



ECHOMAP™ ULTRA 2

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 personal injury or product damage caused by fire or overheating, the appropriate fuse must be in place as indicated in the product specifications. Connecting the power cable without the appropriate fuse in place voids the product warranty.

Failure to install this device according to these instructions could result in personal injury, damage to the vessel or device, or poor product performance.

CAUTION

To avoid possible personal injury, always wear safety goggles, ear protection, and a dust mask when drilling, cutting, or sanding.

To avoid possible personal injury or damage to the device and vessel, disconnect the vessel's power supply before beginning to install the device.

To avoid possible personal injury or damage to the device or vessel, before applying power to the device, make sure that it has been properly grounded, following the instructions in the guide.

To avoid possible personal injury or damage to this device and vessel, only install this device when the vessel is on land, or when properly secured and docked in calm water conditions.

NOTICE

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

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 and screws appropriate for the surface and hardware
 - Flush mount: 3.2 mm ($\frac{1}{8}$ in.) and 9.5 mm ($\frac{3}{8}$ in.) drill bits
- #2 Phillips screwdriver
- Jigsaw or rotary tool
- File and sandpaper
- Marine sealant (optional)

Mounting Considerations

You can flush mount the device in the dashboard or bail mount the device on the dashboard.

When selecting a mounting location, observe these considerations.

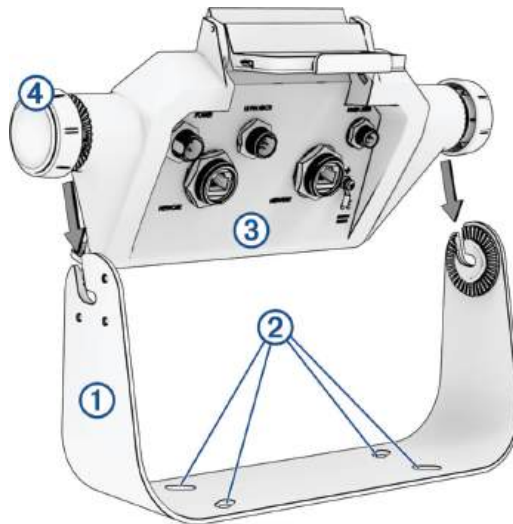
- The mounting location must provide a clear view of the screen and access to the keys on the device.
- The mounting location must be sturdy enough to support the device and the mount.
- The cables must be long enough to connect the components to each other and to power.
- To avoid interference with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

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.

- 1 Select the mounting hardware appropriate for your mounting surface and for the bail-mount bracket.
- 2 Using the bail-mount bracket ① as a template, mark the pilot holes ②.



- 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 Place the cradle ③ into the bail-mount bracket, and tighten the bail-mount knobs ④.
- 6 Connect all necessary cables to the cradle ([Connector View, page 4](#)), and spin the locking rings clockwise to lock the cables to the cradle.

NOTICE

To prevent corrosion of the metal contacts, cover unused connectors with the attached weather caps.

Flush Mounting the Device

NOTICE

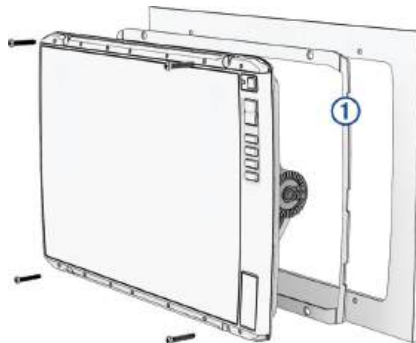
Be careful when cutting the hole to flush mount the device. There is only a small amount of clearance between the case and the mounting holes, and cutting the hole too large could compromise the stability of the device after it is mounted.

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 Secure the template to the mounting location.
- 2 Using a 13 mm ($1/2$ 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.
- 3 Using a jigsaw or rotary cutting tool, cut the mounting surface along the inside of the solid line indicated on the template.
- 4 Place the device into the cutout to test the fit.
- 5 Use a pry tool, such as a flat piece of plastic or a screwdriver, to carefully pry up the corners of the trim caps, and remove the trim caps.
- 6 Place the device in the cutout, and ensure the mounting holes on the device line up with the pilot holes on the template.
- 7 If the mounting holes on the device do not line up with the pilot holes on the template, mark the new hole locations.
- 8 Using a 3.2 mm ($1/8$ in.) drill bit, drill the pilot holes.
- 9 Remove the template from the mounting surface.
- 10 Place the device in the cradle ([Installing the Device in the Cradle](#), page 8).
- 11 Install the rubber gasket ① on the back of the device.

The rubber gasket has adhesive on the back. Make sure you remove the protective liner before installing it on the device.



- 12 Connect all necessary cables ([Connector View](#), page 4), and spin the locking rings clockwise to secure the cables to the cradle before placing it into the cutout.

NOTICE

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

- 13 Place the device into the cutout.
- 14 Secure the device to the mounting surface using the included screws.
- 15 Install the trim caps by snapping them in place around the edges of the device.

Connection Considerations

After connecting the cables to the cradle, tighten the locking rings to secure each cable.

Connector View



Label	Description
POWER	Power cable port
12 PIN XDCR	12-pin transducer
NMEA 2000	NMEA 2000® network
NETWORK	Garmin network cable port for connection to compatible Panoptix™, GCV™, and ECHOMAP devices NOTE: This device is not compatible with some Garmin Marine Network devices such as GPSMAP®, GSD™, and radar devices.
	Ground screw

NOTICE

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

For best performance and to prevent corrosion, insert the cable connector fully into the port and turn the locking ring clockwise to tighten it. If the split-collar locking ring is not installed, you must install it.

Connecting to Power

WARNING

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

You should connect the red wire to the power source through the ignition or another manual switch to turn the device on and off.

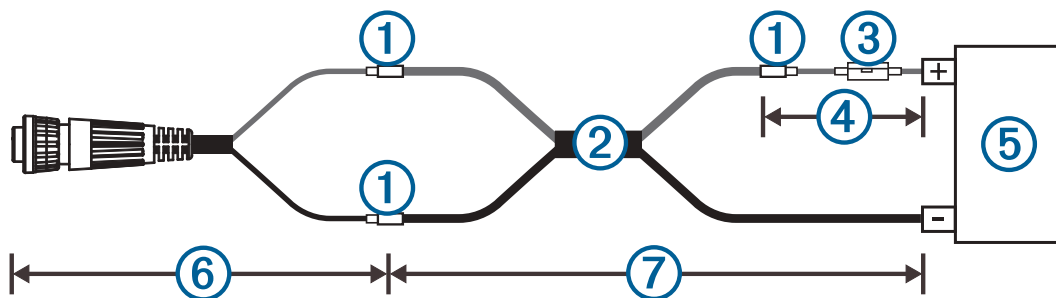
NOTE: Some models use a power cable that has brown and blue wires in addition to the black and red wires. The brown and blue wires not used by this device and should not be connected. You can cut and tape the ends of these wires for a clean install, if preferred.

- 1 Route the power cable between the power source and the device.
- 2 Connect the red power wire to the ignition or another manual switch, and connect the switch to the positive (+) battery terminal, if necessary.
- 3 Connect the black wire to the negative (-) battery terminal or to ground.
- 4 Connect the power cable to the device, and turn the locking ring clockwise to tighten it.

Power Cable Extensions

If necessary, the power cable can be extended using the appropriate wire gauge for the length of the extension.

NOTE: Some models use a power cable that has brown and blue wires in addition to the black and red wires. The brown and blue wires not used by this device and should not be connected. You can cut and tape the ends of these wires for a clean install, if preferred.



①	Splice
②	• Up to 3 m (10 ft.): 16 AWG (1.5 mm²) extension wire • Up to 6.1 m (20 ft.): 14 AWG (2.5 mm²) extension wire
③	Fuse (8 A)
④	23 cm (9 in.)
⑤	Battery
⑥	1.8 m (6 ft.)
⑦	6 m (20 ft.) maximum extension

Connecting the Device to a Transducer

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

NOTE: If you use an existing transducer and the transducer cable pin connector does not match the device port, you may be able to use a transducer cable adapter to connect your existing transducer to this device. Go to garmin.com for more information about transducer accessories.

- 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.

If the device behaves erratically, the cable connector may not be fully seated. Disconnect the cable connector from the port, check the pin alignment, and firmly push the connector into the port.

Network Connection Considerations and Requirements

You can use the NETWORK port to connect a compatible Garmin device such as a Panoptix transducer, GCV sonar module, or another ECHOMAP chartplotter. This device is not compatible with the Garmin BlueNet™ network or the Garmin Marine Network, and you should not connect devices such as a GPSMAP chartplotter or a Garmin radar.

When connecting a compatible device to the NETWORK port, observe these considerations and requirements:

- Any device connected to the NETWORK port must connect to the same ground as this device. If multiple power sources are used between the devices, you must tie the ground connections from the power supplies together using a low resistance connection or tie them to a common ground bus bar, if available.
- You must use a Garmin network cable for any connections using the NETWORK port.
 - You must not use third-party CAT5e or CAT6 Ethernet cable and RJ45 connectors.
 - Additional Garmin network cables and connectors are available from your Garmin dealer.
 - Although it is not recommended, you can use a field-installable connector to create a custom-length Garmin network cable if necessary. Follow the directions provided with the connector.

NMEA 2000 Considerations

NOTICE

If you are connecting to an **existing** NMEA 2000 network, identify the NMEA 2000 power cable. Only one NMEA 2000 power cable is required for the NMEA 2000 network to operate properly.

A NMEA 2000 Power Isolator (010-11580-00) should be used in installations where the existing NMEA 2000 network manufacturer is unknown.

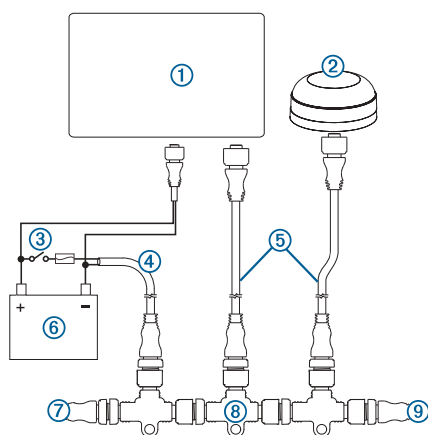
If you are installing a NMEA 2000 power cable, you must connect it to the boat ignition switch or through another in-line switch. NMEA 2000 devices will drain your battery if the NMEA 2000 power cable is connected to the battery directly.

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

This device is not powered through the NMEA 2000 network. You must connect the device to a power source ([Connecting to Power, page 5](#)).

If you are unfamiliar with NMEA 2000, you should read the *Technical Reference for NMEA 2000 Products* at garmin.com/manuals/nmea_2000.

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

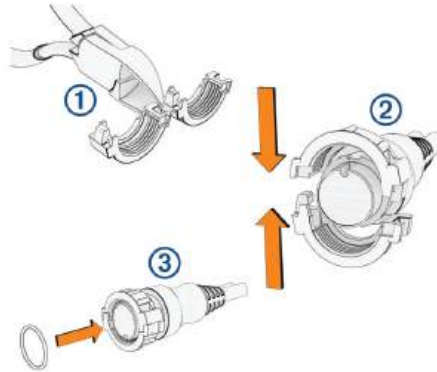


Item	Description
①	ECHOMAP Ultra 2 device
②	GPS antenna or other NMEA 2000 device
③	Ignition or in-line switch
④	NMEA 2000 power cable
⑤	NMEA 2000 drop cable
⑥	12 Vdc power source
⑦	NMEA 2000 female terminator or backbone extension cable
⑧	NMEA 2000 T-connector
⑨	NMEA 2000 male terminator or backbone extension cable

Installing Locking Rings on the Cables

To help make the cable-routing process easier, some locking rings are packaged separately from the cables. When installing a cable that does not have a locking ring installed at the factory, you must install the split-collar locking ring on the cable to ensure a tight connection.

- 1 Separate the two halves of the locking ring ①.

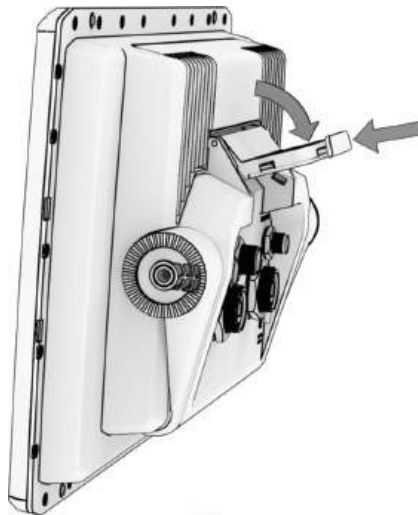


- 2 Align the two halves ② of the locking ring over the cable and snap them together.
- 3 Insert the O-ring ③ into the end of the connector.
- 4 After connecting the cable to the port, turn the locking ring clockwise to tighten it.

Installing the Device in the Cradle

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

- 1 Press the button on the release lever and lift the lever to unlock it.
- 2 Place the base of the device in the bottom of the cradle.
- 3 Lift the lever.
- 4 Tilt the top of the device toward the cradle.



- 5 Press the button on the lever, and push the lever down until the device clicks in place.

Removing the Device from the Cradle

- 1 Press the button on the release lever on the cradle, and pull the lever up.
- 2 Tilt the device forward, and lift the device out of the cradle.

Specifications

All Models

Material	Polycarbonate plastic
Water rating	IEC 60529 IPX7 ¹
Temperature range	From -15° to 55°C (from 5° to 131°F)
Clearance to nearest obstruction behind chartplotter	150 mm (5 ⁷ / ₈ in.)
Input voltage	From 9 to 18 Vdc
Fuse	8 A, fast-blow (included)
Display resolution (W x H)	1280 x 800 pixels
Display type	WXGA
Memory card	2 microSD® card slots; 1 TB max. card size ²
Wireless frequency	2.4 GHz @ 16.6 dBm maximum
Sonar frequencies ³	Traditional L, M, H CHIRP: 50/77/83/200 kHz Garmin ClearVü™ CHIRP: 260/455/800/1000/1200 kHz Garmin SideVü™ CHIRP: 260/455/800/1000/1200 kHz
Sonar transmit power (RMS) ⁴	CHIRP: 600 W Garmin ClearVü and Garmin SideVü CHIRP: 600 W
Sonar depth ⁵	701 m (2,300 ft.) at 77 kHz

100 Series Models

Dimensions, device only (W x H x D)	295 x 195 x 98 mm (11 ⁵ / ₈ x 7 ¹¹ / ₁₆ x 3 ⁷ / ₈ in.)
Dimensions, in bail mount with sun cover (W x H x D)	314 x 211 x 114 mm (12 ³ / ₈ x 8 ⁵ / ₁₆ x 4 ¹ / ₂ in.)
Display size (W x H)	218 x 137 mm (8 ⁹ / ₁₆ x 5 ³ / ₈ in.) 257 mm (10 in.) diagonal
Weight	1.75 kg (3 lb. 14 oz.)
Max. power draw	34 W
Typical current draw at 12 Vdc (RMS)	2.3 A
Max. current draw at 12 Vdc (peak)	5 A
Compass-safe distance	10 cm (3.9 in.)

¹ 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.

² As of software version 35.00, this device is compatible with up to 1 TB memory cards formatted to exFAT.

³ Dependent upon the transducer.

⁴ Dependent upon the transducer rating and depth.

⁵ Dependent upon the transducer, water salinity, bottom type, and other water conditions.

120 Series Models

Dimensions, device only (W x H x D)	341 x 229 x 98 mm ($13\frac{7}{16}$ x 9 x $3\frac{7}{8}$ in.)
Dimensions, in bail mount with sun cover (W x H x D)	352 x 235 x 114 mm ($13\frac{7}{8}$ x $9\frac{1}{4}$ x $4\frac{1}{2}$ in.)
Display size (W x H)	262 x 164 mm ($10\frac{5}{16}$ x $6\frac{15}{32}$ in.) 309 mm (12 in.) diagonal
Weight	2.46 kg (5 lb. 7 oz.)
Max. power draw	36 W
Typical current draw at 12 Vdc (RMS)	2.5 A
Max. current draw at 12 Vdc (peak)	5 A
Compass-safe distance	9 cm (3.5 in.)

NMEA 2000 PGN Information

Transmit and Receive

PGN	Description
059392	ISO acknowledgment
059904	ISO request
060160	ISO transport protocol, data transfer
060416	ISO transport protocol, connection management - RTS group function
060928	ISO address claim
126208	NMEA®: Command, request, and acknowledge group function
126993	Heartbeat
126996	Product information
126998	Configuration information
127250	Vessel heading
128259	Speed: Water referenced
128267	Water depth
129539	GNSS DOPs
129540	GNSS satellites in view
129799	Radio frequency, mode, and power
130060	Label
130306	Wind data
130310	Environmental parameters
130312	Temperature

Transmit

PGN	Description
126464	Transmit and receive PGN list group function
126984	Alert response
127258	Magnetic variance
127502	Switch bank control
129025	Position: Rapid update
129026	COG and SOG: Rapid update
129029	GNSS position data
129283	Cross track error
129284	Navigation data
129285	Navigation route and waypoint info

Receive

PGN	Description
065240	ISO commanded address
126983	Alert
126985	Alert text
126987	Alert threshold
126988	Alert value
126992	System time
127233	Man overboard
127237	Heading/tack control
127245	Rudder
127250	Vessel heading
127251	Rate of turn
127252	Heave
127257	Attitude
127488	Engine parameters: Rapid update
127489	Engine parameters: Dynamic
127493	Transmission parameters: Dynamic
127498	Engine parameters: Static
127501	Switch bank status
127503	AC input status

PGN	Description
127504	AC output status
127505	Fluid level
127506	DC detailed status
127507	Charger status
127508	Battery status
127509	Inverter status
128000	Nautical leeway angle
128275	Distance log
128780	Linear actuator control and status
129025	Position, rapid update
129026	COG and SOG, rapid update
129029	GNSS position data
129038	AIS class A position report
129039	AIS class B position report
129040	AIS class B extended position report
129041	AIS Aids to Navigation (AtoN) report
129283	Cross track error
129284	Navigation data
129285	Navigation: Route and waypoint information
129794	AIS class A static and voyage related data
129798	AIS SAR aircraft position report
129799	Radio frequency, mode, and power
129802	AIS safety-related broadcast message
129808	DSC call information
129809	AIS static data report, part A
129810	AIS static data report, part B
130067	Route and waypoint service: Route and waypoint name and position
130310	Environmental parameters
130311	Environmental parameters (obsolete)
130313	Humidity
130314	Actual pressure
130316	Temperature: extended range

PGN	Description
130576	Trim tab status
130578	Vessel speed components

Viewing E-label Regulatory and Compliance Information

The label for this device is provided electronically. The e-label may provide regulatory information, such as identification numbers provided by the FCC or regional compliance markings, as well as applicable product and licensing information. Not available on all models.

- 1 Select .
- 2 Select **System**.
- 3 Select **Regulatory Information**.

物質宣言

部件名称	有毒有害物质或元素									
	铅	汞	镉	六价铬	多溴联苯	多溴二苯醚	邻苯二甲酸二(2-乙基己)酯	邻苯二甲酸丁苄酯	邻苯二甲酸二丁酯	邻苯二甲酸二异丁酯
印刷电路板组件	✗	○	○	○	○	○	○	○	○	○
屏幕/背光	✗	○	○	○	○	○	○	○	○	○
金属零件	✗	○	○	○	○	○	○	○	○	○
电缆 电缆组件连接器	✗	○	○	○	○	○	○	○	○	○
塑料和橡胶零件	○	○	○	○	○	○	○	○	○	○

本表格依据 SJ/T11364 的规定编制。

○: 代表此种部件的所有均质材料中所含的该种有害物质均低于 (GB/T26572) 规定的限量

✗: 代表此种部件所用的均质材料中, 至少有一类材料其所含的有害物质高于 (GB/T26572) 规定的限量

* 该产品说明书应提供在环保使用期限和特殊标记的部分详细讲解产品的担保使用条件。



中国微功率无线电发射设备合规

- 一) 工作于 2400–2483.5 MHz 频段的 ANT 技术无线遥控设备, 使用频率: 2400–2483.5 MHz, 发射功率限值: 10 mW(e.i.r.p), 频率容限: 75 kHz
- 二) 不得擅自改变使用场景或使用条件、扩大发射频率范围、加大发射功率 (包括额外加装射频功率放大器), 不得擅自更改发射天线;
- 三) 不得对其他合法的无线电台 (站) 产生有害干扰, 也不得提出免受有害干扰保护;
- 四) 应当承受辐射射频能量的工业、科学及医疗 (ISM) 应用设备的干扰或其他合法的无线电台 (站) 干扰;
- 五) 如对其他合法的无线电台 (站) 产生有害干扰时, 应立即停止使用, 并采取措施消除干扰后方可继续使用;
- 六) 在航空器内和依据法律法规、国家有关规定、标准划设的射电天文台、气象雷达站、卫星地球站 (含测控、测距、接收、导航站) 等军民用无线电台 (站)、机场等的电磁环境保护区域内使用微功率设备, 应当遵守电磁环境保护及相关行业主管部门的规定;
- 七) 禁止在以机场跑道中心点为圆心、半径 5000 米的区域内使用各类模型遥控器;
- 八) 微功率设备使用时温度 -15–55°C 直流电压 9–18 Vdc。

联系信息

制造厂商: 台湾国际航电股份有限公司

销售厂商: 上海佳明航电企业管理有限公司

联络地址: 上海市徐汇区桂平路 391 号 (新漕河泾国际商务中心 A 座 37 层)

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