holes.

11 Remove the template from the mounting surface.

12 Place the device in the cradle.

NOTE: You must use the cradle and locking bracket or locking rings when you flush-mount the device.

13 If you will not have access to the back of the device after you mount it, connect all necessary cables to the cradle and secure the cables with the locking bracket or locking rings before placing the device into the cutout (Installing the Cables and Connectors, page 2).

14 To prevent corrosion of the metal contacts, cover unused connectors with weather caps (ECHOMAP Plus 70/90 models only).

15 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.

16 Connect each cable to a port on the cradle, using the locking bracket or locking rings to secure the cables to the cradle (Installing the Cables and Connectors, page 2).

17 Place the device and cradle 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 Cables and Connectors

Wiring to Power

1 Route the power cable from the mount to the boat battery or fuse block.

2 If necessary, extend the wires using 0.82 mm² (18 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.

Wiring Harness

- The wiring harness is used for NMEA® 0183 devices, and to share route and waypoint information.
- 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 0.82 mm² (18 AWG) or larger wire.
- If it is necessary to extend the NMEA 0183 or alarm wires, you must use .33 mm² (22 AWG) wire.
Connecting to a Garmin Device to Share User Data

NOTE: This feature is not available on ECHOMAP Plus 70/90 devices. The blue and brown wires on those devices can connect to NMEA 0183 devices only.

You can connect the ECHOMAP Plus 60 device to a compatible Garmin device to share user data, such as waypoints. If the devices are mounted near each other, you can connect the blue and brown wires. If the devices are mounted too far apart for the wires to reach, you can connect the devices using a User Data Sharing Cable (010-12234-06).

1. Make sure both devices are connected to the same ground.
2. Complete an action:
   - If the devices are mounted near each other, connect the blue wire from the first device to the brown wire of the second, and connect the brown wire from the first device to the blue wire of the second.
   - If the devices are not mounted near each other, obtain a User Data Sharing Cable (010-12234-06), and connect the devices following the instructions included with the cable.
3. On both devices, select **Nav Info > Manage Data > User Data Sharing**. User data is shared between the connected devices. If you select **Clear User Data**, data is removed from both connected devices.

Connecting the Device to a Transducer

Go to [www.garmin.com/transducers](http://www.garmin.com/transducers) 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 the cradle.

Connecting the Cables to the ECHOMAP Plus 60 Cradle

The connectors on the cables are keyed to fit only in the correct ports on the ECHOMAP Plus 60 cradle. The connected cables are held in place by a locking bracket.

1. Slide the cable locking bracket up from the bottom, and remove the bracket from the cradle.
2. Compare the divots on each cable connector to the keying on each port to determine which cable corresponds to each port.

Connecting the Cables to the ECHOMAP Plus 70/90 Cradle

The connectors on the cables are keyed to fit only in the correct ports on the ECHOMAP Plus 70/90 cradle. The connected cables are held in place by locking rings.

1. Insert each cable into the appropriate port in the cradle.
2. Spin the locking ring clockwise to lock the cable to the cradle.

Installing the Device in the Cradle

After the cables are connected to the cradle, you can quickly place the device in the cradle.

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

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

**NOTICE**
You should make sure the device is firmly secured in the cradle. If the model uses a locking bracket, make sure the bracket is firmly snapped shut. There is an audible click when the device or locking bracket is installed correctly. If the device is not firmly secured, it can lose power. The device can also fall out of the cradle and become damaged if it is not firmly secured.

Removing the Device from the Cradle

1. Press the release lever on the cradle until the device is released.
2. Tilt the device forward, and lift it out of the cradle.
NMEA 2000® Considerations

**NOTICE**
If you are connecting this device to an existing NMEA 2000 network, the NMEA 2000 network should already be connected to power. Do not connect the NMEA 2000 power cable to an existing NMEA 2000 network, because only one power source should be connected to a NMEA 2000 network.

If you are connecting this device to an existing NMEA 2000 network or engine network by another manufacturer, you should install a NMEA 2000 Power Isolator (010-11580-00) between the existing network and the Garmin devices.

If you are installing a NMEA 2000 power cable, you must connect it to the boat ignition switch or through another in-line switch. NMEA 2000 devices will drain your battery if the NMEA 2000 power cable is connected to the battery directly.

**NOTE:** NMEA 2000 is not available on all models.

NMEA 2000 compatible models can connect to a NMEA 2000 network on your boat to share data from NMEA 2000 compatible devices such as sensors or a VHF radio. The necessary NMEA 2000 cables and connectors are sold separately.

If you are unfamiliar with NMEA 2000, you should read the "NMEA 2000 Network Fundamentals" chapter of the Technical Reference for NMEA 2000 Products. To download this document, go to www.garmin.com and select Manuals on the product page for your device.

The port labeled NMEA 2000 on the cradle is used to connect it to a standard NMEA 2000 network.

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**Item** | **Description**
---|---
① | NMEA 2000 compatible Garmin device
② | NMEA 2000 drop cable
③ | NMEA 2000 power cable
④ | Ignition or in-line switch
⑤ | 12 Vdc power source
⑥ | NMEA 2000 terminator or backbone cable
⑦ | NMEA 2000 T-connector
⑧ | NMEA 2000 terminator or backbone cable

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### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Specification</th>
<th>Measurement</th>
</tr>
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<tbody>
<tr>
<td>ECHOMAP Plus 60 series</td>
<td><strong>Dimensions on cradle and bail mount (W x H x D)</strong></td>
<td>259.2 x 160.8 x 65.2 mm (10 3/16 x 6 5/16 x 2 9/16 in.)</td>
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<tr>
<td></td>
<td><strong>Clearance to nearest obstruction</strong></td>
<td>80.0 mm (3 1/8 in.)</td>
</tr>
<tr>
<td></td>
<td><strong>Weight</strong></td>
<td>0.75 kg (1.6 lb.)</td>
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**Sonar models**

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<tr>
<th>Frequencies²</th>
<th>Traditional: 50, 77, 83, or 200 kHz CHIRP Garmin ClearVu: 260, 455, or 800 kHz CHIRP SideVu: 260, 455, or 800 kHz</th>
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<tbody>
<tr>
<td><strong>Transmit power (RMS)¹</strong></td>
<td>500 W</td>
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### NMEA 2000 PGN Information

<table>
<thead>
<tr>
<th>Type</th>
<th>PGN</th>
<th>Description</th>
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<tbody>
<tr>
<td>Transmit and receive</td>
<td>059392</td>
<td>ISO acknowledgment</td>
</tr>
<tr>
<td></td>
<td>059904</td>
<td>ISO request</td>
</tr>
<tr>
<td></td>
<td>060928</td>
<td>ISO address claim</td>
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<tr>
<td></td>
<td>126206</td>
<td>NMEA: Command, request, and acknowledge group function</td>
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<tr>
<td></td>
<td>126996</td>
<td>Product information</td>
</tr>
<tr>
<td></td>
<td>127250</td>
<td>Vessel heading</td>
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<tr>
<td></td>
<td>128259</td>
<td>Speed: Water referenced</td>
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<tr>
<td></td>
<td>128267</td>
<td>Water depth</td>
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<tr>
<td></td>
<td>129539</td>
<td>GNSS DOPs</td>
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<td></td>
<td>129799</td>
<td>Radio frequency, mode, and power</td>
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<tr>
<td></td>
<td>130306</td>
<td>Wind data</td>
</tr>
<tr>
<td></td>
<td>130312</td>
<td>Temperature</td>
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<tr>
<td>Transmit</td>
<td>126464</td>
<td>Transmit and receive PGN list group function</td>
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<tr>
<td></td>
<td>127256</td>
<td>Magnetic Variance</td>
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<tr>
<td></td>
<td>129025</td>
<td>Position: Rapid update</td>
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<tr>
<td></td>
<td>129026</td>
<td>COG and SOG: Rapid update</td>
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<td></td>
<td>129029</td>
<td>GNSS position data</td>
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<tr>
<td></td>
<td>129283</td>
<td>Cross track error</td>
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<tr>
<td></td>
<td>129284</td>
<td>Navigation data</td>
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<td></td>
<td>129285</td>
<td>Navigation route and waypoint info</td>
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<td></td>
<td>129540</td>
<td>GNSS satellites in view</td>
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<td>Receive</td>
<td>127245</td>
<td>Rudder</td>
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<td>127250</td>
<td>Vessel heading</td>
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<td>127488</td>
<td>Engine parameters: Rapid update</td>
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<tr>
<td></td>
<td>127489</td>
<td>Engine parameters: Dynamic</td>
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<tr>
<td></td>
<td>127493</td>
<td>Transmission parameters: Dynamic</td>
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<tr>
<td></td>
<td>127498</td>
<td>Engine parameters: Static</td>
</tr>
<tr>
<td></td>
<td>127505</td>
<td>Fluid level</td>
</tr>
</tbody>
</table>

1 Dependent upon transducer and chartplotter model.
2 Dependent upon transducer rating and depth.
3 Maximum depth is dependent upon transducer, water salinity, bottom type, and other water conditions.
4 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](http://www.garmin.com/waterrating).
5 NMEA 2000 not available in all models.

### NMEA 0183 Information

<table>
<thead>
<tr>
<th>Type</th>
<th>Sentence</th>
<th>Description</th>
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<tbody>
<tr>
<td>Transmit</td>
<td>GPAPB</td>
<td>APB: Heading or track controller (autopilot) sentence “B”</td>
</tr>
<tr>
<td></td>
<td>GPBOD</td>
<td>BOD: Bearing (origin to destination)</td>
</tr>
<tr>
<td></td>
<td>GPWBc</td>
<td>BWC: Bearing and distance to waypoint</td>
</tr>
<tr>
<td></td>
<td>GPGGA</td>
<td>GGA: Global positioning system fix data</td>
</tr>
<tr>
<td></td>
<td>GPGLL</td>
<td>GLL: Geographic position (latitude and longitude)</td>
</tr>
<tr>
<td></td>
<td>GPGSA</td>
<td>GSA: GNSS DOP and active satellites</td>
</tr>
<tr>
<td></td>
<td>GPGSV</td>
<td>GSV: GNSS satellites in view</td>
</tr>
<tr>
<td></td>
<td>GPRMB</td>
<td>RMB: Recommended minimum navigation information</td>
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<tr>
<td></td>
<td>GPRMC</td>
<td>RMC: Recommended minimum specific GNSS data</td>
</tr>
<tr>
<td></td>
<td>GPRTe</td>
<td>RTE: Routes</td>
</tr>
<tr>
<td></td>
<td>GPVTG</td>
<td>VTG: Course over ground and ground speed</td>
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<tr>
<td></td>
<td>GPWPL</td>
<td>WPL: Waypoint location</td>
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<td></td>
<td>GPRXE</td>
<td>XTE: Cross track error</td>
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<tr>
<td></td>
<td>GPRME</td>
<td>E: Estimated error</td>
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<td></td>
<td>GPRMM</td>
<td>M: Map datum</td>
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<td></td>
<td>GPRM2</td>
<td>Z: Altitude</td>
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<tr>
<td></td>
<td>SDDBT</td>
<td>DBT: Depth below transducer</td>
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<tr>
<td></td>
<td>SDDPT</td>
<td>DPT: Depth</td>
</tr>
<tr>
<td></td>
<td>SDMTW</td>
<td>MTW: Water temperature</td>
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<tr>
<td></td>
<td>SDVHW</td>
<td>VHW: Water speed and heading</td>
</tr>
</tbody>
</table>

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](http://www.nmea.org))