



# YAMAHA

## CL7 DISPLAY

# 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.

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 your Yamaha® dealer.

### Tools Needed

- Appropriate pigtail bus wire for engine network connection
- Drill and drill bits
  - 3.2 mm ( $1/8$  in.) drill bit, if using wood screws
  - 3.6 mm ( $9/64$  in.) drill bit, if using the nut plates (optional accessory)
  - 7.2 mm ( $9/32$  in.) drill bit, if using the nut plates (optional accessory)
- Mounting hardware
  - 4 Wood screws (included)
  - 4 M4 machine screws if using the nut plates (included with nut plate accessory)
  - 4 M3 machine screws if using the nut plates (included with nut plate accessory)
- #2 Phillips screwdriver
- Jigsaw or rotary tool
- File and sandpaper
- Marine sealant (recommended)

### Mounting Considerations

#### NOTICE

This device should be mounted in a location that is not exposed to extreme temperatures or conditions. The temperature range for this device is listed in the product specifications. Extended exposure to temperatures exceeding the specified temperature range, in storage or operating conditions, may cause device

failure. Extreme-temperature-induced damage and related consequences are not covered by the warranty.

When selecting a mounting location, you should observe these considerations.

- The location should provide optimal viewing as you operate your boat.
- The location should allow for easy access to all device interfaces, such as the keypad, touchscreen, and card reader, if applicable.
- The location must be strong enough to support the weight of the device and protect it from excessive vibration or shock.
- 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.
- The location must allow room for the routing and connection of all cables.
- The location must not be a flat, horizontal surface. The location should be in a vertical angle.

The location and viewing angle should be tested before you install the device. High viewing angles from above and below the display may result in a poor image.

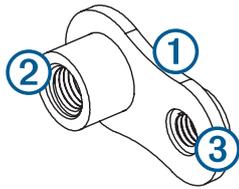
### Mounting the Device

#### 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.

There are different options for hardware based on the mounting surface material. You may need additional hardware depending on the mounting option selected.

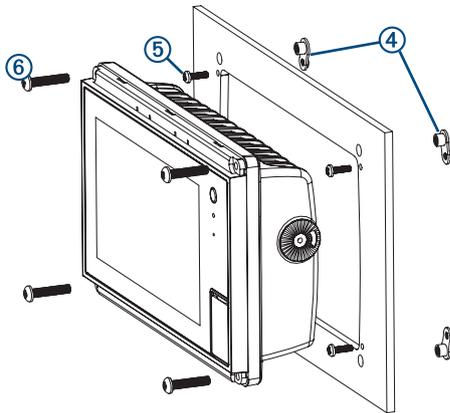
- You can drill pilot holes and use the included wood screws.
  - You can drill holes and use nut plates and machine screws (optional accessory). The nut plates can add stability to a thinner surface.
- 1 Trim the template and make sure it fits in the location where you want to mount the device.
  - 2 Secure the template to the selected location.
  - 3 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.
  - 4 Using a jigsaw or a rotary tool, cut the mounting surface along the inside line on the template.
  - 5 Place the device in the cutout to test the fit.
  - 6 If necessary, use a file and sandpaper to refine the size of the cutout.
  - 7 After the device fits correctly in the cutout, ensure the mounting holes on the device line up with the larger holes in the corners of the template.
  - 8 If the mounting holes on the device do not line up, mark the new hole locations.
  - 9 Based on your mounting surface, drill or punch and tap the larger holes:
    - Drill 3.2 mm ( $1/8$  in.) pilot holes for wood screws, and skip to step 17.
    - Drill 7.2 mm ( $9/32$  in.) holes for the nut plate and machine screws, and continue to the next step.
  - 10 If using the nut plates (optional accessory), starting in one corner of the template, place a nut plate ① over the larger hole ② drilled in step 9.



The smaller hole ③ on the nut plate should line up with the smaller hole on the template.

- 11 If the smaller 3.6 mm ( $\frac{9}{64}$  in.) hole on the nut plate does not line up with the smaller hole on the template, mark the new location.
- 12 Repeat steps 10 and 11 for each nut plate.
- 13 Using a 3.6 mm ( $\frac{9}{64}$  in.) drill bit, drill the smaller holes.
- 14 Starting in one corner of the mounting location, place a nut plate ④ on the back of the mounting surface, lining up the large and small holes.

The raised portion of the nut plate should fit into the larger hole.



- 15 Secure the nut plate to the mounting surface by fastening an M3 screw ⑤ through the smaller 3.6 mm ( $\frac{9}{64}$  in.) hole.
- 16 Repeat steps 14 and 15 for each of the nut plates along the top and bottom of the device.
- 17 Remove the template from the mounting surface.
- 18 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.
- 19 To prevent corrosion of the metal contacts, cover unused connectors with the attached weather caps.
- 20 Apply marine sealant between the mounting surface and the device to properly seal and prevent leakage behind the dashboard.
- 21 If you will have access to the back of the device, apply marine sealant around the cutout.
- 22 Place the device into the cutout.
- 23 Secure the device to the mounting surface using M4 screws ⑥ or wood screws, depending on the mounting method.
- 24 Wipe away all excess marine sealant.
- 25 Install the decorative bezel by snapping it in place around the edges of the device.

## Connection Considerations

When connecting this device to power and to other Garmin® devices, you should observe these considerations.

- The power and ground connections to the battery must be checked to make sure they are secured and cannot become loose.

- The cables may be packaged without the locking rings installed. The cables should be routed before the locking rings are installed.
- After installing a locking ring on a cable, you should make sure the ring is securely connected and the o-ring is in place so the power or data connection remains secure.

## Connecting to Power

### ⚠ WARNING

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.

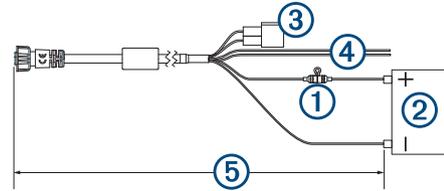
- 1 Route the power cable to the power source and to the device.
- 2 Connect the red wire to the positive (+) battery terminal, and connect the black wire to the negative (-) battery terminal.
- 3 Connect the power cable to the device, and turn the locking ring clockwise to tighten it.

### Additional Grounding Considerations

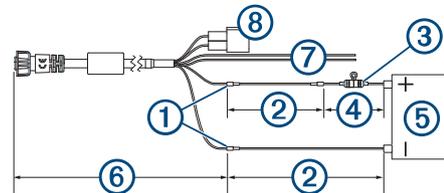
This device should not need any additional chassis grounding in most installation situations. If interference is experienced, the grounding screw on the housing can be used to connect the device to the water ground of the boat to help avoid the interference.

### Power Cable Extensions

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



Item	Description
①	Fuse
②	12 Vdc power source
③	Command Link Plus® and Helm Master® bus network connector
④	<a href="#">Differential NMEA® 0183 Connection Considerations, page 3</a>
⑤	2.4 m (7.9 ft.) no extension



Item	Description
①	Splice
②	<ul style="list-style-type: none"> <li>• 10 AWG (5.26 mm<sup>2</sup>) extension wire, up to 4.6 m (15 ft.)</li> <li>• 8 AWG (8.36 mm<sup>2</sup>) extension wire, up to 7 m (23 ft.)</li> <li>• 6 AWG (13.29 mm<sup>2</sup>) extension wire, up to 11 m (36 ft.)</li> </ul>
③	Fuse
④	20.3 cm (8 in.)
⑤	12 Vdc power source
⑥	2.4 m (7.9 ft.)
⑦	<a href="#">Differential NMEA® 0183 Connection Considerations, page 3</a>
⑧	Command Link Plus and Helm Master bus network connector

## Command Link Plus and Helm Master Bus Network Connection Considerations

### NOTICE

If you have an existing engine network on your boat, it should already be connected to power.

This display connects to the Command Link Plus or Helm Master engine network on your boat to read data from compatible devices such as certain engines. The engine network follows a standard and uses proprietary messages.

The Furukawa connector on the end of the power cable connects the display to the existing engine network, using the appropriate length pigtail bus wire. You must route the cable within 6 m (20 ft.) of the engine network backbone.

For more information on connecting to your engine network, see the engine documentation.

### NMEA 2000® Considerations

### NOTICE

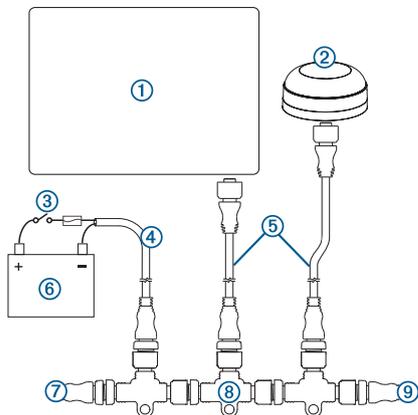
If you are installing a NMEA 2000 power cable, you must connect it to the boat ignition switch or through another in-line switch. NMEA 2000 devices will drain your battery if the NMEA 2000 power cable is connected to the battery directly.

**NOTE:** If you are connecting this device to an existing NMEA 2000 network, the NMEA 2000 network should already be connected to power.

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

This device can connect 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. If you do not have an existing NMEA 2000 network, you can create a basic one. For more information, go to [www.nmea.org](http://www.nmea.org).

The port labeled NMEA 2000 is used to connect the device to a standard NMEA 2000 network.



Item	Description
①	CL7 display
②	GPS antenna
③	Ignition or in-line switch
④	NMEA 2000 power cable
⑤	NMEA 2000 drop cable
⑥	12 Vdc power source
⑦	NMEA 2000 terminator or backbone cable
⑧	NMEA 2000 T-connector
⑨	NMEA 2000 terminator or backbone cable

## Garmin Marine Network Considerations

### NOTICE

A Garmin Power over Ethernet (PoE) Isolation Coupler (P/N 010-10580-10) must be used when connecting any third-party device, such as a FLIR® camera, to a Garmin Marine Network. Connecting a PoE device directly to a Garmin Marine Network chartplotter damages the Garmin chartplotter and may damage the PoE device. Connecting any third-party device directly to a Garmin Marine Network chartplotter will cause abnormal behavior on the Garmin devices, including the devices not properly turning off or the software becoming inoperable.

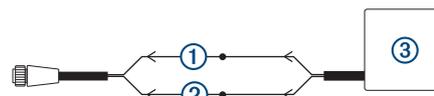
This device can connect to additional Garmin Marine Network devices to share data such as radar, sonar, and detailed mapping. When connecting Garmin Marine Network devices to this device, observe these considerations.

- All devices connected to the Garmin Marine Network must be connected to the same ground.
- A Garmin Marine Network cable must be used for all Garmin Marine Network connections.
  - Third-party CAT5 cable and RJ45 connectors must not be used for Garmin Marine Network connections.
  - Additional Garmin Marine Network cables and connectors are available from your Garmin dealer.
- The ETHERNET ports on the device each act as a network switch. Any compatible device can be connected to any ETHERNET port to share data with all devices on the boat connected by a Garmin Marine Network cable.

### Differential NMEA® 0183 Connection Considerations

This device can receive differential NMEA 0183 information from a compatible device.

- See the installation instructions for the NMEA 0183 device to identify the wires.
- See the table and wiring diagram when connecting the data cable to NMEA 0183 devices.
- You must use 28 AWG, shielded, twisted-pair wiring for extended runs of wire. Solder all connections and seal them with heat-shrink tubing.
- See *Differential NMEA 0183 Receive Information*, page 4 for a list of NMEA 0183 sentences that can be received by this device.
- The internal NMEA 0183 ports and communication protocols are configured on the connected display. See the NMEA 0183 section of the display owner's manual for more information.
- Do not connect either NMEA 0183 data wire from this device to power ground.
- The power cable from this device and the NMEA 0183 device must be connected to a common power ground.



①	N0183+, white
②	N0183-, blue
③	NMEA 0183 device

### Tank Level Sensor Connection Considerations

You can connect up to six tank level sensors to the device.

### NOTICE

You must connect fuel sensors to inputs 1, 2, 3, or 4. If you connect a fuel sensor to input 5 or 6, the fuel management system will not working properly.

Wire Color	Description
Pink	Input 1
Black/Pink	Ground 1
Green	Input 2
Black/Green	Ground 2
Brown	Input 3
Black/Brown	Ground 3
Orange	Input 4
Black/Orange	Ground 4
Blue	Input 5
Black/Blue	Ground 5
Yellow	Input 6
Black/Yellow	Ground 6

### Composite Video Considerations

This chartplotter allows video input from composite video sources using the port labeled CVBS IN. When connecting composite video, you should observe these considerations.

- The CVBS IN port uses a BNC connector. You can use a BNC to RCA adapter to connect a composite-video source with RCA connectors to the CVBS IN port.
- Video is shared across the Garmin Marine Network, but it is not shared across the NMEA 2000 network.

### Specifications

Dimensions (W × H × D)	22.2 × 14.2 × 6.1 cm (8.75 × 5.6 × 2.6 in.)
Weight	1.13 kg (2.5 lbs)
Display size (W × H)	15.5 × 8.6 cm (6.1 × 3.4 in.)
Display type	WVGA display
Material	Die-cast aluminum and polycarbonate plastic
Water rating <sup>1</sup>	IEC 60529 IPX7
Temperature range	From -15° to 55°C (from 5° to 131°F)
Input voltage	From 10 to 32 Vdc
Typical current draw at 12 Vdc	1.5 A
Max. power usage at 10 Vdc	24 W
Max. current draw at 12 Vdc	2.0 A
Fuse	6 A, 125 V fast-acting
NMEA 2000 LEN	2
NMEA 2000 Draw	75 mA max.
Compass-safe distance	80 cm (31.5 in.)
Wireless frequency and protocols	Wi-Fi®, ANT®, and Bluetooth® technologies 2.4 GHz @ 19.5 dBm nominal
Memory card	2 microSD® card slots; 32 GB max. card size

<sup>1</sup>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).

<sup>2</sup>Dependent upon the transducer.

<sup>3</sup>Dependent upon the transducer rating and depth.

<sup>4</sup>Dependent upon the transducer, water salinity, bottom type, and other water conditions.

### Differential NMEA 0183 Receive Information

Sentence	Description
DPT	Depth
DBT	Depth below transducer
MTW	Water temperature
VHW	Water speed and heading
WPL	Waypoint location
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 [www.nmea.org](http://www.nmea.org).

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