SIMRAD

NSX™

INSTALLATION MANUAL

ENGLISH

Software version: 1.1.170

www.simrad-yachting.com

CONTENTS

Disclaimer

⚠ **Warning: Refer to important safety information in the user app guides, product documentation and review all warnings, limitations, and disclaimers before using this product.**

This product is not a substitute for proper training and prudent seamanship. It is the owner's sole responsibility to install and use the equipment in a manner that will not cause accidents, personal injury or property damage. The user of this product is solely responsible for observing maritime safety practices.

Navigational features that appear in this guide are not a substitute for proper training and prudent seamanship. They do not replace a human navigator and SHOULD NOT be relied on as a sole or primary source of navigation. It is the operator's sole responsibility to use more than one navigational methods to ensure the route suggested by the system is safe.

NAVICO HOLDING AS AND ITS SUBSIDIARIES, BRANCHES AND AFFILIATES DISCLAIM ALL LIABILITY FOR ANY USE OF THIS PRODUCT IN A WAY THAT MAY CAUSE ACCIDENTS, DAMAGE OR THAT MAY VIOLATE THE LAW.

This manual represents the product as at the time of printing. Navico Holding AS and its subsidiaries, branches and affiliates reserve the right to make changes to the product and/or specifications at any time without notice. Please contact your nearest distributor if you require any further assistance.

Governing language

This statement, any instruction manuals, user guides and other information relating to the product (Documentation) may be translated to, or has been translated from, another language (Translation).

In the event of any conflict between any Translation of the Documentation, the English language version of the Documentation will be the official version of the Documentation.

Copyright

Trademarks

Compliance statements

Declarations

The relevant declarations of conformity are available in the product's section at the following website: www.simrad-yachting.com.

United Kingdom

Simrad® NSX complies with UKCA under The Radio Equipment Regulations 2017.

Europe

Navico declare under our sole responsibility that the product conforms with the requirements of CE under RED 2014/53/EU.

United States of America

Navico declare under our sole responsibility that the product conforms with the requirements of Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

⚠ **Warning: The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.**

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that of the receiver is connected.
- Consult the dealer or an experienced technician for help.

ISED Canada

This device complies with ISED (Innovation, Science and Economic Development) Canada's license-exempt RSSs. Operation is subject to the following two conditions: (1) This device may not cause interference; and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

La traduction française de ce document est disponible sur le site Web du produit.

Australia and New Zealand

Navico declare under our sole responsibility that the product conforms with the requirements of:

- Level 2 devices of the Radiocommunications (Electromagnetic Compatibility) standard 2017.
- Radiocommunications (Short Range Devices) Standards 2021.

Warranty

The warranty card is supplied as a separate document. In case of any queries, refer to the brand website of your unit or system: www.simrad-yachting.com

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.

About this manual

Product features

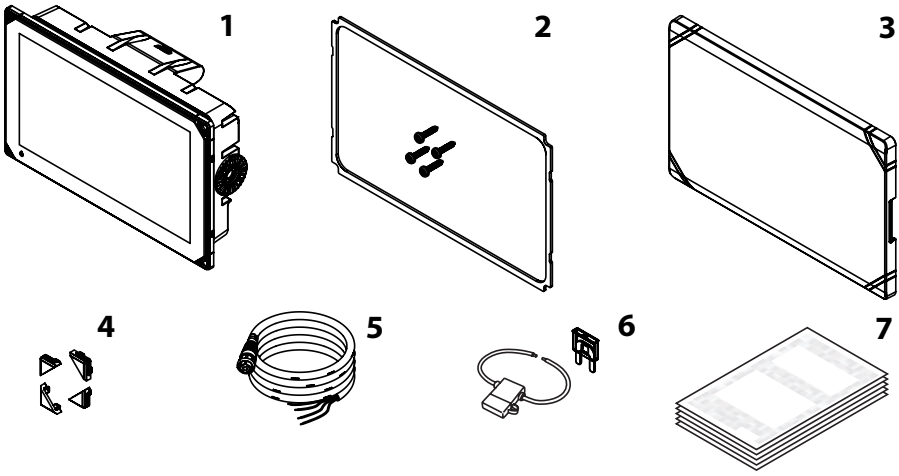
Features described and illustrated in this guide may vary from your display unit due to continuous development of the software.

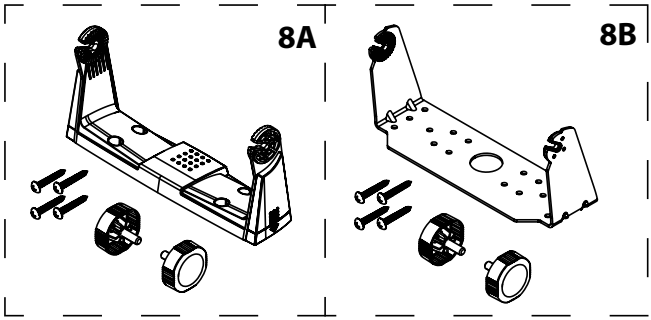
Document version 002

For the latest version of this document in supported languages, use your mobile device to scan the QR code below or visit: www.simrad-yachting.com/downloads/nsx

INTRODUCTION

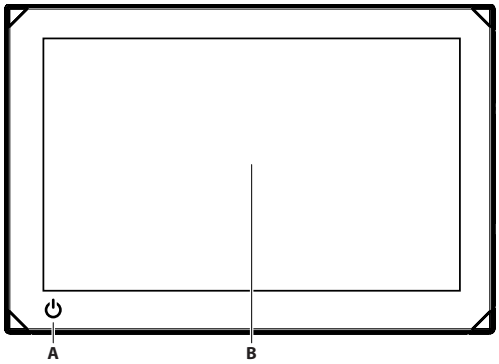
Parts included





1	Display unit
2	Panel mounting kit
3	Sun cover
4	Corner clips
5	Power cable
6	Fuseholder and fuse
7	Documentation package
8A	U-bracket mounting kit - 7″ and 9″ units
8B	U-bracket mounting kit - 12″ unit

Front controls



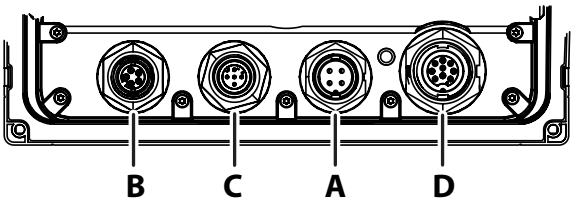
A Power key

- 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.

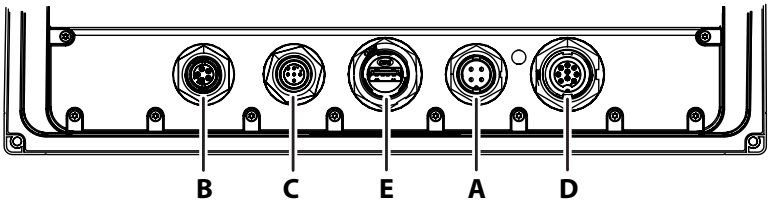
B Touchscreen

Connectors

7” unit

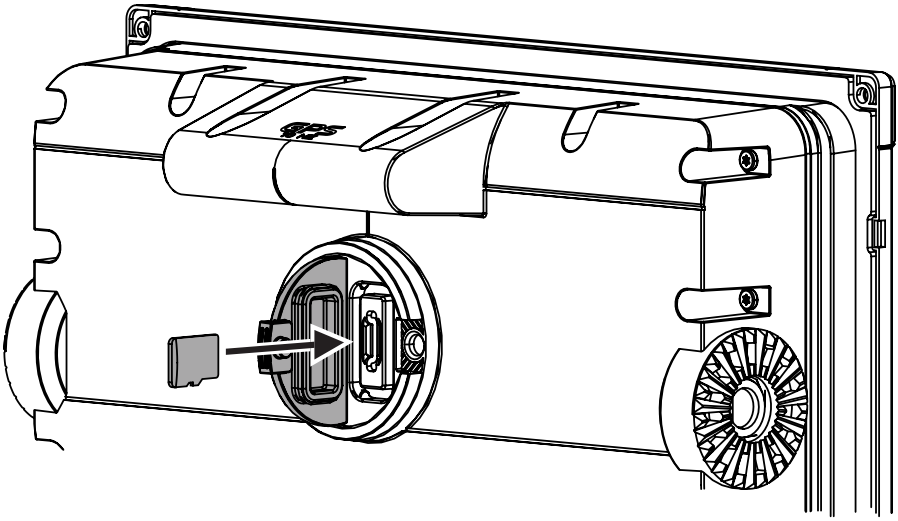


9” and 12” units



A Power and power control (4-pin connector)
B Ethernet (5-pin connector)
C NMEA 2000® (Micro-C connector)
D Echosounder (9-pin connector)
E 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 to the appropriate Electromagnetic Compatibility (EMC) regulations. To ensure that 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.

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 structure might affect Wi-Fi® performance.

The following guidelines apply:

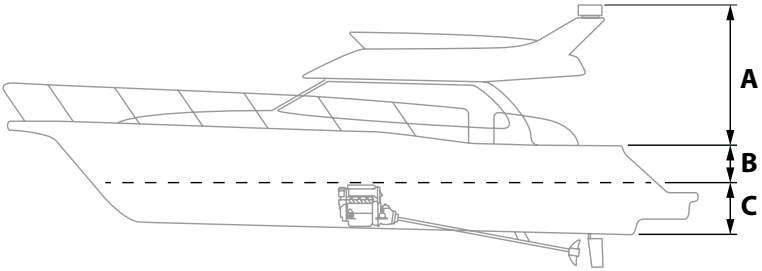
- Select a location where there is a clear, direct line of sight between Wi-Fi® connected units.
- Keep the distance between Wi-Fi® units as short as possible.
- Mount the unit at least 1 m (3 ft) away from equipment that might generate interference.

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 might 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

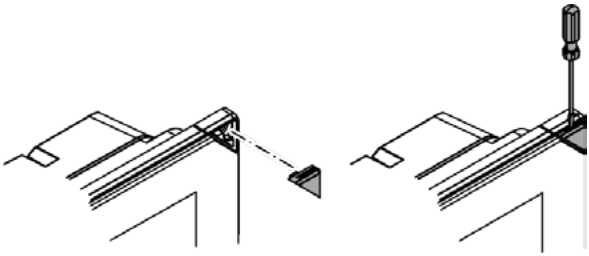
C Not recommended location

➔ *Note: Consider the lateral swinging if mounting the GPS sensor high above the 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



Panel mounting

Refer to the separate mounting template for panel mounting instructions.

U-bracket mounting

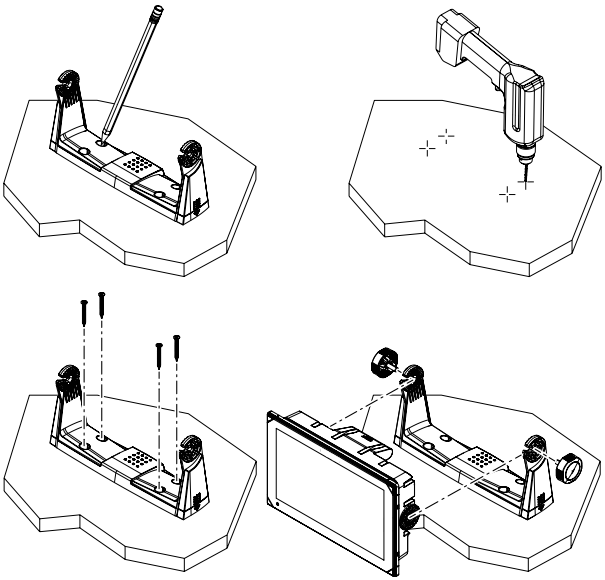
4 Place the bracket in the desired mounting location. Ensure that the chosen location has enough height to accommodate the unit fitted in the bracket, and allows tilting of the unit. Adequate space is also required on both sides to allow tightening and loosening of the knobs.

5 Mark the screw locations using the bracket as a template, and drill pilot holes.

6 Screw down the bracket using fasteners that are suitable for the material you are mounting the bracket on.

7 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 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.

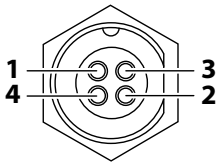
⚠ Warning: The positive supply wire (red) should always be connected to (+) DC with a fuse or a circuit breaker (closest available to fuse rating). For the recommended fuse rating, refer to the Specifications section of this manual.

Power and power control

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

Power connector details

Unit socket (male)



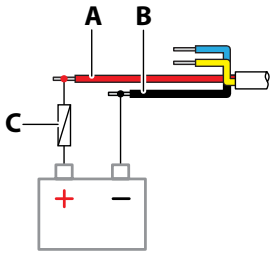
1 DC negative
2 Power control
3 + 12 V DC
4 External alarm

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 **Specifications** section of this manual.



A + 12 V DC (Red)

B DC negative (Black)

C Fuse
(for the recommended rating, refer to the Specifications section of this manual)

Power control connection

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

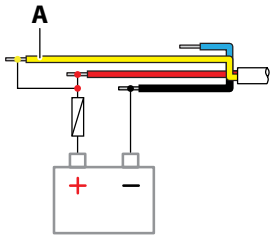
Power controlled by power key

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).*

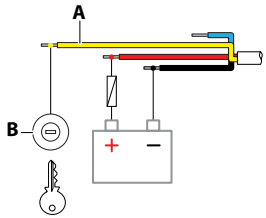


A Power control wire (Yellow)

Power controlled by ignition

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

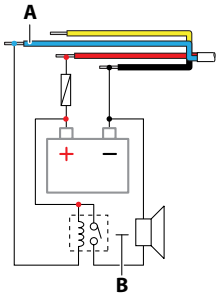
→ *Note: Engine start batteries and house batteries should have a common ground connection.*

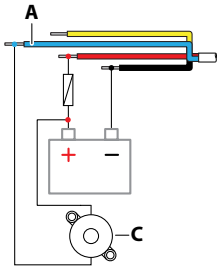


A Power control wire (Yellow)
B Ignition switch

External alarm

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





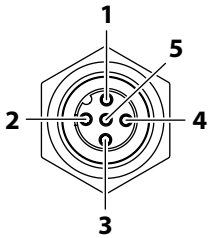
A External alarm output (Blue)
B Siren and relay
C Buzzer
→ *Note: Use a relay for sirens that draw more than 1 A.*

NMEA 2000®

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

Connector details

Unit socket (male)



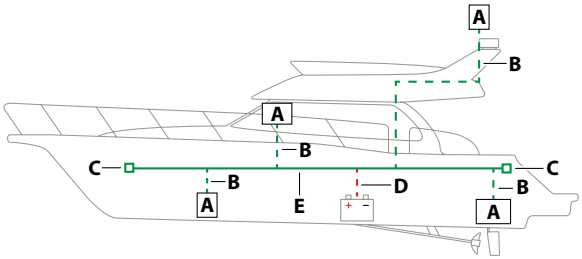
1 Shield
2 NET-S (+ 12 V DC)
3 NET-C (DC negative)
4 NET-H
5 NET-L

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 meters (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.



A NMEA 2000® device
B Drop cable
C Terminator
D Power supply
E Backbone

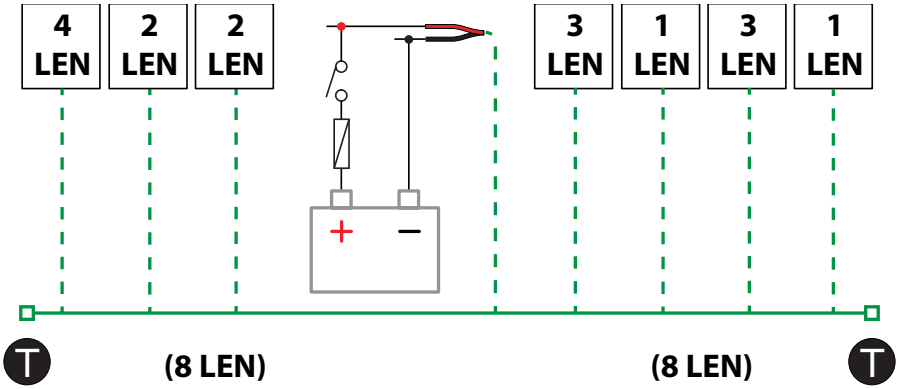
Power the NMEA 2000® network

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. Make the installation such that 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

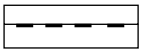
The USB-A port can be used to connect a:

- Storage device
- Card reader

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

USB connector details

Unit socket (female) - Standard USB type-A.

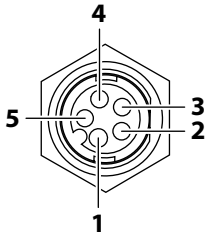


Ethernet

The Ethernet port(s) can be used for transfer of data 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 (female)



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

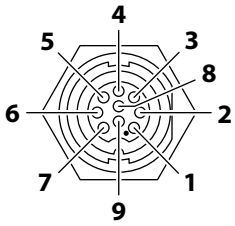
Supports:

- Sonar / CHIRP Sonar
- DownScan
- SideScan
- Active Imaging/Active Imaging 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 adaptor 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 (female)



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

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

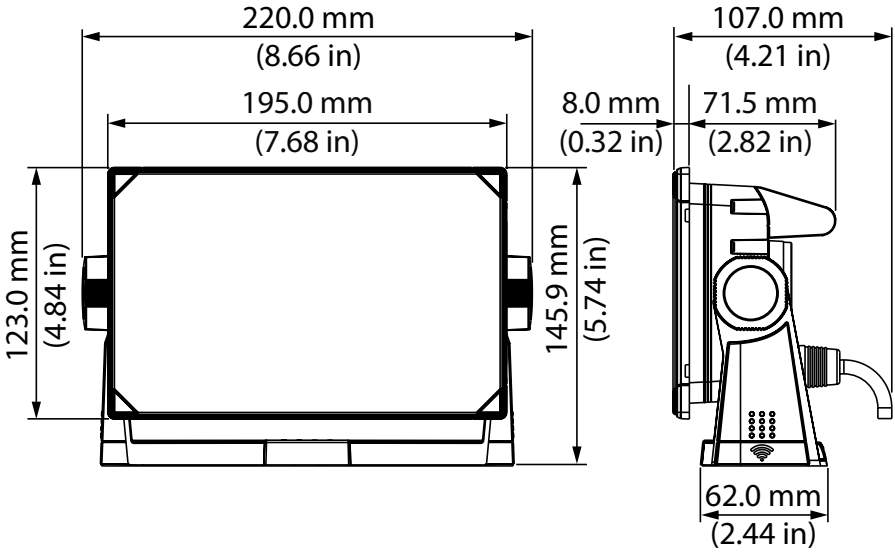
129809	AIS Class B “CS” Static Data Report, Part A
129810	AIS Class B “CS” Static Data Report, Part B
130060	Label
130074	Route and WP Service - WP List - WP Name & Position
130306	Wind Data
130310	Environmental Parameters
130311	Environmental Parameters
130312	Temperature
130313	Humidity
130314	Actual 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)

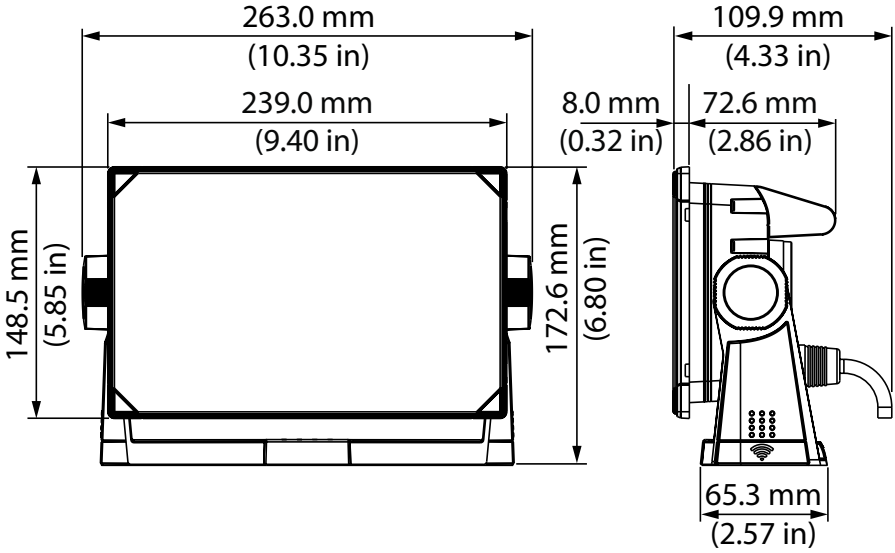
60160	ISO Transport Protocol, Data Transfer
60416	ISO Transport Protocol, Connection M
126208	ISO Command Group Function
126992	System Time
126993	Heartbeat
126996	Product Info
127237	Heading/Track Control
127250	Vessel Heading
127258	Magnetic Variation
127502	Switch Bank Control
128259	Speed, Water 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

DIMENSIONAL DRAWINGS

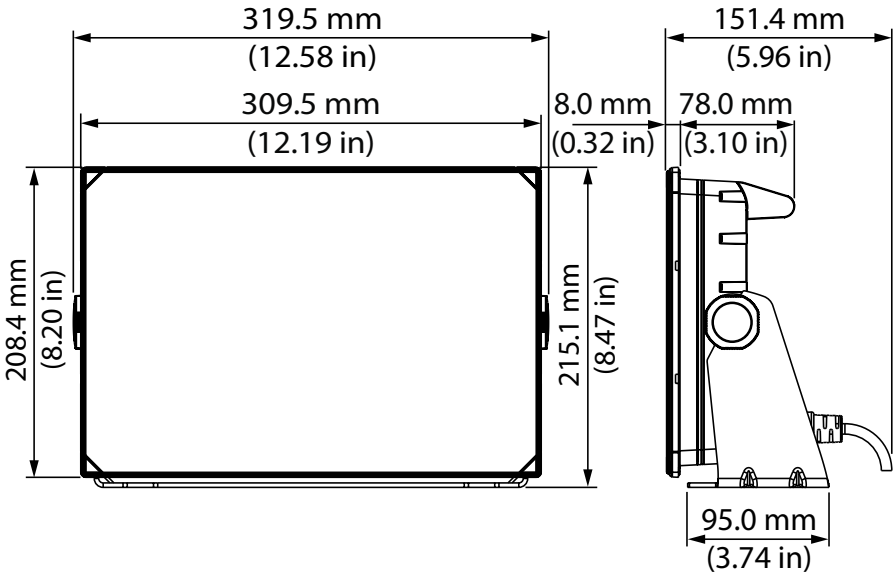
7” unit



9” unit



12” unit



SPECIFICATIONS

Display		
Resolution	7” unit 9” unit 12” unit	1024 x 600 px 1280 x 720 px 1280 x 800 px
Brightness		>1200 nits
Touch screen		Full touch screen (multi-touch)
Viewing angles in degrees (typical value at contrast ratio = 10)		85° (top, bottom, left, and right)
Electrical		
Supply voltage		12 V DC (10 - 17 V DC min - max)
Recommended fuse rating	7” unit 9” and 12” unit	2 A 3 A
Protection		Protected against reverse polarity and temporary over-voltage to 18 V
Power consumption - max	7” unit 9” unit 12” unit	11.5 W (830 mA at 13.8 V) 18.8 W (1360 mA at 13.8 V) 29.7 W (2150 mA at 13.8 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
Humidity		IEC 60945 Damp heat 66°C (150°F) at 95% relative (18 hr)
Shock and vibration		100 000 cycles of 20 G
Interface and connectivity		
GPS		10 Hz high speed update (internal) WASS, MSAS, EGNOS, GLONASS
Bluetooth®		Bluetooth® 4.0 with support for Bluetooth® Classic
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	9″ and 12″ unit	1 port (USB A) Output: 5 V DC, 1.5 A
Physical		
Weight (display only)	7″ unit 9″ unit 12″ unit	0.8 kg (1.7 lbs) 1.2 kg (2.6 lbs) 2.2 kg (4.9 lbs)
Compass safe distance		50 cm (1.7 ft)

www.simrad-yachting.com