

SIMRAD®

NSX®

Installation manual

English



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Internet usage

Some features in this product use an internet connection to perform data downloads and uploads. Internet usage via a connected mobile/cell phone internet connection or a pay-per-MB type internet connection may require large data usage. Your service provider may charge you based on the amount of data you transfer. If you are unsure, contact your service provider to confirm rates and restrictions. Contact your service provider for information about charges and data download restrictions.

More information

Document version: 002

Features described and illustrated in this guide may vary from your unit due to continuous development of the software.

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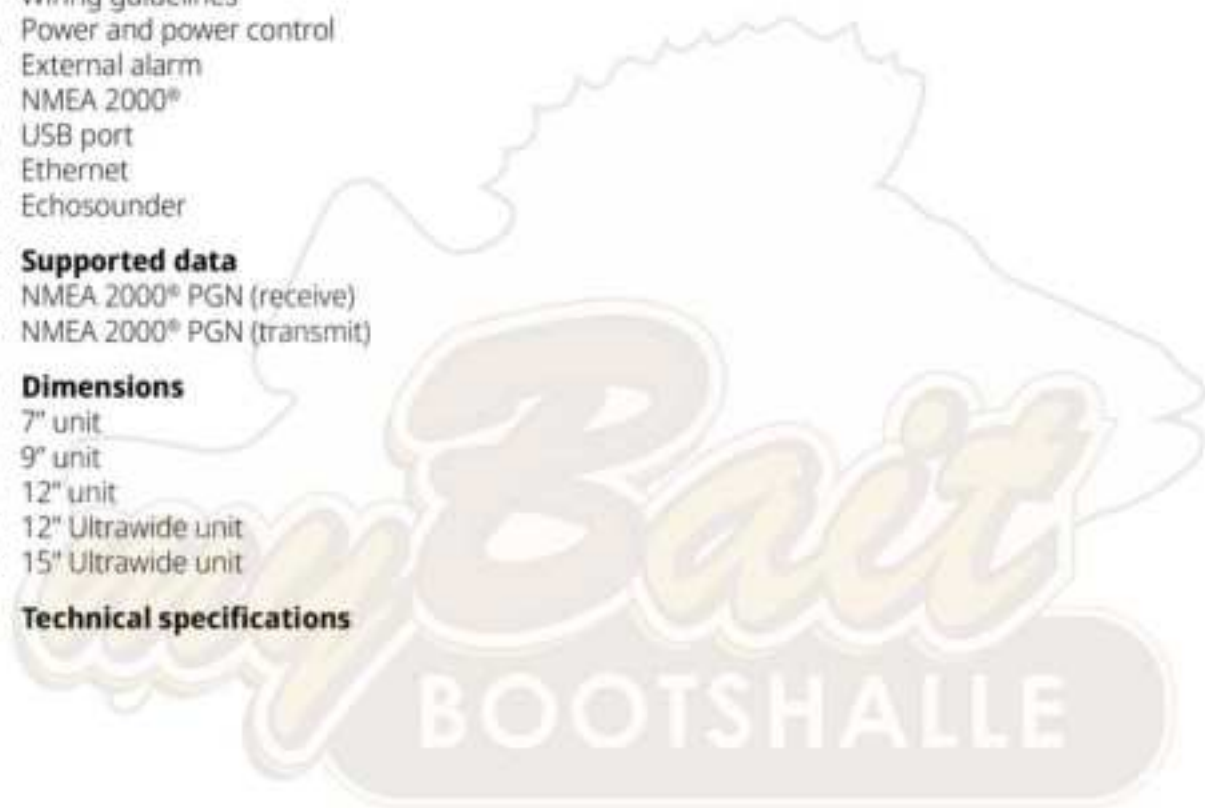
15 Supported data

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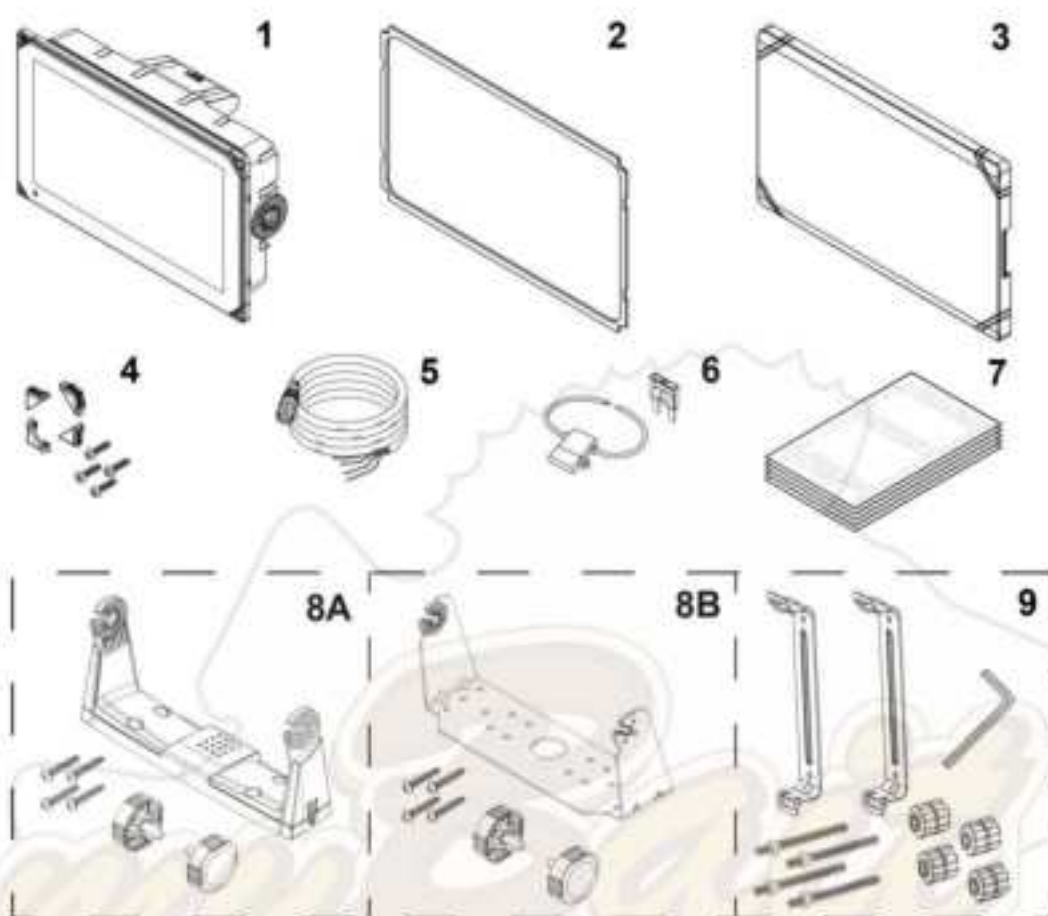
- 17 7" unit
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INTRODUCTION

In the box

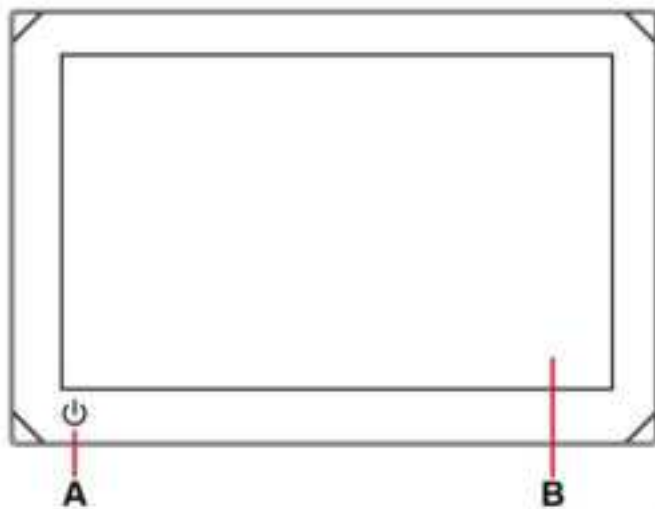


	Description	7"	9"	12"	12" Ultrawide	15" Ultrawide
1	Display unit	x1	x1	x1	x1	x1
2	Dash gasket	x1	x1	x1	x1	x1
3	Sun cover	x1	x1	x1	x1	x1
4	Corner clip and screws kit	x1	x1	x1	n/a	n/a
5	Power cable	x1	x1	x1	x1	x1
6	Fuse holder and fuse	x1	x1	x1	x1	x1
7	Documentation pack	x1	x1	x1	x1	x1
8A	Plastic gimbal kit	x1	x1	n/a	n/a	n/a
8B	Metal gimbal kit	n/a	n/a	x1	000-16217-001*	000-16220-001*
9	Rear mount kit	n/a	n/a	n/a	x1	x1

n/a = not applicable

*Part number for gimbal kit, sold separately.

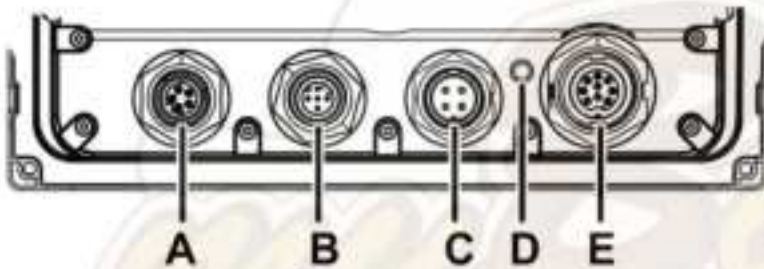
Front controls



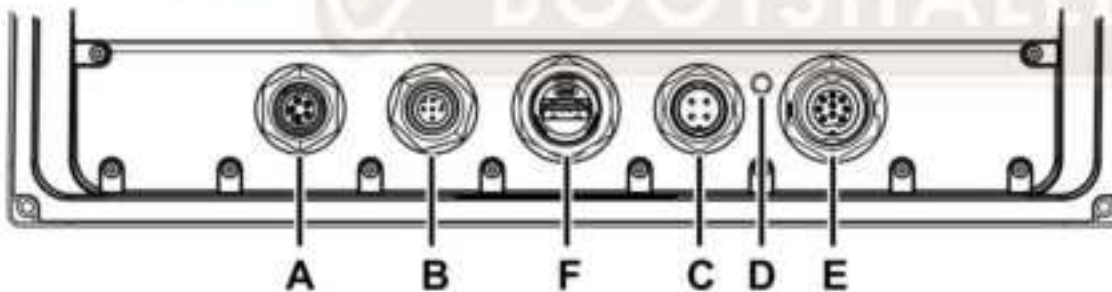
- A** Power key
- Press and hold to turn the unit on or off.
 - Press once to display the quick access menu. Repeat short presses to toggle through the default screen brightness levels.
- B** Touchscreen

Connectors

7" unit

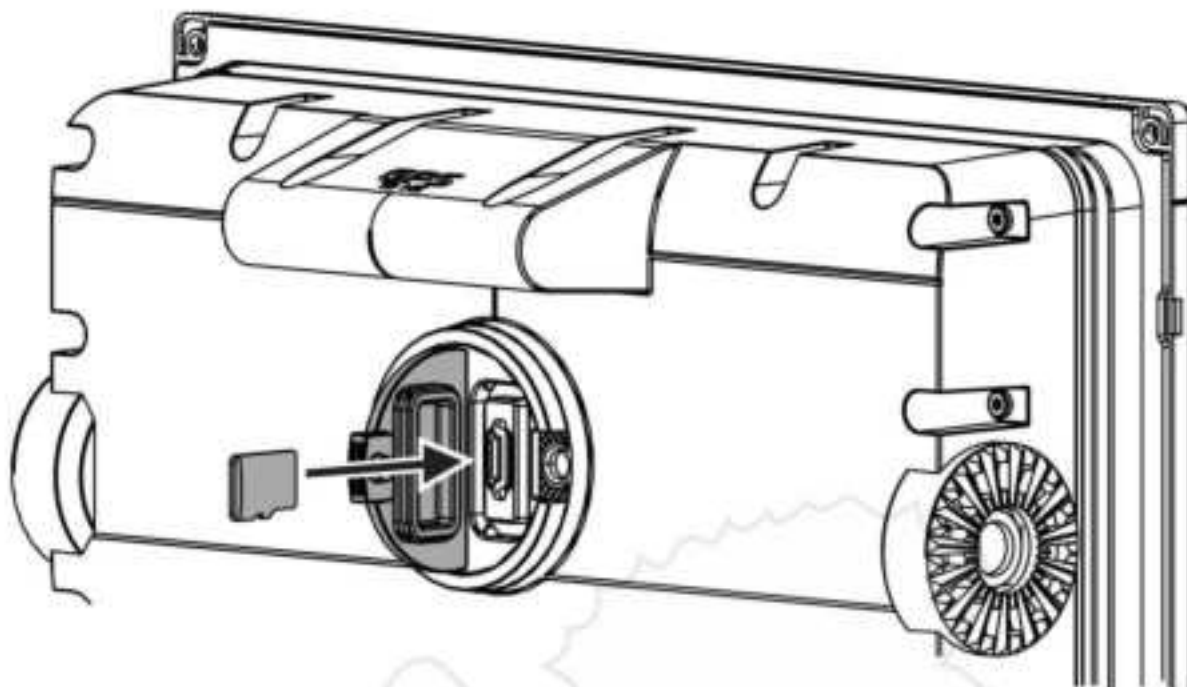


9", 12" and ultrawide units



- A** Ethernet (5-pin connector)
B NMEA 2000® (Micro-C connector)
C Power and power control (4-pin connector)
D Grounding terminal
E Echosounder (9-pin connector)
F USB (Type-A connector)

Card reader



A microSD® card can be used to:

- Provide detailed charts
- Update software
- Transfer user data (waypoints, routes, tracks, screenshots).

→ Notes:

- *If a microSD® card and USB storage device are both inserted, by default, data and screenshots are saved to the USB storage device.*
- *Do not download, transfer or copy files to a chart card as it can damage chart information on the card.*
- *MicroSD® cards up to a maximum of 256 GB capacity are supported in FAT32, ExFAT or NTFS file system.*
- *Always shut the protective cover securely after inserting or removing a microSD® card to keep the slot watertight.*

INSTALLATION

General mounting guidelines

⚠ WARNING: Do not install the unit in a hazardous/flammable atmosphere. Always wear appropriate eye wear, ear protection and dust mask when drilling, cutting, or sanding. Remember to check the reverse side of all surfaces whenever drilling or cutting.

→ **Note:** Choose a mounting location that will not expose the unit to conditions that exceed the technical specifications.

Mounting location

This product generates heat which must be considered when choosing the mounting location.

Ensure the selected area allows for:

- Cable routing, cable connection and cable support.
- Connection and use of portable storage devices.

Do also consider:

- The free space around the unit to avoid overheating.
- The mounting surface's structure and strength, with regard to the weight of the equipment.
- Any mounting surface vibration that might damage the equipment.
- Hidden electrical wires that might be damaged when drilling holes.

Ventilation

Inadequate ventilation and subsequent overheating of the unit may cause reduced performance and reduced service life. Ventilation is recommended behind all units that are not bracket mounted.

Ensure cables do not obstruct the airflow.

Examples of enclosure ventilation options, in order of preference, are:

- Positive pressure air from the vessel's air conditioning system.
- Positive pressure air from local cooling fans (fan required at input, fan optional at outlet).
- Passive airflow from air vents.

Electrical and radio frequency interference

This unit conforms with the appropriate Electromagnetic Compatibility (EMC) regulations. To ensure the EMC performance is not compromised, the following guidelines apply:

- Separate battery used for the vessel engine.
- Minimum 1 m (3 ft) between the device, the device's cables and any transmitting equipment or cables with radio signals.
- Minimum 2 m (7 ft) between the device, the device's cables and the SSB radio.
- More than 2 m (7 ft) between the device, the device's cables and the radar beam.

Compass safe distance

The unit outputs electromagnetic interference that can cause inaccurate readings on a nearby compass. To prevent compass inaccuracy, the unit must be mounted far enough away so the interference does not affect compass readings. For minimum compass safe distance, refer to the technical specifications table.

Wi-Fi®

It is important to test the Wi-Fi® performance before the location of the unit is decided.

Construction material (steel, aluminum or carbon) and heavy structures will affect Wi-Fi® performance.

The following guidelines apply:

- Select a location with a clear, direct line of sight between Wi-Fi® connected units.
- Keep the distance between Wi-Fi® units as short as possible.
- Mount the unit at least 1 m (3 ft) away from equipment that might generate interference.

GPS

It is important to test the GPS performance before the location of the unit is decided.

Construction material (steel, aluminum or carbon) and heavy structure will affect GPS performance. Avoid a mounting location where metal obstacles block the view of the sky.

A well-placed external GPS module can be added to overcome poor performance.



- A Optimal location (above deck)
- B Less effective location
- C Not recommended location

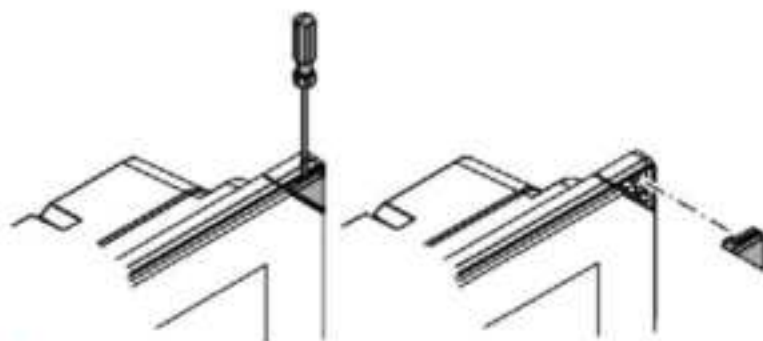
→ **Note:** Consider the lateral swinging if mounting the GPS sensor high above sea level. Roll and pitch might give false positions and affect the true directional movement.

Touchscreen

Touchscreen performance can be affected by the location of the unit. Avoid locations where the screen is exposed to direct sunlight or prolonged rainfall.

Corner clip fitment and removal

Use a flathead screwdriver to gently remove the corner clip.



→ **Note:** Ultrawide display units do not have corner screws or clips.

Panel mount

Refer to the mounting template for illustrated panel mounting instructions.

Rear mount (ultrawide displays only)

- 1 Using the gasket provided, place the display unit into the dash cutout.
- 2 Use the provided tool to tighten the threaded studs.
- 3 Finger tighten the four threaded studs (provided) into the brass inserts on the back case.
- 4 Place the rear mount brackets over the studs and secure with two thumb nuts per stud, turning them clockwise.

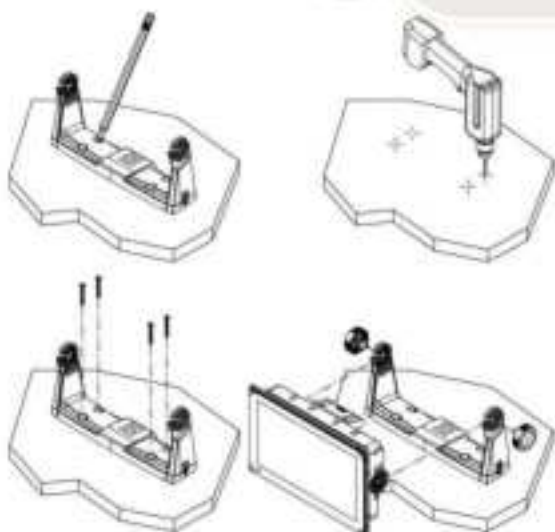
⚠ WARNING: Finger tighten only! Do not use any tools to tighten the rear brackets into the display chassis. Using excessive force may damage the back side of the display unit.



Gimbal mount

- 1 Position bracket with ample height to tilt the unit and ensure space for knob adjustments on both sides.
- 2 Mark the screw locations using the bracket as a template, and drill pilot holes.
- 3 Screw down the bracket using fasteners suitable for the material you are mounting the bracket on.
- 4 Mount the unit to the bracket using the knobs. Hand tighten only.

→ **Note:** The screws shown below are for illustration purposes only. Use fasteners that are suitable for the mounting surface.



WIRING

Wiring guidelines

Don't:

- Make sharp bends in the cables.
- Run cables in a way that allows water to flow down into the connectors.
- Run the data cables adjacent to radar, transmitter, or large/high current carrying cables or high frequency signal cables.
- Run cables so they interfere with mechanical systems.
- Run cables over sharp edges or burrs.

Do:

- Make drip and service loops.
- Use cable-ties on all cables to keep them secure.
- Solder/crimp and insulate all wiring connections if extending or shortening the cables. Extending cables should be done with suitable crimp connectors or solder and heat shrink. Keep joins as high as possible to minimize the possibility of water immersion.
- Leave room adjacent to connectors to ease the plugging and unplugging of cables.

⚠ WARNING: Before starting the installation, turn the electrical power off. If power is left on or turned on during the installation, fire, electrical shock, or other serious injury may occur. Be sure that the voltage of the power supply is compatible with the unit.

⚠ WARNING: The positive supply wire (red) should always be connected to (+) DC with a fuse or a circuit breaker (closest available to fuse rating). For the recommended fuse rating, refer to the technical specifications section of this document.

Power and power control

The power connector is used for power control and an external alarm.

Power connector details

Unit socket (male)



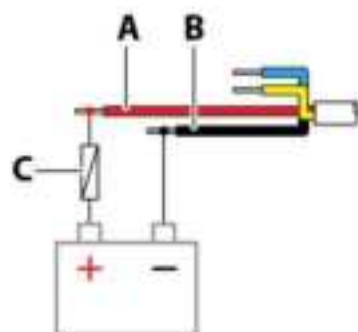
- 1 DC negative
- 2 Power control
- 3 +12 V DC
- 4 External alarm

Power connection

The unit is designed to be powered by 12 V DC.

It is protected against reverse polarity, under voltage and over voltage (for a limited duration).

A fuse or circuit breaker should be fitted to the positive supply. For the recommended fuse rating, refer to the technical specifications section of this document.



- A +12 V DC (red)
- B DC negative (black)
- C Fuse (for the recommended rating, refer to the technical specifications section of this document)

Power control connection

The yellow wire in the power cable can be used to control how the unit is turned on and off.

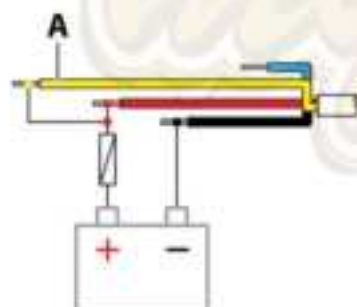
Power controlled by power key

The unit will turn on/off when the power key on the unit is pressed. Leave the yellow power control wire disconnected and tape or heat-shrink the end to prevent shorting.

Power control by supply power

The unit will turn on/off without using the power key when power is applied/removed. Connect the yellow wire to the red wire after the fuse.

→ **Note:** The unit cannot be powered down by the power key, but can be put in to standby mode (the screen backlight turns off).

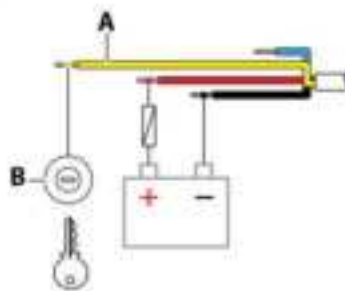


- A Power control (yellow)

Power controlled by ignition

The unit will turn on when the ignition is turned on to start engines.

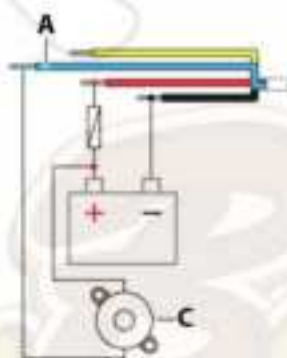
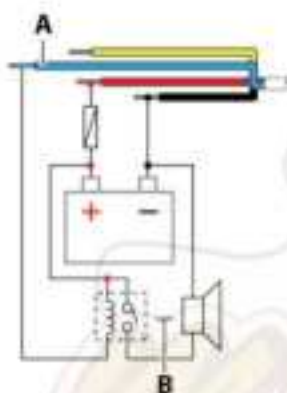
→ **Note:** Engine start batteries and house batteries should have a common ground connection.



- A Power control (yellow)
- B Ignition switch

External alarm

Connect the blue wire on the power cable to an external buzzer or siren to trigger an external alarm.



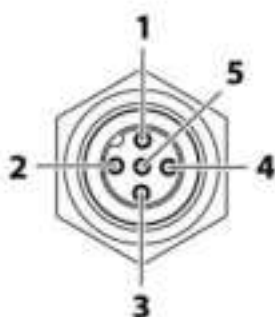
- A External alarm output (blue)
 - B Siren and relay
 - C Buzzer
- **Note:** Use a relay for sirens that draw more than 1 A.

NMEA 2000®

The NMEA 2000® data port allows receiving and sharing of data from various sources.

Connector details

Unit socket (male)



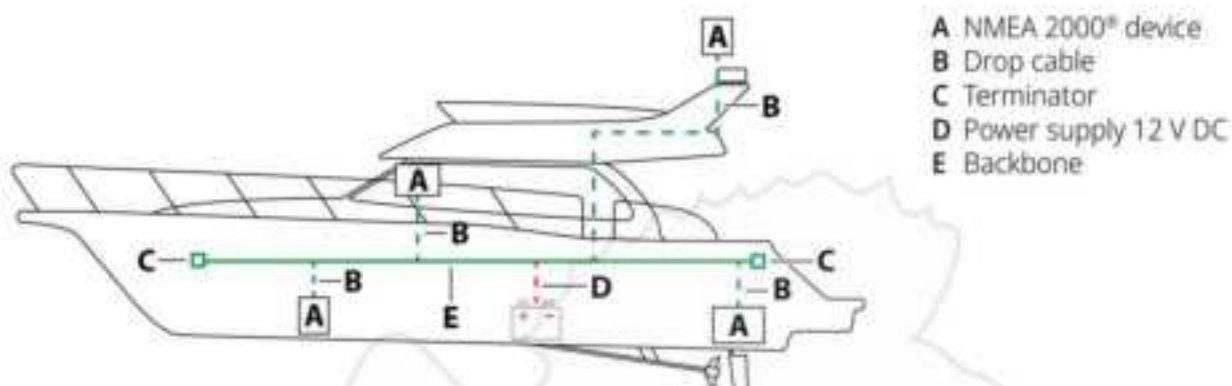
- 1 Shield
- 2 NET-S (+12 V DC)
- 3 NET-C (DC negative)
- 4 NET-H
- 5 NET-L

Plan and install an NMEA 2000® network

An NMEA 2000® network consists of a powered backbone from which drop cables connect to NMEA 2000® devices. The backbone needs to run within 6 m (20 ft) of the locations of all products to be connected, typically in a bow to stern layout.

The following guidelines apply:

- The total length of the backbone should not exceed 100 meters (328 ft).
- A single drop cable has a maximum length of 6 meters (20 ft). The total length of all drop cables combined should not exceed 78 m (256 ft).
- A terminator must be installed at each end of the backbone. The terminator can be a terminator plug or a unit with a built-in terminator.



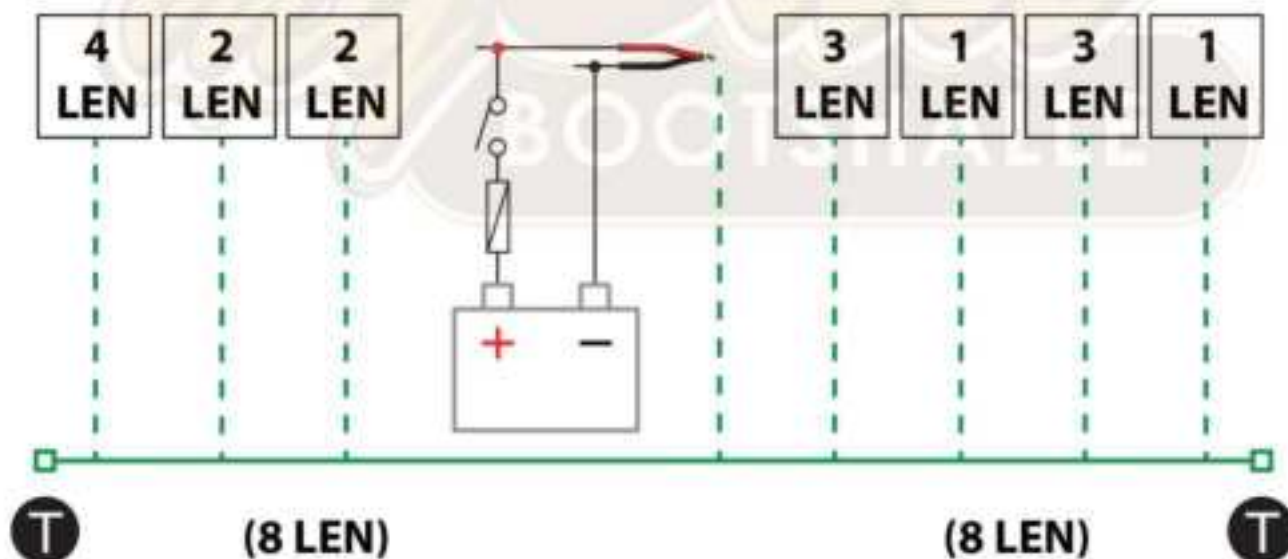
Power the NMEA 2000® network

The network requires its own 12 V DC power supply, protected by a 3 A fuse.

For smaller systems, connect power at any location in the backbone.

For larger systems, connect power at a central point in the backbone to balance the voltage drop of the network. Ensure the load/current draw on each side of the power node is equal.

→ **Note:** 1 LEN (Load Equivalency Number) equals 50 mA current draw.



→ **Note:** Do not connect the NMEA 2000® power cable to the same terminals as the engine start batteries, autopilot computer, bow thruster or other high-current devices.

USB port

The 9", 12", and Ultrawide display units have a USB-A port that can be used to connect a:

- Storage device or
- Card reader

→ **Note:** USB devices should be standard PC-compatible hardware.

Ethernet

The Ethernet port(s) can be used for data transfer and synchronization of user-created data. It is recommended that each device in the system is connected to the Ethernet network. No special setup is required for establishing an Ethernet network.

Ethernet connector details

Unit socket



- 1 Transmit positive TX+
- 2 Transmit negative TX-
- 3 Receive positive RX+
- 4 Receive negative RX-
- 5 Shield

Ethernet expansion device

Connection of network devices can be made via an Ethernet expansion device. Additional expansion devices can be added to provide the required number of ports.

Echosounder

Supports:

- Sonar / CHIRP Sonar
- DownScan
- SideScan
- Active Imaging/Active Imaging HD/Active Imaging 3-in-1/TotalScan/StructureScan

→ **Note:** A 7-pin transducer cable can be connected to a 9-pin port using a 7-pin to 9-pin adapter cable. However, if the transducer has a paddle wheel speed sensor, the water-speed data will not display on the unit.

Connector details

Unit socket



- | | |
|------------------|------------------|
| 1 Drain/ground | 6 Not applicable |
| 2 Not applicable | 7 Not applicable |
| 3 Not applicable | 8 Temp + |
| 4 Transducer - | 9 Transducer ID |
| 5 Transducer + | |

SUPPORTED DATA

NMEA 2000® PGN (receive)

59392	ISO Acknowledgement
59904	ISO Request
60160	ISO Transport Protocol, Data Transfer
60416	ISO Transport Protocol, Connection M
65240	ISO Commanded Address
60928	ISO Address Claim
126208	ISO Command Group Function
126992	System Time
126996	Product Info
126998	Configuration Information
127233	Man Overboard Notification (MOB)
127237	Heading/Track Control
127245	Rudder
127250	Vessel Heading
127251	Rate of Turn
127252	Heave
127257	Attitude
127258	Magnetic Variation
127488	Engine Parameters, Rapid Update
127489	Engine Parameters, Dynamic
127493	Transmission Parameters, Dynamic
127500	Load Controller Connection State/Control
127501	Binary Status Report
127503	AC Input status
127504	AC Output Status
127505	Fluid Level
127506	DC Detailed Status
127507	Charger Status
127508	Battery Status
127509	Inverter Status

128259	Speed, Water referenced
128267	Water Depth
128275	Distance Log
129025	Position, Rapid Update
129026	COG & SOG, Rapid Update
129029	GNSS Position Data
129033	Time & Date
129038	AIS Class A Position Report
129039	AIS Class B Position Report
129040	AIS Class B Extended Position Report
129041	AIS Aids to Navigation
129283	Cross Track Error
129284	Navigation Data
129539	GNSS DOPs
129540	AIS Class B Extended Position Report
129545	GNSS RAIM Output
129549	DGNSS Corrections
129551	GNSS Differential Correction Receiver Signal
129793	AIS UTC and Date Report
129794	AIS Aids to Navigation
129798	AIS SAR Aircraft Position Report
129801	Cross Track Error
129802	AIS Safety Related Broadcast Message
129283	Cross Track Error
129284	Navigation Data
129539	GNSS DOPs
129540	GNSS Sats in View
129794	AIS Class A Static and Voyage Related Data
129801	AIS Addressed Safety Related Message
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
130060	Label

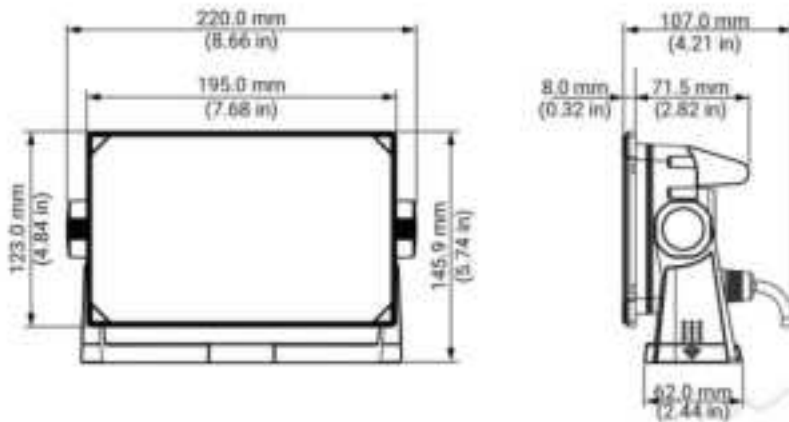
130074	Route and WP Service - WP List - WP Name & Position
130306	Wind Data
130310	Environmental Parameters
130311	Environmental Parameters
130312	Temperature
130313	Humidity
130314	Actual Pressure
130316	Temperature, Extended Range
130569	Entertainment - Current File and Status
130570	Entertainment - Library Data File
130571	Entertainment - Library Data Group
130572	Entertainment - Library Data Search
130573	Entertainment - Supported Source Data
130574	Entertainment - Supported Zone Data
130576	Small Craft Status
130577	Direction Data
130578	Vessel Speed Components
130579	Entertainment - System Configuration Status
130580	Entertainment - System Configuration Status
130581	Entertainment - Zone Configuration Status
130582	Entertainment - Zone Volume Status
130583	Entertainment - Available Audio EQ Presets
130584	Entertainment - Bluetooth® Devices
130585	Entertainment - Bluetooth® Source Status

NMEA 2000® PGN (transmit)

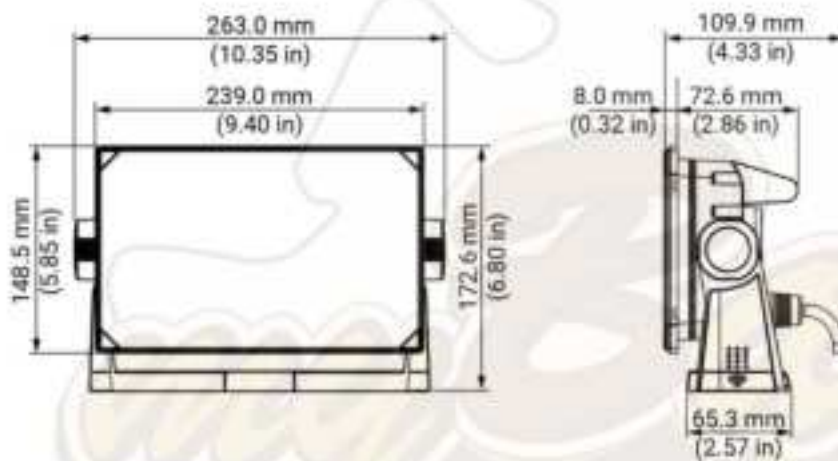
60160	ISO Transport Protocol, Data Transfer
60416	ISO Transport Protocol, Connection M
126208	ISO Command Group Function
126992	System Time
126993	Heartbeat
126996	Product Info
127237	Heading/Track Control
127250	Vessel Heading
127258	Magnetic Variation
127502	Switch Bank Control
128259	Speed, Water referenced
128267	Water Depth
128275	Distance Log
129025	Position, Rapid Update
129026	COG & SOG, Rapid Update
129029	GNSS Position Data
129283	Cross Track Error
129285	Navigation - Route/WP Information
129284	Navigation Data
129285	Route/Waypoint Data
129539	GNSS DOPs
129540	GNSS Sats in View
130074	Route and WP Service - WP List - WP Name & Position
130306	Wind Data
130310	Environmental Parameters
130311	Environmental Parameters
130312	Temperature
130577	Direction Data
130578	Vessel Speed Components

DIMENSIONS

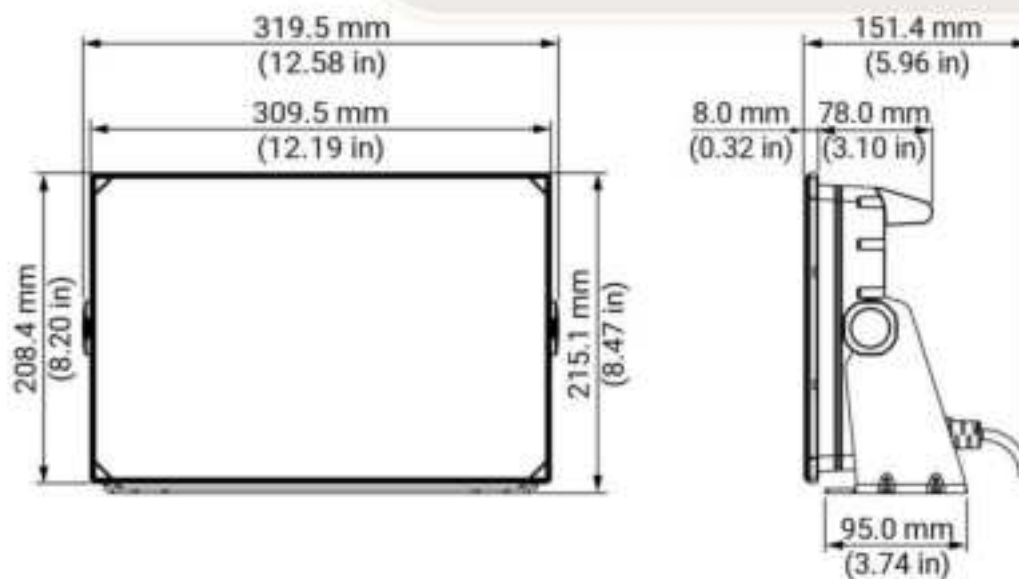
7" unit



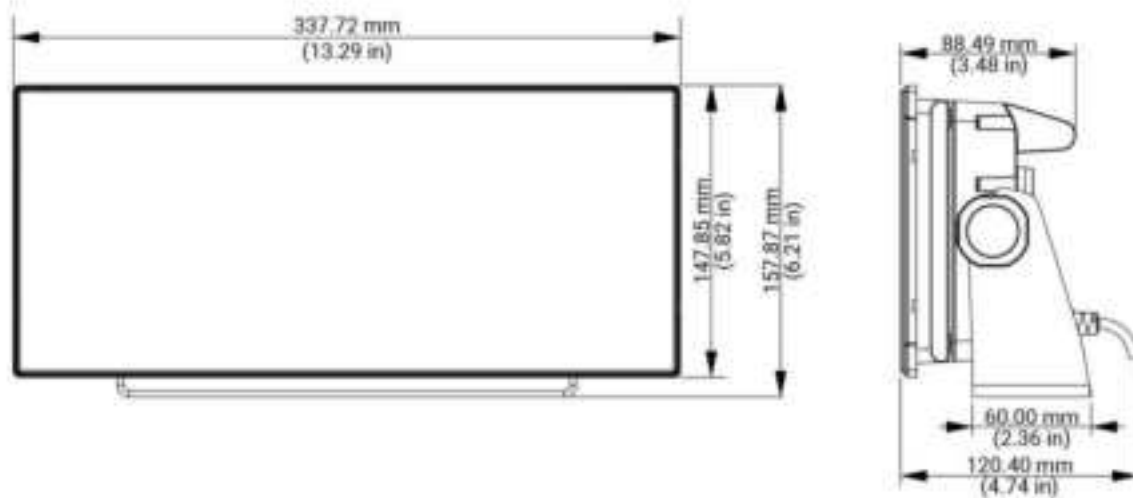
9" unit



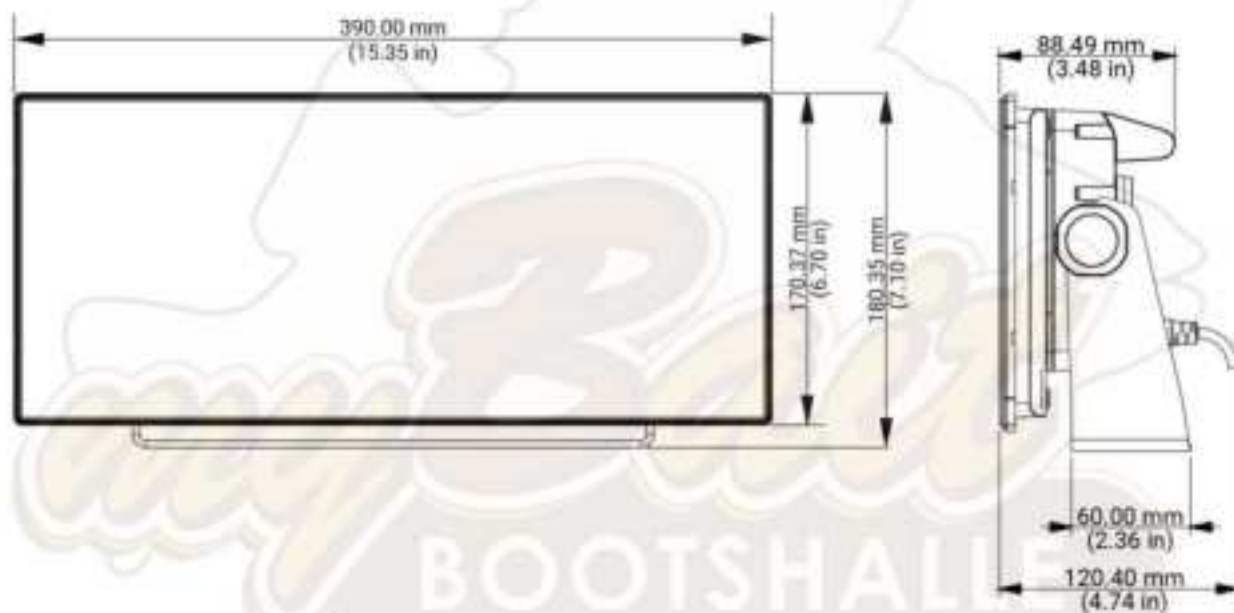
12" unit



12" Ultrawide unit



15" Ultrawide unit



TECHNICAL SPECIFICATIONS

Display	7"	9"	12"	12" UW	15" UW
Resolution (px)	1024 x 600	1280 x 720	1280 x 800	1920 x 720	1920 x 720
Brightness	>1000 nits				
Touchscreen	Full touchscreen (multi-touch)				
Viewing angles in degrees <small>(typical value at contrast ratio = 10)</small>	85° (top, bottom, left, and right)				
Electrical					
Supply voltage	12 V DC (10 - 17 V DC min - max)				
Recommended fuse rating	2 A	5 A		3 A	
Maximum power consumption	11.5 W (833 mA at 13.8 V)	18.8 W (1362 mA at 13.8 V)	26.2 W (1897 mA at 13.8 V)	19.7 W (1427 mA at 13.8 V)	28.3 W (2050 mA at 13.8 V)
Protection	Reverse polarity and over-voltage (max. 18 V)				
Environmental					
Operating temperature range	-15°C to 55°C (5°F to 131°F)				
Storage temperature	-20°C to 60°C (-4°F to 140°F)				
Waterproof rating	IPX6 and IPX7				
Shock and vibration	100,000 cycles of 20 G				
Interface and connectivity					
GPS	10 Hz high speed update (internal) WASS, MSAS, EGNOS, GLONASS				
Wi-Fi®	IEEE 802.11b/g/n				
Ethernet/radar	1 port (5-pin connector)				
Echosounder	1 port (9-pin connector)				
NMEA 2000®	1 port (Micro-C)				
Data card slot	1 (microSD®, SDHC®)				
USB	n/a	1 port (USB-A) Output: 5 V DC, 1.5 A			
Physical					
Weight (display only)	0.8 kg (1.7 lbs)	1.2 kg (2.6 lbs)	2.2 kg (4.9 lbs)	1.5 kg (3.3 lbs)	1.9 kg (4.2 lbs)
Compass safe distance	65 cm (2.1 ft)				

