Manuals+

GARMIN ECHOMAP ULTRA 2 16XSV Chart plotters Installation Guide

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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 inline 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.
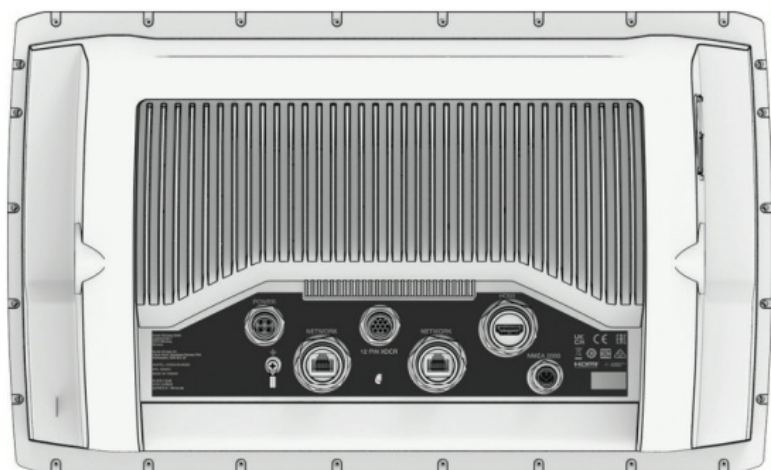
NOTICE:

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: 3 mm (1 /8 in.) drill bits and screws appropriate for the surface and hardware
  - Flush mount: 3.2 mm (1 /8 in.) and 8.5 mm (11/32 in.) drill bits
- #2 Phillips screwdriver
- Jigsaw or rotary tool
- File and sandpaper
- Marine sealant (optional)

Connector View

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

Software Update

You may need to update the chart plotter software after installation. For the instructions on how to update the software, see the owner's manual at garmin.com/manuals/echomap_ultra_2_16xsv.

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.

You can use the bracket to bail mount the device on a flat surface.

1. Using the bail-mount bracket as **(1)** template, mark the pilot holes .

2. Using a 3 mm (1 /8 in.) drill bit, drill the pilot holes.
3. Secure the bail-mount bracket to the surface using the included washers and wood screws(3).
4. Install the bail-mount knobs (4) on the sides of the device.

5. Place the device in the bail-mount bracket, and tighten the bail-mount knobs.
6. Install the trim caps by snapping them in place around the edges of the device.

**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 included screws.

1. Secure the template to the mounting location.
2. Using a 8.5 mm (11/32 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. If necessary, use a file or sandpaper to refine the size of the cutout.
6. 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.
7. Place the device in the cutout, and ensure the mounting holes on the device line up with the pilot holeson the template.
8. If the mounting holes on the device do not line up with the pilot holes on the template, mark the new hole locations.
9. Using a 3.2 mm (1 /8 in.) drill bit, drill the pilot holes.
10. Remove the template from the mounting surface.
11. Install the rubber gasket (1) on the back of the device.

    The individual pieces of the rubber gasket have adhesive on the back. Make sure you remove the protective liner before installing them on the device.
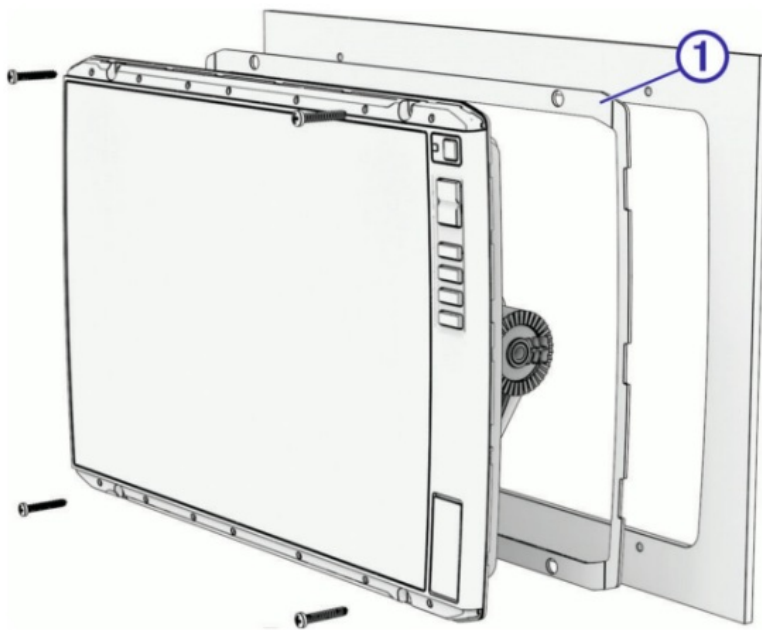
12. Connect all necessary cables(Connector View, page 2), and turn the locking rings clockwise to secure the cables to device before placing it into the cutout.

NOTICE:

To prevent corrosion of the metal contacts, cover unused connectors with the attached 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 device, tighten the locking rings to secure each cable.

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. Align the divot on the transducer cable connector with the keying on the 12 PIN XDCR

port on the back of the device.

NOTICE

You must align the holes on the cable connector with the pins in the cable port.
Misalignment of the cable connection could damage the devices.

4. Push the connector firmly into the port until fully seated.

   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 Live
Scope transducer,
GCV sonar module, or another ECHOMAP chart plotter. This device is not compatible
with the Garmin Blue Net™ network or the Garmin Marine Network, and you should not
connect devices such as a GPSMAP chart plotter 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 NMEA2000 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 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.
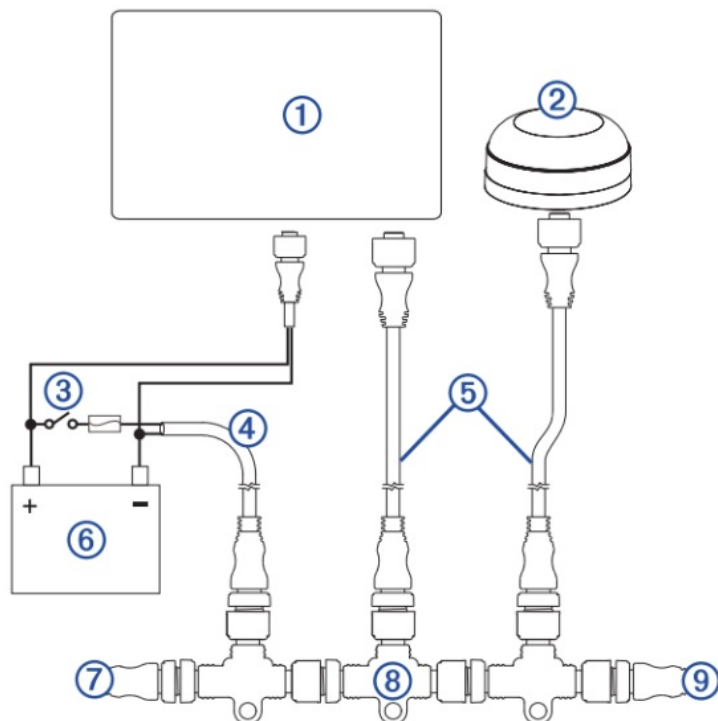
Item	Description
1	ECHOMAP Ultra 2 16xsv device

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

**HDMI Out Video Considerations**

NOTICE

To prevent corrosion due to moisture, you must use Garmin accessory cables when connecting the chart plotter to the video display. Using different cables voids your warranty.

The ECHOMAP Ultra 2 16xsv chart plotter models have HDMI out capability to duplicate the chart plotter screen on another device, such as a television or monitor.

The Garmin HDMI accessory cable is 4.5 m (15 ft.) long. If you need a longer cable, you should use an active

HDMI cable only. You need an HDMI coupler to connect the two HDMI cables.

You must make all cable connections in a dry environment.
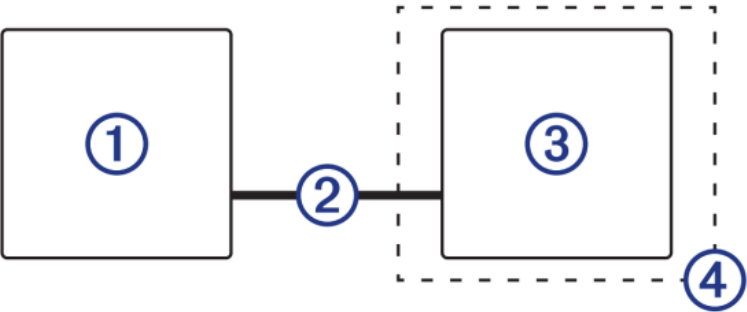
Item	Description

1	ECHOMAP Ultra 2 16xsv chartplotter
2	Garmin HDMI cable (HDMI)
3	Display with an HDMI In port, such as a computer or television
4	Dry environment, protected from moisture

Specifications

Temperature range	From -15° to 55°C (from 5° to 131°F)
Material	Polycarbonate plastic and die-cast aluminum
Water rating	IEC 60529 IPX7 1
Input voltage	From 9 to 18 Vdc
NMEA 2000 LEN @ 9 Vdc	2
NMEA 2000 draw	75 mA max.
Memory card	2 microSD® memory card slots, 1 TB max. card size, formatted to exFAT.
Dimensions (W × H × D)	384.7 × 266.4 × 78 mm (15 $1/_8$ × 10 $1/_2$ × 3 $1/_{16}$ in.)
Dimensions with cover on bail mount (W × H × D)	405.9 × 277.3 × 110 mm (16 × 10 $15/_{16}$ × 4 $3/_8$ in.)
Clearance to next obstruction behind chart plotter	94 mm (3 $3/_4$ in.)
Display size (W × H)	345.2 × 194.6 mm (13 $9/_{16}$ × 7 $11/_{16}$ in.)396.3 mm (15 $5/_8$ in.) diagonal
Display resolution	FHD, 1920 × 1080 pixels (IPS)

Weight	4.45 kg (9.8 lb.)
Compass-safe distance	85 cm (33.5 in.)
Wireless frequency	2.4 GHz @ 16.4 dBm maximum
Max. power usage at 10 Vdc	45 W
RMS current draw at 12 Vdc	3.6A @ 12V
Peak current draw at 12 Vdc	6.5A @ 12V
Fuse	8 A, 125 V fast-acting

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.

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
060928	ISO address claimed
126208	Request group function
126993	Heartbeat
126996	Product information

126998	Configuration information
127237	Heading/track control
127245	Rudder
127250	Vessel heading
127258	Magnetic variance
127488	Engine parameters: Rapid update
127489	Engine parameters: Dynamic
127490	Electric drive status: Dynamic
127491	Electric energy storage status: Dynamic
127493	Transmission parameters: Dynamic
127494	Electric drive information
127495	Electric energy storage information
127505	Fluid level
127508	Battery status
128002	Electric drive status: Rapid update
128003	Electric energy storage status: Rapid update
128259	Speed: Water referenced
128267	Water depth
129025	Position: Rapid update
129026	COG and SOG: Rapid update
129029	GNSS position data

129283	Cross track error
129284	Navigation data
129285	Navigation – route/waypoint information
129539	GNSS DOPs
129540	GNSS satellites in view
130060	Label
130306	Wind data
130310	Environmental parameters (obsolete)
130312	Temperature (obsolete)
126464	Transmit and receive PGN list group function
126984	Alert response
127258	Magnetic variation
127497	Trip parameters: Engine
127502	Switch bank control (DEPRECATED)
065030	Generator average basic AC quantities (GAAC)
065240	Commanded address
126983	Alert
126985	Alert text
126987	Alert threshold
126988	Alert value
126992	System time

127233	Man overboard
127237	Heading/track control
127245	Rudder
127251	Rate of turn
127252	Heave
127257	Attitude
127498	Engine parameters: Static
127501	Switch bank status
127503	AC input status (obsolete)
127504	AC output status (obsolete)
127506	DC detailed status
127507	Charger status
127509	Inverter status
128000	Nautical leeway angle
128275	Distance log
128780	Linear actuator
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
129044	Datum

129285	Navigation: Route, waypoint information
129794	AIS class A static and voyage related data
129798	AIS SAR aircraft position report
129799	Radio frequency/mode/power
129802	AIS safety-related broadcast message
129808	DSC call Information
129809	AIS class B "CS" static data report, part A
129810	AIS class B "CS" static data report, part B
130067	Route and waypoint service: Route, waypoint name and position
130311	Environmental parameters (obsolete)
130313	Humidity
130314	Actual pressure
130316	Temperature: Extended range
130569	Entertainment: Current file and status
130570	Entertainment: Library data file
130571	Entertainment: Library data group
130573	Entertainment: Supported source data
130574	Entertainment: Supported zone data
130576	Trim tab status
130577	Direction data

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ECHOMAP™ 162sv/165sv/166sv

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M/**N:** A05043

FCC ID: IPH-05043 IC: 1792A-05043 Garmin Corporation

Documents / Resources

	GARMIN ECHOMAP ULTRA 2 16XSV Chartplotters [pdf] Installation Guide ECHOMAP ULTRA 2 16XSV, ECHOMAP ULTRA 2 16XSV Chartplotters, Chartplotters

References

- User Manual

Chartplotters, ECHOMAP ULTRA 2 16XSV, ECHOMAP ULTRA 2 16XSV Chartplotters,
Garmin   Garmin

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