

LOWRANCE

ELITE Ti

Installation Manual

ENGLISH



Preface

Disclaimer

As Navico is continuously improving this product, we retain the right to make changes to the product at any time which may not be reflected in this version of the manual. Please contact your nearest distributor if you require any further assistance.

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 safe boating practices.

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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 specifications without notice.

Copyright

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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: lowrance.com.

Regulatory statements

This equipment is intended for use in international waters as well as coastal sea areas administered by the USA, and countries of the E.U. and E.E.A.

This equipment complies with:

- CE under 2014/53/EU Directive
- The requirements of level 2 devices of the Radio communications (Electromagnetic Compatibility) standard 2008
- 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.

The relevant Declaration of conformity is available on the following website: lowrance.com.

Industry Canada

IC RSS-GEN, Sec 7.1.3 Warning Statement- (Required for license exempt devices)

This device complies with Industry Canada license-exempt RSS standard(s). 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.

Le présent appareil est conforme aux CNR d'Industrie

Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes: (1)

l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de

l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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
- Consult the dealer or an experienced technician for help

Countries of intended use in the EU

AT - Austria
BE - Belgium
BG - Bulgaria
CY - Cyprus
CZ - Czech Republic
DK - Denmark
EE - Estonia
FI - Finland
FR - France
DE - Germany
GR - Greece
HU - Hungary
IS - Iceland
IE - Ireland
IT - Italy
LV - Latvia
LI - Liechtenstein
LT - Lithuania
LU - Luxembourg
MT - Malta
NL - Netherlands
NO - Norway
PL - Poland
PT - Portugal
RO - Romania
SK - Slovak Republic

SI - Slovenia
ES - Spain
SE - Sweden
CH - Switzerland
TR - Turkey
UK - United Kingdom

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Navico product references

This manual refers to the following Navico products:

- Broadband Sounder™ (Broadband Sounder)
- DownScan Overlay™ (Overlay)
- GoFree™ (GoFree)
- INSIGHT GENESIS® (Insight Genesis)
- StructureMap™ (StructureMap)
- StructureScan® (StructureScan)
- StructureScan® HD (StructureScan HD)

About this manual

This manual is a reference guide for installing the ELITE Ti.

Important text that requires special attention from the reader is emphasized as follows:

→ **Note:** Used to draw the reader's attention to a comment or some important information.

⚠ Warning: Used when it is necessary to warn personnel that they should proceed carefully to prevent risk of injury and/or damage to equipment/personnel.

Contents

- 11 Check the contents**
- 12 Overview**
 - 12 Front controls
 - 13 Rear connections
 - 14 Card reader
- 16 Installation**
 - 16 Mounting location
 - 17 Quick release bracket mounting
 - 19 Panel mount
- 22 Mounting the transducer**
 - 22 Research
 - 22 Select a transducer location
 - 24 Attaching the transducer
 - 25 Adjusting the transducer
- 26 Wiring**
 - 26 Guidelines
 - 27 Power connection
 - 27 Transducer connection
 - 28 NMEA 2000 backbone
 - 30 NMEA 0183 device connection
- 31 Software Setup**
 - 31 First time startup
 - 31 Time and Date
 - 32 Data source selection
 - 34 Device list
 - 34 Diagnostics
 - 36 Damping
 - 36 Sonar setup
 - 38 StructureScan
 - 38 Autopilot setup
 - 38 Fuel setup
 - 41 Wireless setup
 - 44 Bluetooth wireless technology

- 44 NMEA 2000 setup
- 45 NMEA 0183 setup
- 46 Touchscreen calibration
- 47 Software updates and data backup

50 Accessories

- 50 NMEA 2000
- 50 ELITE Ti accessories
- 51 Sonar accessories

52 Supported data

- 52 NMEA 2000 compliant PGN List
- 56 NMEA 0183 supported sentences

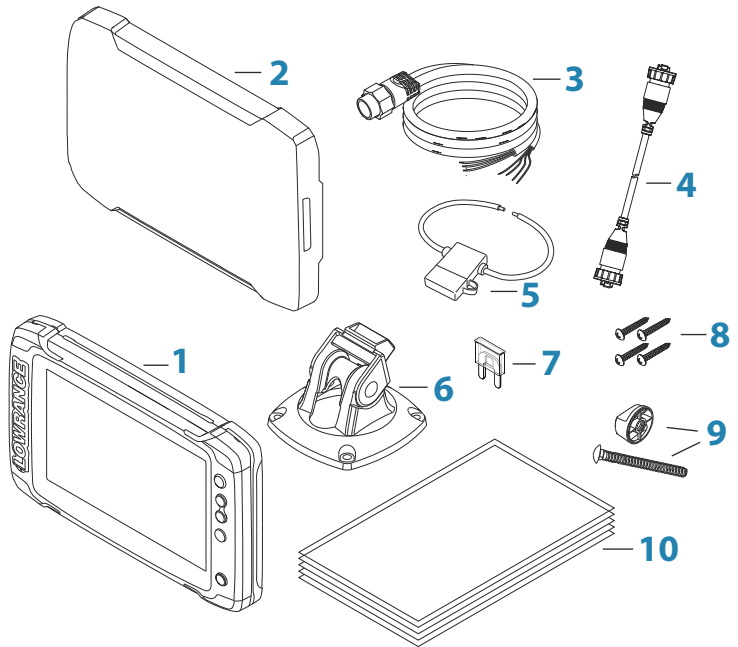
58 Specifications

60 Dimensional drawings

- 60 ELITE-5Ti Dimensional drawings
- 60 ELITE-7Ti Dimensional drawings

1

Check the contents



- 1 ELITE Ti
- 2 Sun cover
- 3 Power and NMEA 0183 cable
- 4 7-pin to 9-pin transducer adapter cable. Included only with units that do not include transducers.
- 5 Fuse holder (ATC blade)
- 6 Quick release mounting bracket
- 7 Fuse (3 amp)
- 8 Quick release mounting bracket screws (4 x #10 x 3/4 PN HD SS screws)
- 9 Bracket locking bolt and knob. (ELITE-7Ti only)
- 10 Documentation pack

2

Overview

The unit has a built-in CHIRP/Broadband and StructureScan sonar. The ELITE-7Ti can network over NMEA 2000, this allows access to sensor data.

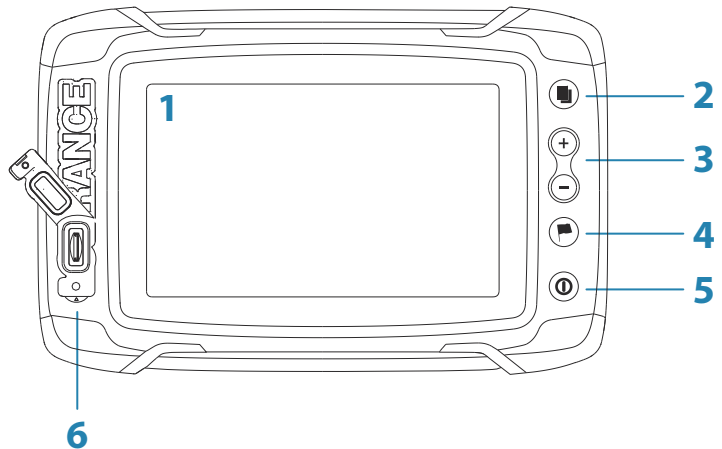
The ELITE-5Ti and ELITE-7Ti can send and receive data via NMEA 0183.

The unit has built-in high speed GPS receiver (10Hz) and supports Insight charts from Navico including Insight Genesis. The system also supports charts from Navionics and Jeppesen as well as content created by a variety of third party mapping providers in the AT5 format. For a full selection of available charts, visit gofreeshop.com, c-map.jeppesen.com, or navionics.com.

The unit may be mounted to the vessel with the supplied mounting bracket, or panel mounted on the dash.

The unit is intended for 12 V DC operation and will accept the moderate fluctuations commonly seen in DC systems.

Front controls

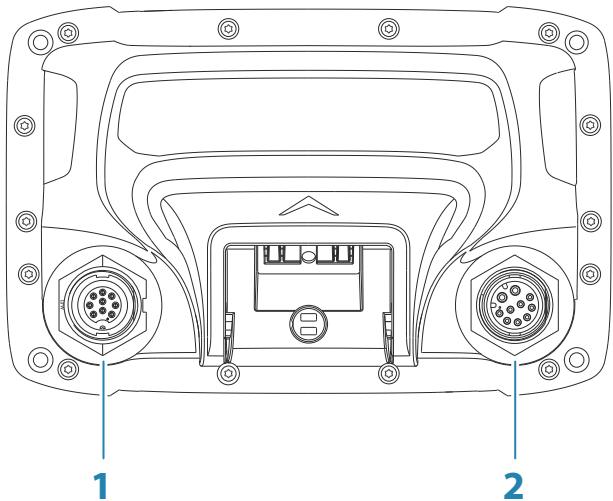


- 1 Touch screen
- 2 Pages
- 3 Zoom out / Zoom in (combined press = MOB)

- 4 **New waypoint (long press = Find dialogue)**
- 5 **Power button**
Press and hold to turn the unit ON/OFF.
Press once to display the System Controls dialog.
- 6 **Card reader** (behind logo)

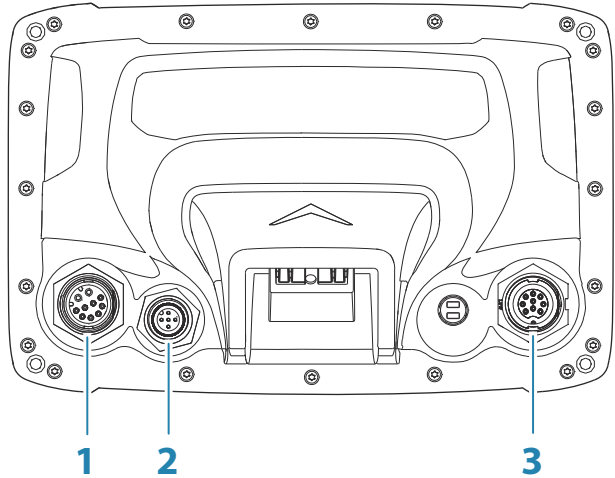
Rear connections

ELITE-5Ti rear connections



- 1 **Sonar** - CHIRP, Broadband, DownScan and SideScan imaging
- 2 **Power** (12 V supply input) and **NMEA 0183**

ELITE-7Ti rear connections

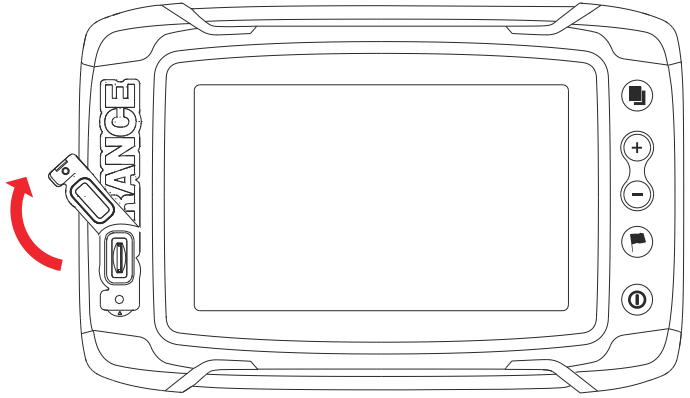


- 1 Power** (12 V supply input) and **NMEA 0183**
- 2 NMEA 2000** - data input / output
- 3 Sonar** - CHIRP, Broadband, DownScan and SideScan imaging

Card reader

Used for attaching a microSD memory card. The memory card can be used for detailed chart data, software updates, transfer of user data, and system backup.

The card reader door is opened by flipping back the logo and pulling the rubber cover open.



The card reader door should always be securely shut immediately after inserting or removing a card, in order to prevent possible water ingress.

3

Installation

Mounting location

Choose the mounting locations carefully before you drill or cut. The unit should be mounted so that the operator can easily use the controls and clearly see the screen. Be sure to leave a direct path for all of the cables. The unit has a high-contrast screen, and is viewable in direct sunlight, but for best results install the unit out of direct sunlight. The chosen location should have minimal glare from windows or bright objects.

Ensure that any holes cut are in a safe position and will not weaken the boat's structure. If in doubt, consult a qualified boat builder, or marine electronics installer.

Before cutting a hole in a panel, make sure that there are no hidden electrical wires or other parts behind the panel.

Check that it is possible to route cables to the intended mounting location.

Leave sufficient clearance to connect all relevant cables.

Do not mount any part where it can be used as a hand hold, where it might be submerged, or where it will interfere with the operation, launching, or retrieving of the boat.

The mounting location may affect the internal GPS receiver. Test the unit in its intended location to ensure satisfactory reception. An external GPS source can be added to overcome poor reception areas.

Choose an area where the unit will not be subjected to excessive vibration, or heat.

Good ventilation is required.

⚠ Warning: Inadequate ventilation may cause the unit to overheat. The unit is designed to operate in temperatures from -15°C to $+55^{\circ}\text{C}$ ($+5^{\circ}\text{F}$ to $+131^{\circ}\text{F}$).

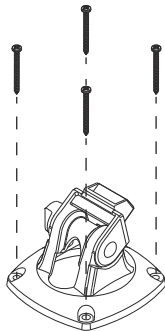
For overall width and height requirements, refer to "*Dimensional drawings*" on page 60.

Choose a location that will not expose the unit to conditions that exceed the IP rating - refer to "*Specifications*" on page 58.

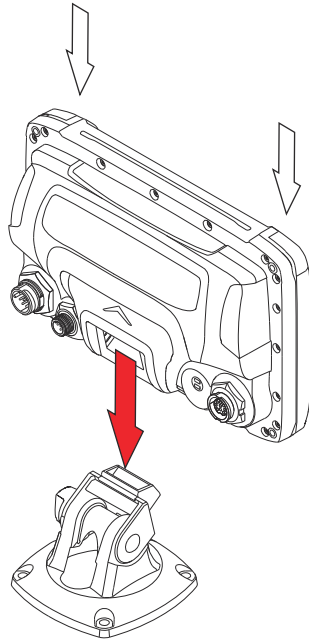
▲ Warning: When installing, ensure appropriate safety equipment is used. For example, ear muffs, protective glasses, gloves and a dust mask. Power tools may exceed safe noise levels, and can cast off dangerous projectiles. The dust from many materials commonly used in boat construction may cause irritation or damage to eyes, skin, and lungs.

Quick release bracket mounting

1. Place the bracket in the desired mounting location. Ensure that the chosen location has enough height to accommodate the unit fitted in the bracket, allows tilting of the unit and connecting cables in the back.
 - **Note:** Ensure that the chosen location has enough height to accommodate the unit fitted in the bracket, allows tilting of the unit and connecting cables in the back.
2. Mark the screw locations using the bracket as a template, and drill pilot holes.
 - **Note:** Use fasteners suited to the mounting surface material. If the material is too thin for self-tappers, reinforce it, or mount the bracket with machine screws and large washers. Use only 304 or 316 stainless steel fasteners.
3. Screw down the bracket.



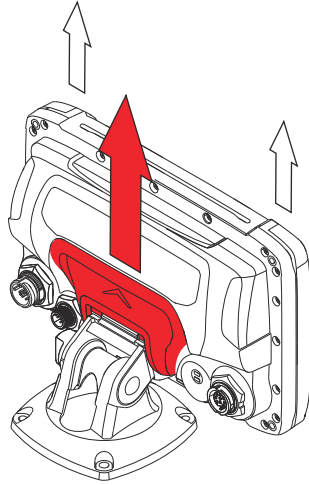
4. Snap the unit to the bracket.



5. Tilt the unit to the desired position angle.
6. For ELITE-7Ti only, set the desired angle and then insert the locking bolt and knob. Tighten to stop angle movement

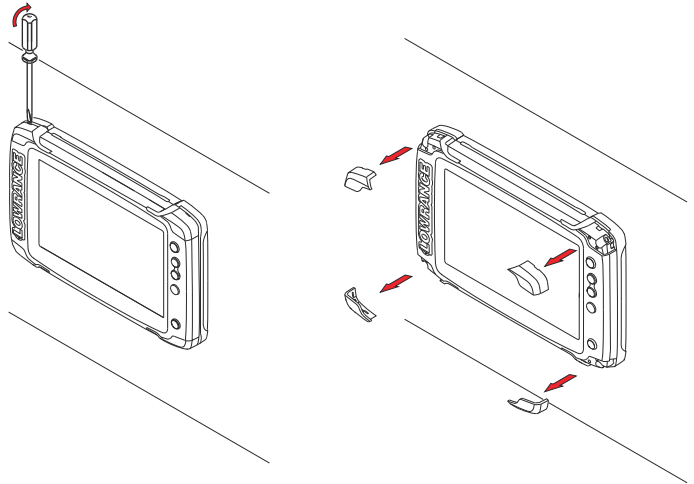
Removing the unit from the quick release bracket

Pull and hold the release handle and then pull the unit from the bracket.

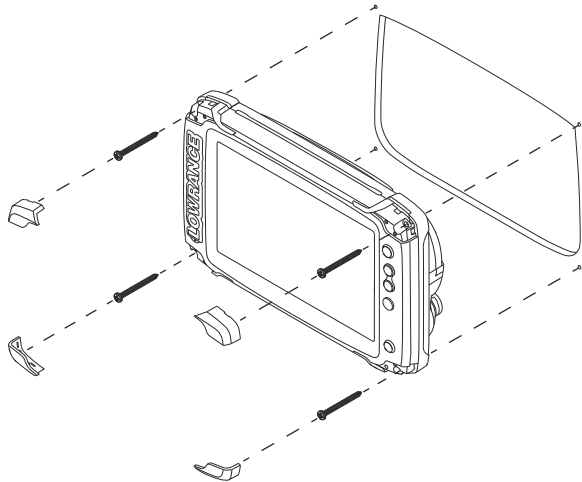


Panel mount

1. Check the Mounting Template for scaling accuracy, using a tape measure or ruler against the ruler printed on the template.
2. Cut away excess paper, and tape down the template. Check that it is correctly aligned to a vertical or horizontal reference. Do not use a bubble level as the vessel might not be level. Adjust where required.
3. Drill all marked pilot holes. For recommended pilot hole size, refer to the Mounting Template.
4. Using an appropriate saw, cut through the template and mounting surface, along the dotted line bordering the shaded center of the template.
5. Using a fingernail or small flat screwdriver, pry off the corner clips at the slotted points located at the top or bottom of each corner clip.



6. Check the fit of the unit, and use a file to remove any remaining obstructions. If water-tightness is required, apply a thin, continuous bead of sealant to the back of the unit prior to final installation. Sealant should be of a 'neutral cure' type to prevent damage to the plastics.
7. Secure the unit with screws (not supplied). For recommended screw size and type, refer to the mounting template. Once screws are fully tightened, ensure there is complete contact with the mounting surface.
8. Press the four corner clips back into position.



4

Mounting the transducer

This chapter provides instructions for mounting a transom mount skimmer transducer. Separate instructions for installing the StructureScan HD and TotalScan transducers are provided with the transducers.

Transducer location selection and installation are two of the most critical steps in Sonar installation. To function properly the transducer must be in the water at all times, and in a location that has a smooth flow of water while the boat is moving.

▲ Warning: Read all the mounting instructions before drilling or cutting holes in your vessel.

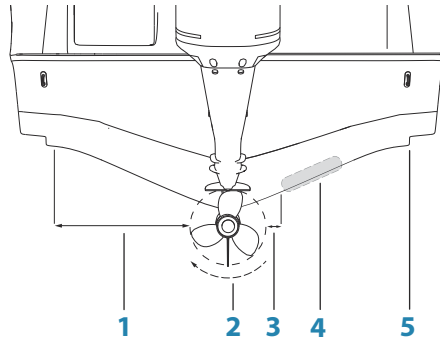
Research

Before starting the installation of the transducer, check the following:

- Find out if the boat builder has a recommended installation location
- Establish the direction of rotation of the propeller(s)
- With the boat traveling at cruising speed, watch the water flow behind the boat to find the area with the smoothest flow (least bubbles)

Select a transducer location

The primary aim is to stay clear of propeller and hull generated turbulence, while mounting the transducer as close to the center of the vessel as possible.

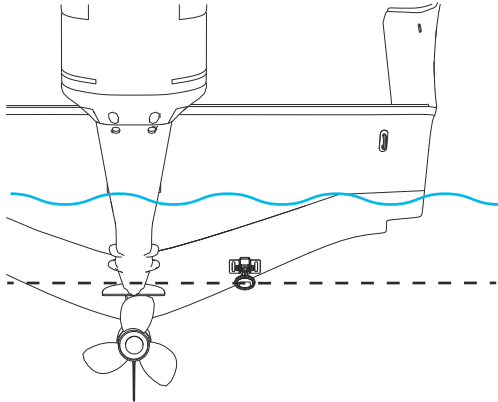


- 1 Avoid mounting within 1 m (3.3') to port (left) of propeller**
- 2 Conventional clockwise propeller rotation**
- 3 Avoid mounting within 7.5 cm (3") to starboard of propeller**
- 4 Best mounting location - undisturbed water flow**
- 5 Planing strake - avoid mounting behind here**

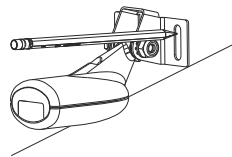
- **Note:** Reverse the distance guides (1 & 3) from propeller where engine is of counterclockwise configuration.
- **Note:** Vessels with strakes or ribs on the hull can create large amounts of turbulence at higher speeds. A good transducer location on these types of boats is between the ribs closest to the engine.
- **Note:** If the transducer is not placed in a smooth flow of water, interference caused by bubbles and turbulence may show onscreen in the form of random lines or dots. The unit could also lose bottom signal when the boat is on plane.
- **Note:** Trim tabs vary in the amount of turbulence they create as they are adjusted, stay clear of these.

Attaching the transducer

The transducer should be installed parallel with the transom's waterline, not the bottom of the boat (deadrise).



- **Note:** Ensure the entire bottom surface of the transducer hangs at least 3 mm (1/8th of an inch) lower than the bottom of the hull.



Hold the transducer with bracket up to the transom of the boat and trace the slotted screw hole locations (two on the 83/200 KHz transducer, and four on the 50/200 KHz transducer). Mark drilling points in the middle of each outline, to allow for transducer height adjustment. Drill pilot holes to suit fasteners.

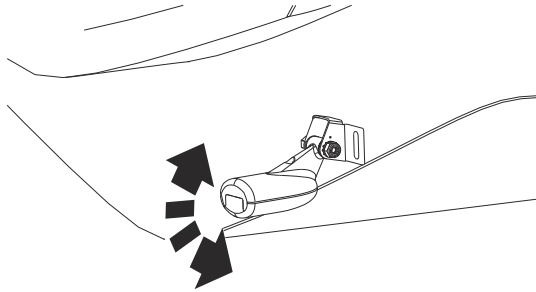
- **Note:** Check that there is nothing on the other side of the mounting surface that may be damaged by drilling.

Attach transducer to transom, using supplied stainless steel fasteners. Drill a 25 mm (1") hole above the waterline, large enough to pass the plug through.

Secure the cable to the hull at regular intervals using cable P clips or saddles and ensure that moving parts such as an outboard motor or boarding ladder cannot snag the cable.

Adjusting the transducer

If the sonar image shows interference lines on the screen when moving, which worsen with speed, it may be possible to eliminate these by adjusting the angle of the transducer.



→ **Note:** A transducer that is tilted too far in either direction does not perform well; missing targets, or losing the bottom at speed.

If performance does not improve with tilting, try adjusting the height of the transducer relative to the transom of the boat. If the transducer is too high it may be seeing cavitation caused by the trailing edge of the transom.

5

Wiring

Guidelines

Don't do this:	Do this:
Don't make sharp bends in the cables.	Do make drip and service loops.
Don't run cables in a way that allows water to flow down into the connectors.	Do cable-tie all cables to keep them secure.
Don't route the data cables in areas adjacent to radar, transmitter, or large current carrying cables.	Do solder/crimp and insulate all wiring connections, if extending or shortening power, NMEA 2000 (ELITE-7Ti only), or NMEA 0183 cables.
	Do leave room adjacent to connectors to ease plugging and unplugging of cables.

⚠ Warning: Before starting the installation, be sure to turn 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 unit has a voltage rating of 12 V DC, it is not suited for use with 24 V DC systems.

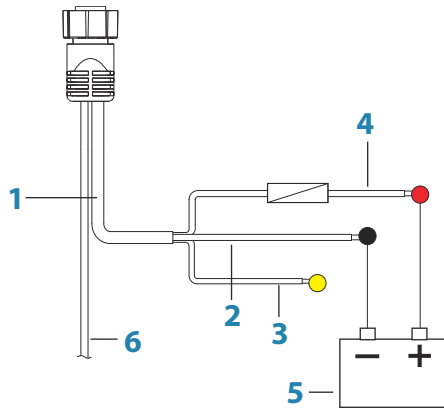
⚠ Warning: The positive supply wire (red) should always be connected to (+) DC with the supplied fuse or a circuit breaker (closest available to fuse rating).

Power connection

The plug of the supplied power cable has two discrete cables exiting from it.

The thickest of the two cables provides power into the system (red and black wires) and a yellow wire which is not used. Leave the yellow wire disconnected and tape or heat-shrink the end to prevent shorting.

The other cable is for connecting to NMEA 0183 devices.



- 1 Power cable
- 2 12 V negative wire (black)
- 3 Not used (yellow)
- 4 12 V positive wire (red) shown with fuse holder installed inline
- 5 Vessel's 12 V DC supply
- 6 NMEA 0183 cable

The unit can be powered on and off using the power button on the front of the unit.

Transducer connection

The unit has internal CHIRP, Broadband, and StructureScan sonar.

Transducers fitted with a 9 pin connector can be plugged directly into the 9 pin port on the back of the unit. For 9 pin port location, refer to "*Rear connections*" on page 13.

- **Note:** The connector attached to the transducer cable is keyed, and can only be inserted in one orientation. Once inserted, turn locking collar to secure.
- **Note:** StructureScan HD, StructureScan 3D and TotalScan transducer installation instructions are included with the transducers.

NMEA 2000 backbone

- **Note:** Only the ELITE-7Ti is equipped with a NMEA 2000 connector. This section does not apply to the Elite-5Ti.

Device connection

The ELITE-7Ti is equipped with an NMEA 2000 data port, which allows the receiving and sharing of a multitude of data from various sources.

Planning and installing a network backbone

The backbone needs to run between the locations of all products to be installed - typically in a bow to stern layout - and be no further than 6 m from a device to be connected.

Choose from the following components to make up the backbone:

- Micro-C cables: 0.6 m (2 ft), 1.8 m (6 ft), 4.5 m (15 ft), and 7.6 m (25 ft) cables.
- T-connector or 4-way connector. Used to connect a drop cable to the backbone.
- Micro-C power cable. Connect to the backbone at a position that is central to the network load using a T-connector or 4-way connector.

Power the network

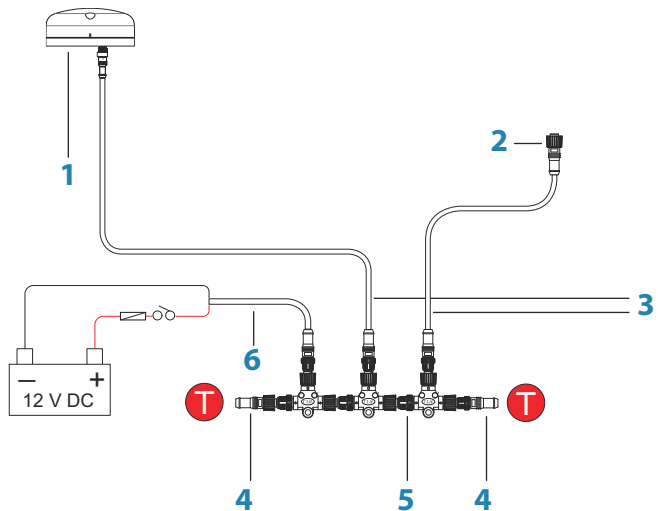
The network requires its own 12 V DC power supply protected by a 3 amp fuse or breaker.

Connect power at any location in the backbone for smaller systems.

For larger systems introduce power at central point in the backbone to “balance” the voltage drop of the network.

- **Note:** If joining to an existing NMEA 2000 network that already has its own power supply, do not make another power connection elsewhere in the network, and ensure the existing network is not powered by 24 V DC.
- **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.

The following drawing demonstrates a typical small network. The backbone is made up of directly interconnected T-connectors.

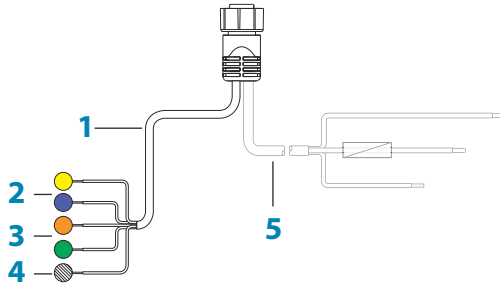


- 1 NMEA 2000 device
- 2 Connector to unit
- 3 Drop-cable, should not exceed 6 m (20 ft)
- 4 Terminators
- 5 Backbone
- 6 Power cable

NMEA 0183 device connection

The unit has a combined power and data - NMEA 0183 serial port, providing both an input and output for NMEA 0183 data. For connection location, refer to "*Rear connections*" on page 13.

The NMEA0183 sentences output can be individually turned on or off. For a complete list of sentences, refer to "*NMEA 0183 supported sentences*" on page 56.



- 1 Data cable (combined in same plug as power cable)
- 2 Transmit (output from this unit): TX_A (yellow), TX_B (blue)
- 3 Receive (input to this unit): RX_A (orange), RX_B (green)
- 4 Ground (shield)
- 5 Power cable

→ **Note:** The majority of NMEA 0183 devices communicate at 4,800 baud. AIS is a common exception, and normally transmits at 38,400 baud.

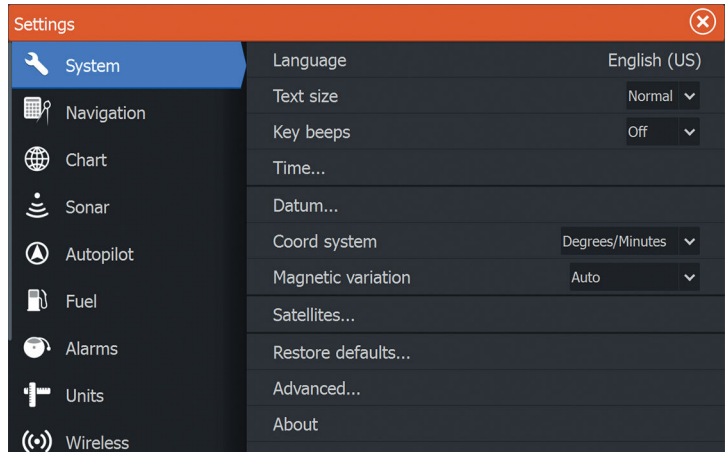
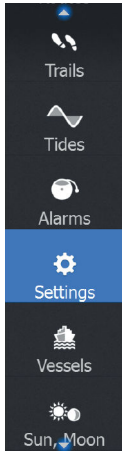
Talkers and Listeners

Do not connect multiple devices outputting data (Talkers) on to any serial input (RX) of the unit. The RS422 protocol is not intended for this type of connection, and data will be corrupted if more than one device transmits simultaneously. The output (TX) however may drive multiple receivers (Listeners). The number of receivers is finite, and depends on the receiving hardware. Typically three devices is possible.

6

Software Setup

This unit requires some initial configuration before use, in order to get the most out of the product. The following sections focus on settings that typically do not require change once configured. User preference settings and operation are covered in the Operator Manual. Selecting the Home button opens the Home page, which has three distinct areas. The scrollable left column of icons is the Tools panel. Select Settings in the Tools panel to open the Settings dialog to access items that require configuration.



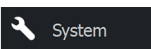
First time startup

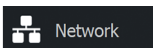
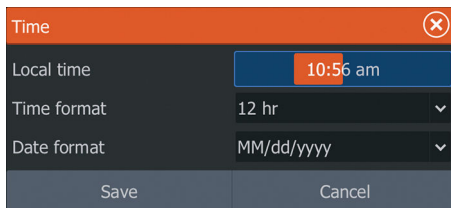
When the unit is started for the first time, or after a factory default, the unit displays a setup wizard. Respond to the setup wizard prompts to select some fundamental setup options.

You can perform further setup using the system settings option and later change settings made with the setup wizard.

Time and Date

Configure time settings to suit vessel location, along with time and date formats.





Data source selection

→ **Note:** If NMEA 0183 is used, complete the NMEA 0183 setup prior to doing source selection. Refer to "*NMEA 0183 setup*" on page 45.

Data sources provide live data to the system.

The data may originate from modules internal to the unit (for example internal GPS or sonar), or external modules connected to the NMEA 2000 or via NMEA 0183 if available on the unit.

When a device is connected to more than one source providing the same data, the user can choose the preferred source. Before commencing with source selection make sure all external devices and the NMEA 2000 backbone are connected and are turned on.

Device name

Assigning a name is useful in systems using more than one device of the same type and size. When viewing data sources or the device list, the assigned name will append the default product name + virtual device function for easy identification.

Auto configure

Auto configure is available on the ELITE-7Ti only.

The Auto configure option will look for all sources connected to the device. If more than one source is available for each data type, selection will be made from an internal priority list. This option will be suitable for the majority of installations.

→ **Note:** Auto data source selection may already have been selected at first time startup, however it should be redone if any new devices have been added to the network since.

Data sources - manual source selection

Manual selection is generally only required where there is more than one source for the same data, and the 'Auto configure' selected source is not the one desired. Pressing the menu key when the desired source is highlighted provides additional options:

Configure device

Configure device is available on the ELITE-7Ti only.

Additional device options can be configured from both the Data source menu or from the Device list. For further information, refer to "*Device list*" on page 34.

Scope

Scope is available on the ELITE-7Ti only.

The active data source under any given category, can be set to be Global or Local.

When a source is set as Global, it will be used by all displays on the network.

When a source is set as Local, it will only be used by the display that selected it as the source.

- **Note:** If changing a display from a Global source to a different Local source, change the Scope setting to Local *before* changing the selected source, otherwise all other displays will be changed over to the new source.
- **Note:** Local and Global data settings apply to the selected data source only. It is not possible to discretely set whether a data source is Global or Local if it is not the active source on the display being operated.

Reset Global/Local

Reset Global and Reset Local are available on the ELITE-7Ti only.

Selecting **Reset Global** runs an Auto data source selection, and overrides all previous manual source selections made on all networked devices.

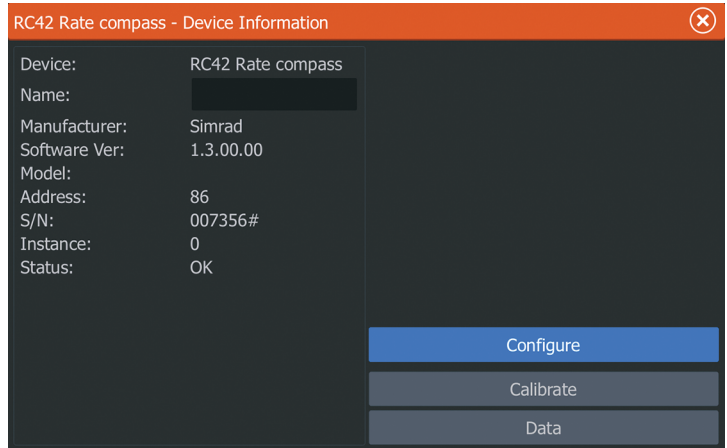
Selecting **Reset Local** reverts all data source selections on the unit being used to the Global source settings available from other networked units.

Device list

Device list is available on the ELITE-7Ti only.

The Device list shows the devices that provide data. This may include a module inside the unit, or any external NMEA 2000 device.

Selecting a device in this list will bring up additional details and actions:



All devices allow allocation of an instance number in the configure option. Set unique instance numbers on any identical devices on the network to allow for the unit to distinguish between them. The data option shows all data being output by the device. Some devices will show additional options specific to the device.

Some devices will show additional option(s) specific to the device - the RC42 illustrated above has a **Calibration** option, to allow easy setup of this device.

→ **Note:** Setting the instance number on a 3rd party product is typically not possible.

Diagnostics

Diagnostics are available on the ELITE-7Ti only.

The NMEA 2000 tab on the diagnostics page can provide information useful for identifying an issue with the network.

→ **Note:** The following information may not always indicate an issue that can be simply resolved with minor adjustment to network layout or connected devices and their activity on the network. However, Rx and Tx errors are most likely indicating issues with the physical network, which may be resolved by correcting termination, reducing backbone or drop lengths, or reducing the number of network nodes (devices).

Bus state

Simply indicates whether the bus is powered, but not necessarily connected to any data sources. However, if bus shows as 'off', but power is present along with an increasing error count, it is possible that termination or cable topology is incorrect.

Rx Overflows

The unit received too many messages for its buffer before the application could read them.

Rx Overruns

The unit contained too many messages for its buffer before the driver could read them.

Rx/Tx Errors

These two numbers increase when there are error messages, and decrease when messages are received successfully. These (unlike the other values) are not a cumulative count. Under normal operation these should be at 0. Values around 96 upwards indicate a heavily error prone network. If these numbers go too high for a given device, it will automatically drop off the bus.

Rx/Tx Messages

Shows actual traffic in and out of device.

Bus Load

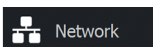
A high value here indicates network is near full capacity. Some devices automatically adjust rate of transmission, if network traffic is heavy.

Fast Packet Errors

Cumulative counter of any fast packet error. This could be a missed frame, or a frame out of sequence etc. NMEA 2000 PGNs are made of up to 32 frames. The entire message will be discarded when a frame is missed.

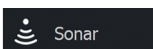
→ **Note:** Rx and Tx Errors often indicate an issue with the physical network, which may be resolved by correcting termination, reducing backbone or drop lengths, or reducing the number of network nodes (devices).

Damping



If data appears erratic or too sensitive, damping may be applied to make the information appear more stable. With damping set at MIN, the data is presented in raw form with no damping applied. This is available for heading, course over ground, speed over ground, apparent wind, true wind, boat speed, depth, and tide sourced from NMEA 2000.

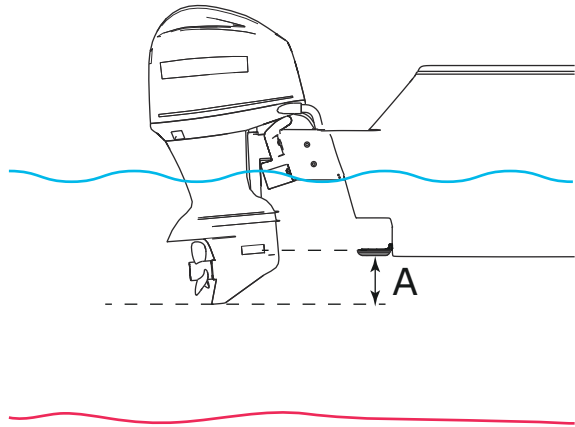
Sonar setup



The **Installation** page allows configuration of the internal sonar.

Keel offset

All transducers measure water depth from the transducer to the bottom. As a result, water depth readings do not account for the distance from the transducer to the lowest point of the boat (for example; bottom of the keel, rudder, or propeller) in the water or from the transducer to the water surface.



A Keel offset, for example: - 0.3 m (- 1 ft)

Before setting the keel offset, measure the distance from the transducer to the bottom of the motor - see illustration. If, for example, the distance is 0.3 m (1 ft), it will be input as (minus) - 0.3 m (-1 ft).

Water temperature calibration

Temperature calibration is used to adjust the water temperature value from the sonar transducer to match the data from another temperature sensor. It may be required to correct for localized influences to the measured temperature.

Calibration range: -9.9° - $+9.9^{\circ}$. Default is 0° .

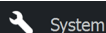
→ **Note:** Water temperature calibration only appears if the transducer is temperature capable. Check transducer type selection if this option should be available.

Transducer type

Transducer type is used for selecting the transducer model connected to the sonar module. The transducer selected will determine what frequencies the user can select during sonar operation. In some transducers with built-in temperature sensors, the temperature reading may be inaccurate or not available at all if the wrong transducer is selected. Transducer temperature sensors are one of two impedances - 5k or 10k. Where both options are

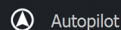
given for the same model transducer, refer to paperwork supplied with transducer to determine impedance.

StructureScan



This feature is automatically enabled when a TotalScan transducer is plugged in before the unit has been powered on.

Autopilot setup



Autopilot is available on the ELITE-7Ti only. Autopilot features will be enabled when a compatible MotorGuide trolling motor is connected. No special setup is required. See the operator manual for further details.

Fuel setup



This feature is available on the ELITE-7Ti only.

The fuel utility monitors a vessel's fuel consumption. This information is totaled to indicate trip and seasonal fuel usage, and is used to calculate fuel economy for display on instrument pages and the data bar.

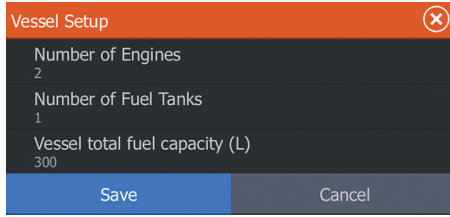
To use the utility, a Navico Fuel Flow sensor, or a NMEA 2000 engine adaptor cable/gateway with Navico Fuel Data Storage device must be fitted to the vessel. Neither the Navico Fuel Flow sensor, nor the Suzuki engine interface require the use of a separate Fuel Storage device. Refer to the engine manufacturer or dealer for information on whether or not your engine provides a data output, and what adaptor is available to connect to NMEA 2000.


Once the physical connection is made, ensure source selection is completed. Multiple engine installations using Fuel Flow sensors, or Fuel Data Storage devices, require setup of related engine location in the Device list. For general source selection information, refer to "*Data source selection*" on page 32.

Vessel setup

Vessel setup is available on the ELITE-7Ti only.

The Vessel setup dialog must be used to select the number of engines, the number of tanks and vessel's total fuel capacity across all tanks.



 Network

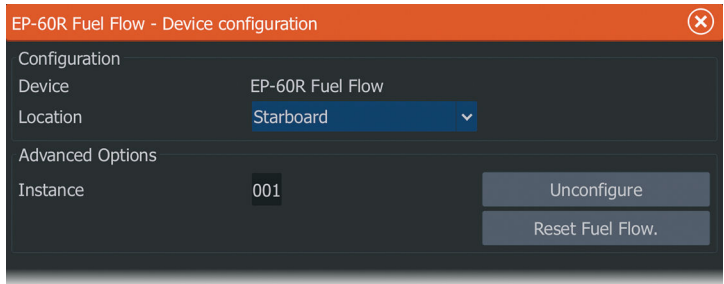
Fuel flow configuration


Fuel flow configuration is available on the ELITE-7Ti only.

After the number of engines is set, it is required to set which fuel flow sensor is connected to which engine. Under **Device list** on the Network page, view the Device Configuration dialog for each sensor, and set the **Location** to match the engine the device is connected to.

Unconfigure - defaults the device which clears all user settings.

Reset Fuel Flow - restores only the Fuel K-Value setting, if set in Calibrate. Only Navico devices can be reset.

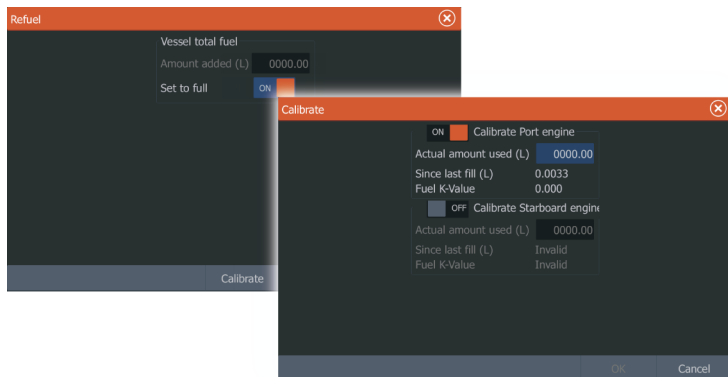


 Fuel

Calibrate

Calibrating fuel flow is available on the ELITE-7Ti only.

Calibration may be required to accurately match measured flow with actual fuel flow. Access calibration from the **Refuel** dialog. Calibration is only possible on Navico's Fuel Flow sensor.



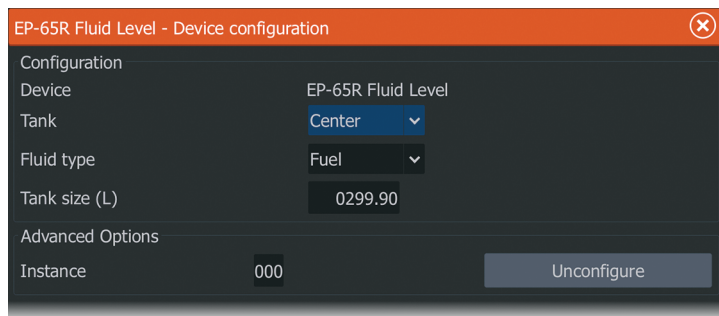
1. Start with a full tank and run the engine as it would normally be operated.
 2. After at least several liters (a few gallons) have been used, the tank should be fully refilled, and the **Set to full** option selected.
 3. Select the **Calibrate** option.
 4. Set the **actual amount used** based on amount of fuel added to the tank.
 5. Select **OK** to save settings. The **Fuel K-Value** should now show a new value.
- **Note:** To calibrate multiple engines repeat the steps above, one engine at a time. Alternatively, run all engines simultaneously, and divide the *Actual amount used* by the number of engines. This assumes reasonably even fuel consumption on all engines.
- **Note:** The **Calibrate** option is only available when **Set to full** is selected, and a Fuel Flow is connected and set up as a source.
- **Note:** A maximum of 8 engines is supported using Fuel Flow sensors.

Fuel Level

Fuel level configuration is available on the ELITE-7Ti only.

With the use of a Navico Fluid Level device connected to a suitable tank level sensor, it is possible to measure the amount of fuel remaining in any equipped tank. The number of tanks must be set in Vessel Setup dialog, initiated from the Fuel setting options page, to allow discrete tank assignment of the Fluid Level devices.

Select **Device list** on the Network page, and view the Device Configuration dialog for each sensor, and set the Tank location, Fluid type, and Tank size.



For setting up the Instrument bar or a gauge on the Instrument page with Fluid Level device data, refer to the Operator Manual.

- **Note:** A maximum of 5 tanks is supported using Fluid Level devices.
- **Note:** Tank data that is output by a compatible engine gateway can also be displayed, however tank configuration for such a data source is not possible from this unit.

Wireless setup

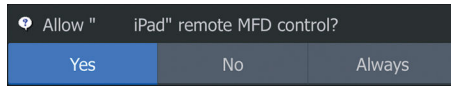
The unit includes built-in wireless functionality that lets you use a wireless device to remotely view (phone and tablet) and control the system (tablet only). The system is controlled from the wireless device by Apps downloaded from their relevant Application store. Various 3rd party applications can also use the data stream.

Connecting the tablet

1. Navigate to the Wi-Fi network connection page on the tablet, and find the unit or GoFree Wifi **xxxx** network. If more than one is in range, review the Wireless Devices page on the unit to confirm which wireless device is connected to the unit.
2. Select a device on this page to show its network key.
3. Enter the eight character (or longer) Network Key in the tablet to connect to the network.
4. Open the GoFree application - the unit should be automatically detected. The name displayed will be either the default, or that

assigned in the Device Name setting. If the unit does not appear, follow the on screen instructions to manually find the device.

5. Select the graphic icon of the unit. The unit displays a prompt similar to the following:

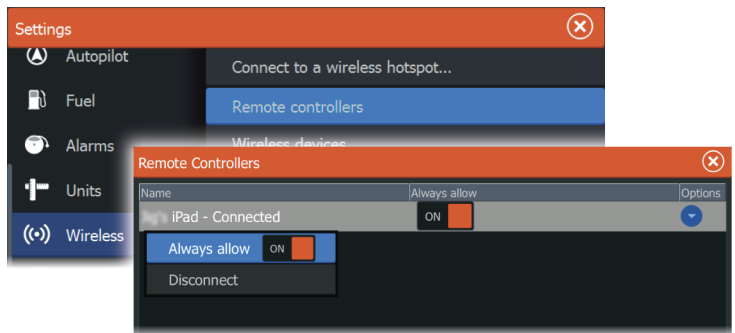


6. Select **Yes** for one-time connection, or **Always** if device is to be remembered for regular connection. This setting can be changed later if required.

→ **Note:** The internal wireless module only supports GoFree connection to itself. Other units connected on the network are not visible.

Remote controllers

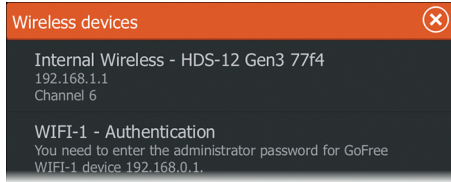
When a wireless device is connected, it should appear in the **Remote controllers** list.



Selecting **Always allow** means the device can automatically connect without needing a password each time. This menu also allows disconnection of devices that no longer require access.

Wireless device

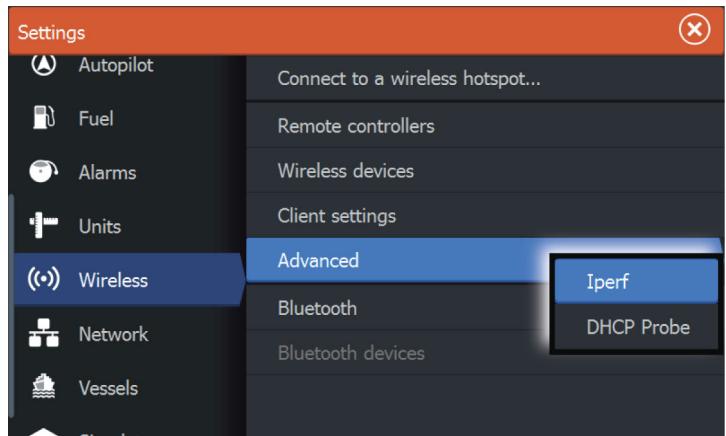
This page shows the internal wireless module and its IP and channel number.



Selecting the device provides additional detail. The Network Name and the Network Key can be edited for security, and Channel can be changed if the connection to the unit is compromised due to interference by another RF device transmitting in the same frequency band. Restore defaults returns the unit to factory settings.

Advanced

Tools are available within the software to assist in fault-finding and setting up the wireless network.



Iperf

Iperf is a commonly used network performance tool. It is provided for testing wireless network performance around the vessel so weak spots or problem areas can be identified. The application must be installed on and run from a tablet device.

The ELITE Ti must be running Iperf server before initiating the test from the tablet. On exiting the page, Iperf automatically stops running.

DHCP Probe

The wireless module contains a DHCP server that allocates IP addresses for all the MFDs, and Sonar in a network. If integrating with other devices, such as a 3G modem or satellite phone, other devices in the network may also be acting as DHCP servers. To make it easy to find all DHCP servers on a network, dhcp_probe may be run from the ELITE Ti. Only one DHCP device may be operational on the same network at a time. If a second device is found, turn off its DHCP feature if possible. Refer to the device's own instructions for further assistance.

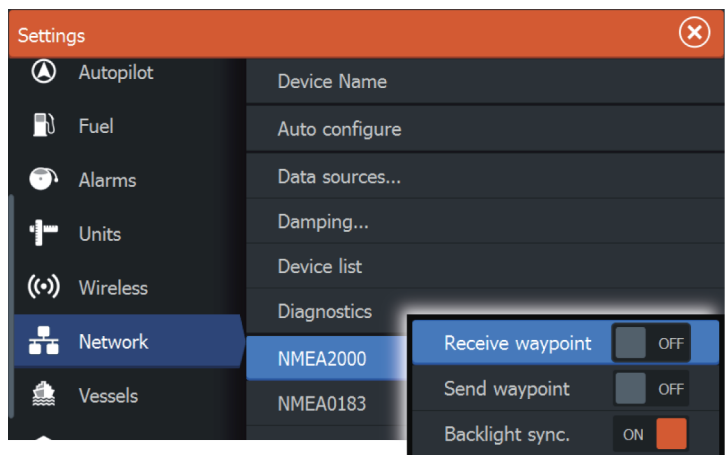
→ **Note:** Iperf and DHCP Probe are tools provided for diagnostic purposes by users familiar with network terminology and configuration. Navico is not the original developer of these tools, and cannot provide support related to their use.

Bluetooth wireless technology

The unit includes built-in Bluetooth wireless technology. To connect the unit to Bluetooth enabled devices you must pair them. For more information about Bluetooth and connecting devices, refer to the unit's Operator manual.

NMEA 2000 setup

NMEA 2000 networking is available with the ELITE-7Ti only.

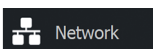


Receive waypoint

Select this option to allow another device capable of creating and exporting waypoints via NMEA 2000 to transfer directly to this unit.

Send waypoint

Select this option to allow this unit to send waypoints to another device via NMEA 2000.

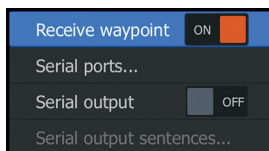


NMEA 0183 setup

The NMEA 0183 port must be set to suit the speed of connected devices, and can be configured to output only the sentences required by listening devices.

Receive waypoint

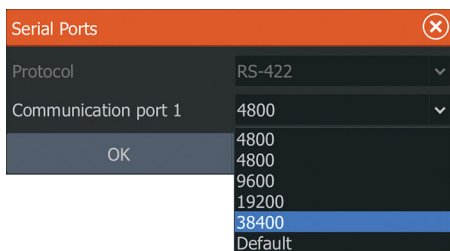
Select this option to allow a device capable of creating and exporting waypoints via NMEA 0183 to transfer directly to this unit.



Baud rate

This should be set to correspond with devices connected to the NMEA 0183 input and output. The input and output (Tx, Rx) use the same baud rate setting.

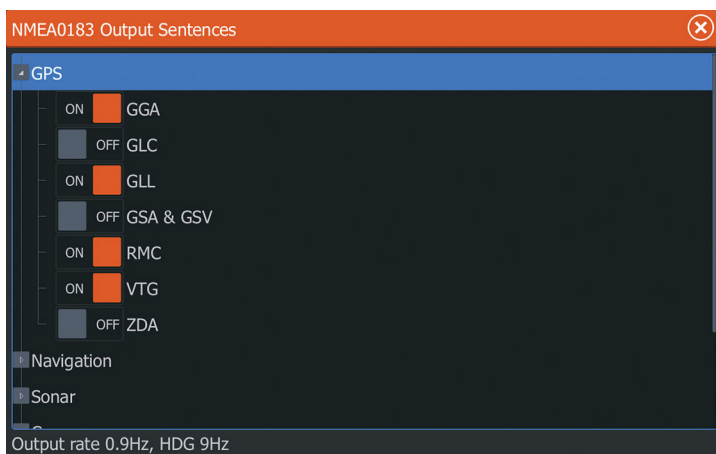
- **Note:** AIS transponders typically operate at NMEA 0183-HS (high speed), and will require the baud rate to be set to 38,400.



Serial Output Sentences

This list allows control over which sentences need to be transmitted to other devices from the NMEA 0183 port. Due to the limited bandwidth of NMEA 0183 it is desirable to only enable the data that is required. The less sentences that are selected, the higher the output rate of the enabled sentences.

Commonly used sentences are enabled by default.



Touchscreen calibration

→ **Note:** Ensure the screen is clean and dry before doing the calibration. Do not touch the screen unless prompted to do so.

In some cases it may be required to re-calibrate the touch screen. To re-calibrate your touchscreen, do the following:

1. Turn the unit off
2. Press and hold the **Waypoint** key, and turn the unit on
3. Continue to press in the **Waypoint** key during power on, until the calibration utility screen comes up
4. Follow the instructions on the screen to perform the calibration.

When completed, the unit returns to the application screen.

Software updates and data backup

From time to time we release software updates to our existing products. Updates are created for a variety of reasons; to add or improve features, to add support for new external devices, or to fix software bugs.

Updates can be found on the website: lowrance.com

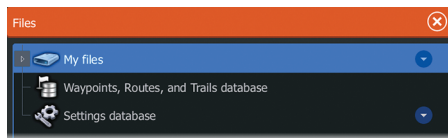
The unit may be used to apply software updates to itself, and to supported network devices, with files read off a memory card inserted in the card reader.

Before initiating an update to the unit itself, be sure to back up any potentially valuable user data.

Backing up and Importing user data

There are two files that can be backed up that relate to user changes made to the system:

- Waypoints, Routes, and Trails database.
- Settings database (includes preferences such as unit settings and custom pages).



Insert a memory card into the unit's card reader as a storage location for backup data.

Waypoints, Routes, and Trails database backup

You can export all Waypoints, Routes, and Trails, or export only those contained within a specific region.

Details - Waypoints, Routes, and Trails	
Waypoints	387
Deleted Waypoints	0
Routes	1
Deleted Routes	0
Trails	5
Used space	2.3 MB
Free space	47.9 MB

Export... Export Region... Delete all Purge

If Export Region is selected, the chart page will be displayed, centered on vessel location. Using the touch screen, adjust the red boundary box to outline the area to be exported. The export option offers different file formats to save as:

- **User data file version 5:** Use with current units (NSO evo2, NSS evo2, NSS, NSO, NSE, Zeus, Zeus Touch, HDS Gen2, HDS Gen2 Touch, HDS Gen3, GO XSE units, Vulcan units, and ELITE Ti units). Offers most detail.
- **User data file version 4:** Use with current units (NSO evo2, NSS evo2, NSS, NSO, NSE, Zeus, Zeus Touch, HDS Gen2, HDS Gen2 Touch, HDS Gen3, GO XSE units, Vulcan units, and ELITE Ti units).
- **User data file version 3 (with depth):** Use with legacy GPS chartplotters.
- **User data file version 2 (no depth):** Use with legacy GPS chartplotters.
- **GPX (GPS Exchange, no depth):** Use with some other manufacturers' GPS products, and PC applications.

After you select the file type, select Export and destination memory card. The receiving GPS/PC typically needs to be set to allow import of Waypoints.

The 'Serial port' option outputs the waypoints over NMEA 0183. The receiving GPS/PC will typically need to be set to allow import of waypoints.

Settings database export

Select **Setting database** to export the Settings database and select the memory card destination.

Importing a database

Later, if the unit has been restored to factory defaults or user data is accidentally deleted, return to the files page, select the backed up file, and then **Import**. View file details for creation date.

Software upgrades

The update file must be loaded to the root directory of the memory card.

The update may be initiated at boot up: insert the memory card into the card reader before turning the unit on, boot the unit, and follow the on-screen instructions.

Alternatively, in the Files menu, locate the update file on the memory card inserted in the card reader and select **Upgrade**, followed by **This Display**. Accept the prompt to reboot the unit, and wait a few moments as the unit restarts. Do not remove the memory card or repower the unit until the process is completed (this typically takes no more than a couple of minutes).

NMEA 2000 device upgrades

NMEA 2000 is available on the ELITE-7Ti only.

The update file must be loaded to the root directory of a memory card inserted in the card reader.

1. Select the Files toolbar option and select the update file under Memory card.
 2. Select the Upgrade option presented when the file is highlighted. A list should appear displaying any compatible devices the update file applies to. In most cases this will be a single device.
- **Note:** If no device is shown, check that the device to be updated has power, and run any outstanding updates for the unit first.
3. Select the device and initiate the upgrade. Do not interrupt the upgrade process.

7

Accessories

The most up-to-date accessories list is available at:
lowrance.com

NMEA 2000

NMEA 2000 networking is only available with the ELITE-7Ti.

Part Number	Description
000-0124-69	NMEA 2000 Starter kit
000-0119-88	NMEA 2000 2' (0.61M) Extension cable
000-0127-53	NMEA 2000 6' (1.82M) Extension cable
000-0119-86	NMEA 2000 15' (4.55M) Extension cable
000-0119-83	NMEA 2000 25' (7.58M) Extension cable
000-11517-001	Fuel flow sensor
000-11518-001	Fluid level sender
000-11519-001	Speed sensor
000-11520-001	Temperature sensor
000-11521-001	Thru-hull temperature sensor
000-11522-001	Fuel data manager
000-11523-001	Pressure sensor
000-11047-001	Point-1 high speed GPS antenna with built-in compass
000-10613-001	RC42 Rate compass

ELITE Ti accessories

Part number	Description
000-10027-001	Quick release mounting bracket kit
000-0127-49	Power and NMEA 0183 Cable
000-12750-001	Sun cover for the ELITE-5Ti
000-12749-001	Sun cover for the ELITE-7Ti

Part number	Description
000-12572-001	7-pin transducer to 9-pin adapter cable
000-12751-001	Blue and black corner detail clips

Sonar accessories

Part Number	Description
000-12568-001	TotalScan transducer
000-0106-72	Skimmer 83/200 kHz transducer*
000-0106-77	Skimmer 50/200 kHz transducer*
000-0106-74	Trolling motor transducer, 83/200 kHz*
000-0106-73	In-hull shoot-thru transducer, depth only*
000-0106-89	In-hull, shoot-thru transducer, depth and remote temperature*
000-12572-001	7-pin transducer to 9-pin adapter cable

* Require the 000-12572-001 7-pin transducer to 9-pin adapter cable

For additional transducer options, visit www.lowrance.com

8

Supported data

NMEA 2000 compliant PGN List

→ **Note:** NMEA 2000 networking is only available with the ELITE-7Ti.

NMEA 2000 PGN (receive)

59392	ISO Acknowledgement
59904	ISO Request
60928	ISO Address Claim
61184	Parameter Request/Command
65285	Temperature with Instance
65289	Trim Tab Insect Configuration
65291	Backlight Control
65292	Clear Fluid Level Warnings
65293	LGC-2000 Configuration
65323	Data User Group Request
65325	Reprogram Status
65341	Autopilot Mode
65480	Autopilot Mode
126208	ISO Command Group Function
126992	System Time
126996	Product Info
127237	Heading/Track Control
127245	Rudder
127250	Vessel Heading
127251	Rate of Turn
127257	Attitude
127258	Magnetic Variation
127488	Engine Parameters, Rapid Update
127489	Engine Parameters, Dynamic

127493 Transmission Parameters, Dynamic
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
129794 AIS aids to Navigation
129801 Cross Track Error
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
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
130576 Small Craft Status
130577 Direction Data
130840 Data User Group Configuration
130842 SimNet DSC Message
130845 Parameter Handle
130850 Event Command
130851 Event Reply
130817 Product Info
130820 Reprogram Status
130831 Suzuki Engine and Storage Device Config
130832 Fuel Used - High Resolution
130834 Engine and Tank Configuration
130835 Set Engine And Tank Configuration
130838 Fluid Level Warn
130839 Pressure Insect Configuration
130840 Data User Group Config
130842 AIS and VHF Message Transport
130843 Sonar Status – Frequency and DSP Voltage
130845 Weather and Fish Prediction and Barometric Pressure History
130850 Evinrude Engine Warnings

130851 Parameter (RC42 Compass and IS12 Wind Calibration and Configuration)

NMEA 2000 PGN (transmit)

61184 Parameter Request/Command
65287 Configure Temperature Insects
65289 Trim Tab Insect Calibration
65290 Paddle Wheel Speed Configuration
65291 Backlight Control
65292 Clear Fluid Level Warnings
65293 LGC-2000 Configuration
65323 Data User Group Request
126208 ISO Command Group Function
126992 System Time
126996 Product Info
127237 Heading/Track Control
127250 Vessel Heading
127258 Magnetic Variation
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
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
- 130840 Data User Group Configuration
- 130845 Parameter Handle
- 130850 Event Command
- 130818 Reprogram Data
- 130819 Request Reprogram
- 130828 Set Serial Number
- 130831 Suzuki Engine and Storage Device Config
- 130835 Set Engine And Tank Configuration
- 130836 Fluid Level Insect Configuration
- 130837 Fuel Flow Turbine Configuration
- 130839 Pressure Insect Configuration
- 130845 Weather and Fish Prediction and Barometric Pressure History
- 130850 Evinrude Engine Warnings
- 130851 Parameter (RC42 Compass and IS12 Wind Calibration and Configuration)

NMEA 0183 supported sentences

TX / RX - GPS

Receive	GGA	GLL	GSA	GSV	VTG	ZDA	
Transmit	GGA	GLL	GSA	GSV	VTG	ZDA	GLC

TX / RX - Navigation

Receive	RMC				
Transmit	AAM	APB	BOD	BWC	BWR

Receive					
Transmit	RMC	RMB	XTE	XDR	

TX / RX - Sonar

Receive	DBT	DPT	MTW	VLW	VHM
Transmit	DBT	DPT	MTW	VLW	VHM

TX / RX - Compass

Receive	HDG	HDT	HDM
Transmit	HDG		

TX / RX - Wind

Receive	MWV	MWD
Transmit	MWV	MWD

TX / RX - AIS / DSC

Receive	DSC	DSE	VDM
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→ **Note:** AIS sentences are not bridged to or from NMEA 2000.

9

Specifications

→ **Note:** The most up-to-date specifications list is available at: lowrance.com

Mechanical/Environmental

Casing	PC/ABS
Operating temp	-15°C to +55°C (+5°F to +131°F)
Water ingress	IPX6 and 7
Weight (excluding mounting hardware)	ELITE-5Ti is 526 kg (1.16 lbs) ELITE-7Ti is 907 kg (2.0 lbs)
Display type	WVGA color TFT LCD
Display brightness	>1200 nits
Display resolution	480 x 800 (H x W)
Viewing angle in degrees (typical value at contrast ratio = 10)	L/R: 70, top: 50, bottom: 60
Dimensions (overall)	See dimensioned drawings

Electrical

Operating voltage	12 V DC (10 - 17 V DC min-max)
Power consumption	12 W (0.9 A at 13.8 V DC)
Low power standby mode	< 650 mA
Protection	reverse polarity and temporary over-voltage to 36 V
Processor	iMX61 single core
Conformity	CE, C-Tick

Interfaces

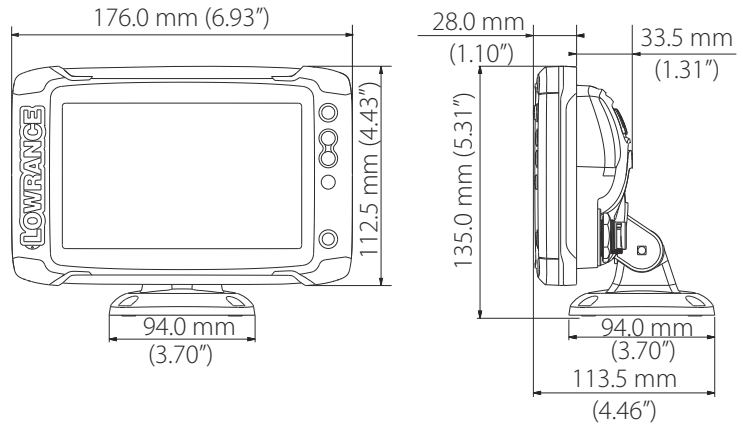
NMEA 2000 (compliant). ELITE-7Ti only.	1 port - Micro-C male. ELITE-7Ti only.
NMEA 0183 (compliant)	1 port - Power 12 V DC and Data - NMEA 0183

Sonar	1 port
Card reader	1 x microSD

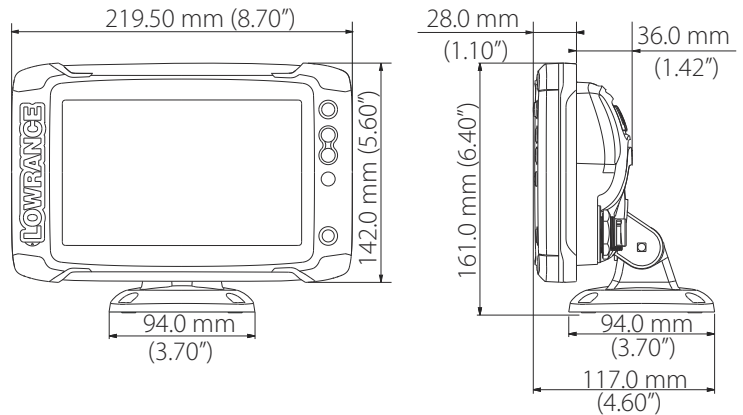
10

Dimensional drawings

ELITE-5Ti Dimensional drawings



ELITE-7Ti Dimensional drawings





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