SIMRAD

P2005 / P3007
Operator Manual

ENGLISH

Mackay

Marine Electronics & Satellite Communications

www.mackaymarine.com

www.navico.com/commercial

Preface

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

P3007

- European Council Directive 2014/90/EU on Marine Equipment modified by Commission Implementing Regulation (EU) 2018/773 (MED) - Wheelmark

→ **Note:** The unit(s) are Wheelmark approved only when installed according to the relevant MED-B certificate.

P2005

- CE under EMC Directive 2014/30/EU

The relevant declaration of conformity and certificates are available in the product's section at the following website:

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This product has been assigned **U.S. Coast Guard Module B number** in accordance with the European Council Decision 2004/425/EC dated 21 April 2004 on the conclusion of an Agreement between the European community and the United Stated of America on Mutual Recognition of Certificates of Conformity for Marine Equipment.

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Contents

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Introduction

About this unit

The P2005 and P3007 units are touch controlled color displays. P2005 units support several languages, while P3007 support English language in menus and dialogs.

Both units offer multiple analog-style gauges as well as configurable digital data display layouts. The units support a wide variety of I/O signal types.

The P2005 unit can be used in GPS systems for workboats in the light professional segment and for other non-SOLAS vessels. The P2005 can be paired with a wide range of Simrad GPS antenna or GPS compasses.

The P3007 unit can be used for SOLAS vessels. Paired with high-precision antennas, the P3007 system can be configured as GPS, DGPS and THD (Transmitting Heading Device).

Type approved pages

The following pages are type approved:

- Position page
- Navigation page
- Heading page
- Trip log page

An AIS page is available if a compatible AIS receiver is connected to the network. The AIS page is not type approved.

NMEA 0183 equivalence with IEC 61162-1

This device uses the term NMEA 0183 in menus and dialogs. NMEA 0183 is equivalent with the IEC standard IEC 61162-1.

Page layout

A	Page selection button
B	Picture freeze indicator
C	Status bar
D	Menu button

Picture freeze indicator

The image includes a picture freeze indicator. The small dot blinks at an interval of 1 second to show that the screen is alive and that information from sensors is updated.

If the picture freezes the unit must be restarted.

The status bar

The status bar includes status icons. The images in the table are examples only. Only active icons are visible.

N	Navigating
R+	RAIM status
GN	GNSS mode
DGPS	GPS/DGPS mode and signal strength
AIS	Un-read AIS message
⚠	Alert

For a full list of GPS and DGPS icons, refer to *"Appendix"* on page 53.

Position quality

The accuracy of the GPS position depends on available satellites, the signal quality and the signal strength.

Signal strength indicator

The number of highlighted bars indicate the signal strength. The more highlighted bars, the stronger signal.

The RAIM feature

RAIM (Receiver Autonomous Integrity Monitoring) is a fault-detection feature required by IMO for type-approved GPS units. This feature requires signal from at least five satellites to determine the accuracy of the position.

→ *Note:* The RAIM function is available only if the antenna is supporting this feature.

The system alerts the operator that a condition may exist in the GPS positioning solution that reduces the accuracy of the ship's position.

The RAIM alert can be turned OFF and the error limits set. Refer to *"Software setup"* on page 26.

RAIM status indicators

| Icon	Status	Description
R+	Safe	Any position error is within the specified limit
R?	Caution	No RAIM, the system is receiving signals from less than five GPS satellites
R-	Unsafe	The statistical position error exceeds the specified limit.

Satellites

The Satellites option displays a graphical view and numeric values for available satellites.

→ *Note:* The content in the Satellites dialogs varies with connected antenna.
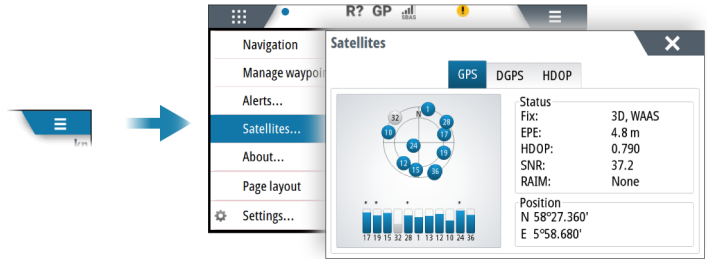
Card reader
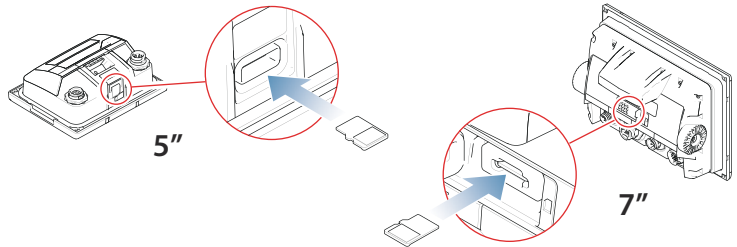
A memory card can be used for:

- Software updates
- Transfer of user data
- System backup

The protective door should always be securely shut immediately after inserting or removing a card, in order to prevent possible water ingress.
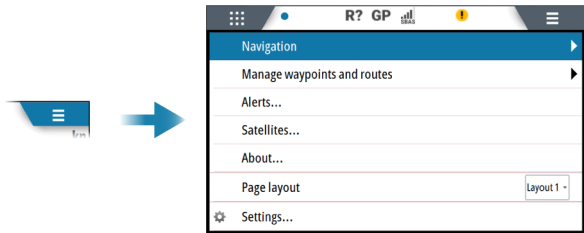
2

Basic operation

Turning the unit ON

The unit does not have a power key.

The unit will be automatically turned ON once power is applied.
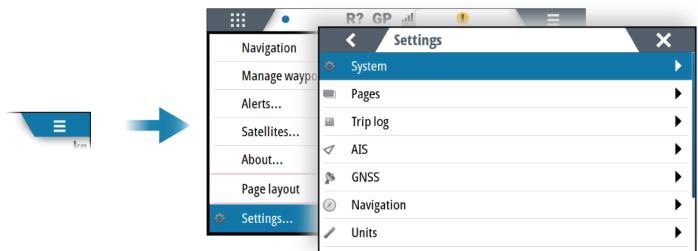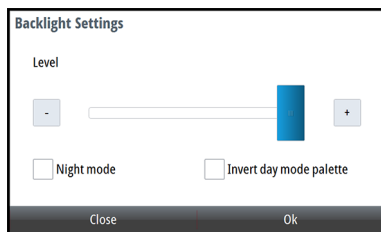
Menu overview

Page menu

Not all pages have the same page menu options. See the page specific sections in this manual for page menu options.

The settings dialog

The software setup is done from the settings dialog.

Backlight settings

Backlight Settings

Level

- — —————————————— +

☐ Night mode   ☐ Invert day mode palette

Close   Ok

The display backlight can be adjusted at any time from the backlight settings dialog.

To access the dialog:

• Press the brilliance key

Repeated short presses on the brilliance key cycles thru the preset backlight levels.

➔ **Note:** All changes made to the display setup will apply to all units belonging to the same display group. For more information about network groups, refer to *"Software setup"* on page 26.
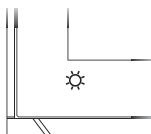
Man over board

This display can receive a MOB signal from an external connected key, or from a connected device.

When a MOB event is received, the following actions are automatically performed:

• A MOB waypoint is created at the vessel's position
• A MOB dialog is displayed

MOB event
MOB event received
Start navigating to MOB waypoint?
OK   Cancel

When navigation is confirmed:

• The display switches to the navigation page
• The system displays navigation information back to the MOB waypoint

Multiple MOB waypoints can be created. The vessel continues to show navigation information to the initial MOB waypoint. Navigation to subsequent MOB waypoints needs to be done manually.

Stop navigating to MOB
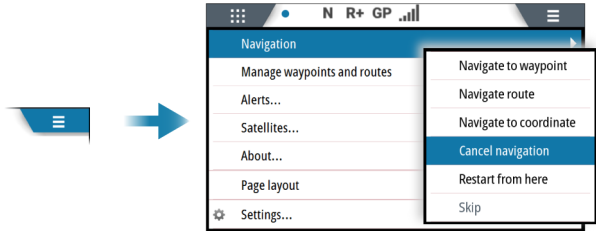
The system continues to display navigational information towards the MOB waypoint until you cancel the navigation from the menu.
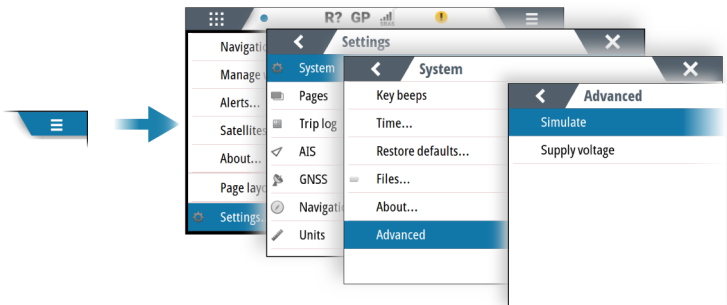
Simulator mode

The simulate option lets you operate the unit without being connected to sensors or other devices.

It is not possible to simulate commissioning and setup.

If the unit is turned off while in simulator mode, this mode will still be active on next power on.

Active simulator mode is indicated with a flashing notification on the image.

Screen capture
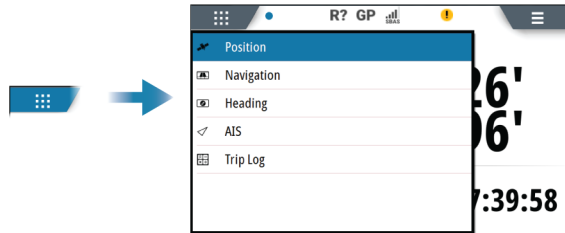
To take a screen capture:

- Press the screen for 5 seconds

The screen capture function is only available when a memory card is inserted in the unit. Screen captures are automatically saved to the memory card.

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Pages

Selecting a page

Selecting page layout

Some of the pages have two layouts. Use the menu option to specify which layout is displayed on the page.
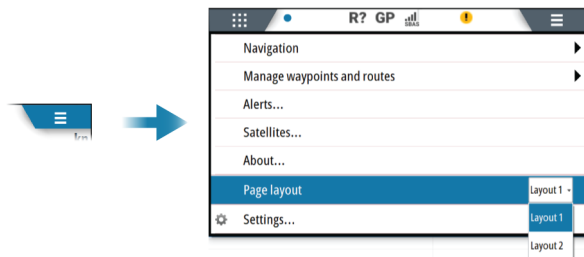
Missing or faulty data

If a data type is missing or if the data is out of scale, there will be no data reading on the display. The example shows a page with missing information.

Customizable data fields

Some pages have customizable data fields. You can specify the data displayed in those data fields. Refer to *"Software setup"* on page 26.

Default pages

Position page
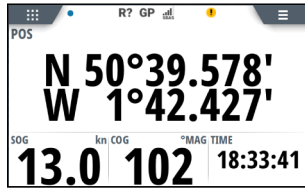
Layout 1

Layout 2

A   Customizable data fields

Navigation page

Layout 1
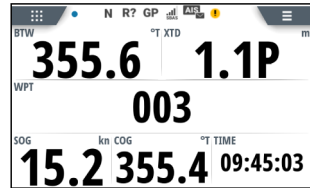
Layout 2

A   Customizable data fields
B   Cross track distance (XTD)

Navigating

The navigation function allows you to navigate towards a waypoint, a coordinate, or along a predefined route.

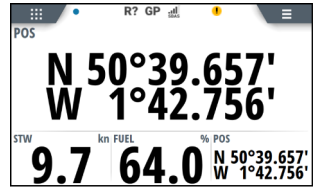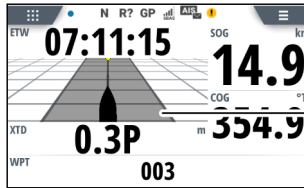When navigating, the page menu includes options for cancelling and restarting the navigation, and for skipping the active waypoint.
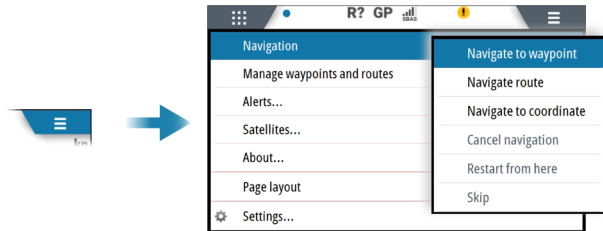
N Active navigation mode is indicated in the status panel.

The navigation function can be started from any page, but only the Navigation page includes by default navigational information.

Heading page
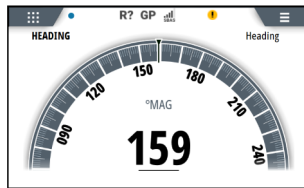
Layout 1   *Layout 2*

A Customizable data fields

AIS page

→ ***Note:*** The AIS page is not Wheelmark approved.

If a compatible AIS receiver is connected to the network, then any targets detected by those devices can be displayed on the AIS page. You can also see messages and position from SARTs and AtoNs within the defined range.
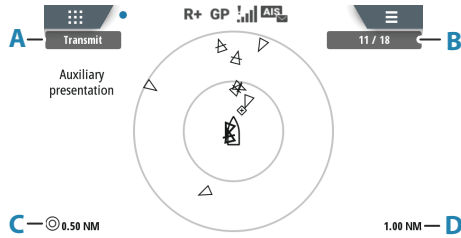
A   AIS mode

B   Number of displayed icons versus total number of targets

C   Distance between range rings

D   Selected range

AIS page menu
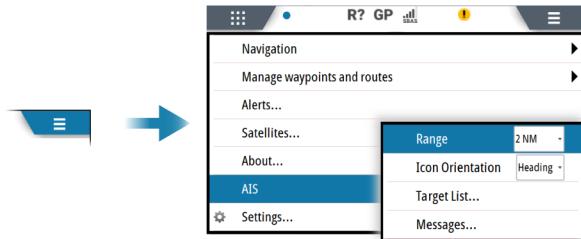
Range
Defines the display range on the AIS page.

AIS icon orientation
Sets the orientation of the AIS icons.

Target list
The target list displays basic information for all received AIS targets.
Select an item in the list to see details.

Messages
All received messages are listed in the message listing.
To display a message:
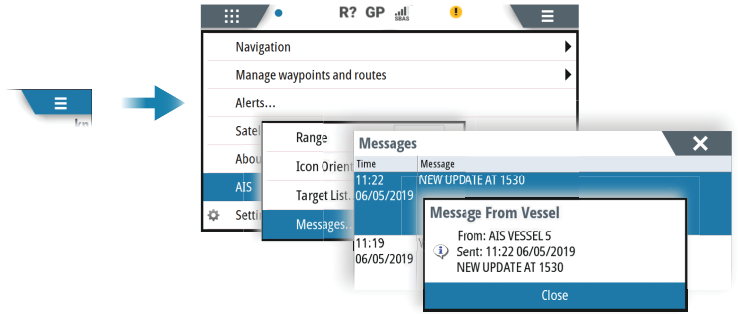
Trip log page
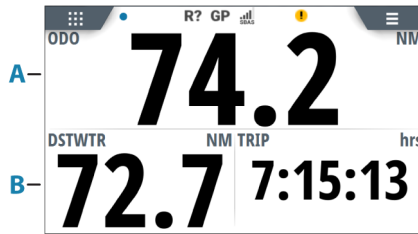
A   Trip odometer

B   Trip counter gauges

The total trip distance can be set and STW toggled on/off from the trip log settings dialog, refer to *"Software setup"* on page 26.

Starting/stopping and resetting the trip log
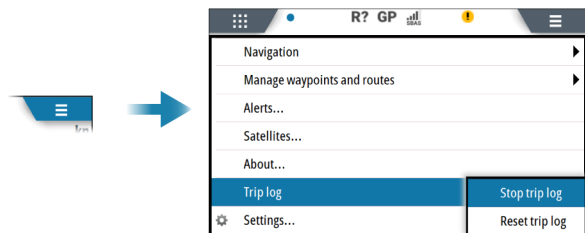
4

Manage waypoints and routes
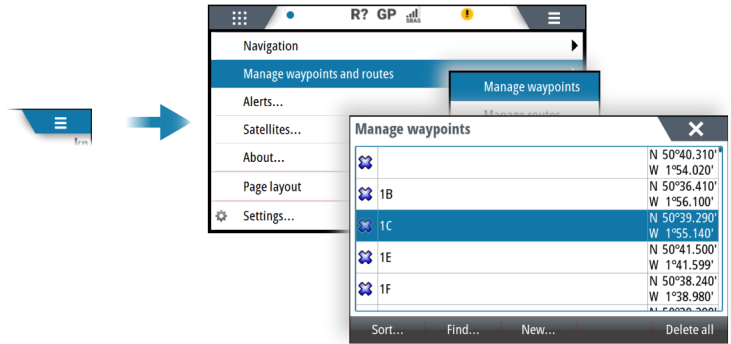
Manage waypoints

Edit waypoint details

Select a waypoint in the waypoint list to edit the waypoint's details.
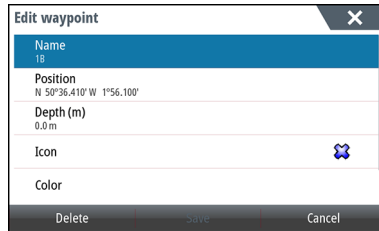
Manage routes
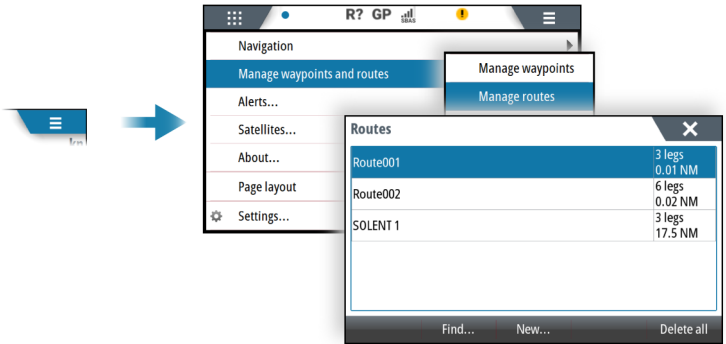
Edit a route
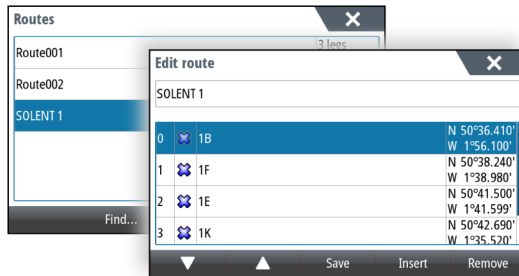
Select a waypoint to activate the arrow keys, then use the arrows to change the sequence of the waypoints.

If no waypoint is selected, a new waypoint can be added at the end of the route.

If a waypoint is selected, the new waypoint will be added as the last waypoint in the route.

Importing routes and waypoints

Routes and waypoints can be imported from an SD card or from a data port.
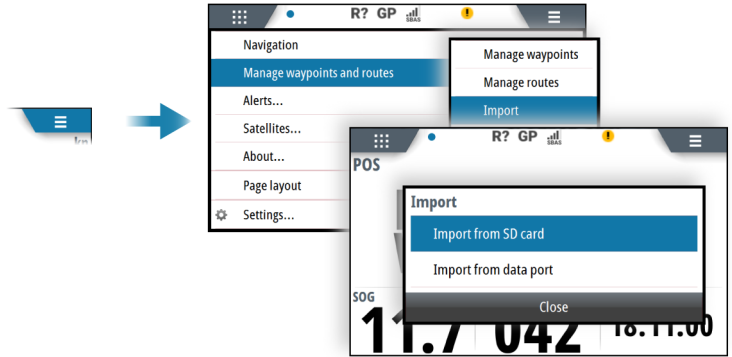
Exporting waypoints and routes
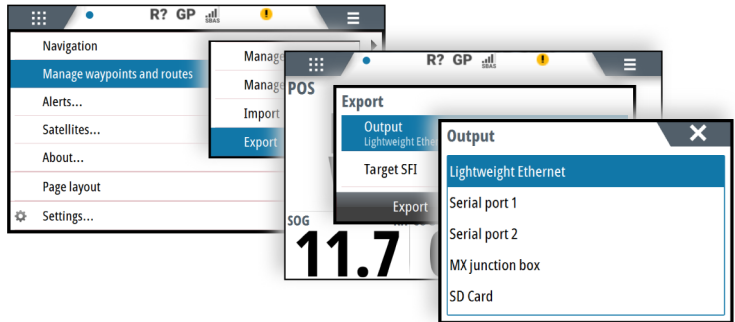
Export to LWE

Exports all waypoints and routes to the selected device.

Target SFI is selected from the drop-down list.

Export to serial port

Exports all waypoints and routes to the selected serial port.

Export via MX junction box

Exports single routes.

Select the route to be exported from the dialog via NMEA 0183 RTE and WPL.

Export to SD card

This option will export the UDB database to the SD card.

The option is only available when an SD card is located in the unit.

Export format

The following formats are available for export:

- **User Data File version 6**
  Used to export waypoints, routes and colored tracks/trails.
- **User Data File version 5**
  Used to export waypoints and routes with a standardized universally unique identifier (UUID), which is very reliable and easy to use. The data includes such information as the time and date when a route was created.
- **User Data File version 4**
  Best used when transferring data from one system to another, since it contains all the extra bits of information these systems store about items.
- **User Data file version 3 (w/depth)**
  Should be used when transferring user data from one system to a legacy product
- **User data file version 2 (no depth)**
  Can be used when transferring user data from one system to a legacy product
- **GPX (GPS Exchange, no depth)**
  This is the format most used on the web that shares among most GPS systems. Use this format if you are taking data to a competitor's unit.

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Software setup

Software setup overview

Prior to use, the system requires a number of settings to be configured in order for the system to perform as expected.

Most settings are intended to be configured by the technician commissioning the system, by the operator at first use, or by a technician after servicing or replacement of system parts. Other settings are generic, and the system can be used with default values.

→ **Note:** Before starting the software setup, the system must be wired according to the wiring instructions. All system units must be powered on.

Introduction to Lightweight Ethernet

Lightweight Ethernet (LWE), defined by IEC61162-450, is a protocol defined to enable an Ethernet connection between multiple talkers and multiple listeners, using the messages defined in IEC61162-1. LWE is an IP-based implementation, making use of a multicast address and corresponding User Datagram Protocol (UDP) port for transmission. LWE is essentially a means to share data between units over Ethernet.

There are some restrictions on the connection of LWE networks:

• The different components are connected through an Ethernet switch, and connection to a router or repeater hubs are not allowed
• No multicast filtering is configured

Equipment on the network that performs system functions can transmit and receive information. Each System Function (SF) is identified by a System Function Identifier (**SFI**) which is unique on any boat network.

→ **Note:** If no SFI is entered (remaining with the default 0000 value), the device will not be visible on the LWE network, and it will not share any data.

Every device that forms part of the LWE network shall be assigned an IP address (172.16.0.1 to 172.31.255.254). This IP address is to be chosen as a unique address for every device on the boat network.

First time startup

When the unit is started for the first time, or after a factory default, the unit displays a series of dialogs. Respond to the dialog prompts to make fundamental settings.

You can perform further setup and later change settings using the system settings dialogs.

Software setup sequence

This chapter describes the software setup options as they appear in the menu system.

All relevant areas listed must be addressed during commissioning, and they should be stepped through in the listed sequence.

1   *"Ethernet setup"* on page 42
    • Define this device on the Lightweight Ethernet

2   *"Local port setup"* on page 36
    • Configure the two NMEA 0183 ports
    • Configure the digital port

3   *"Junction box setup"* on page 45
    • Configure the ports on a junction box connected via NMEA 2000

4   *"NMEA 2000 setup"* on page 40
    • Make sure that the global NMEA 2000 data sources have been selected

5   *"Display sources"* on page 39
    • Select sources for this device if these are to be different from the global NMEA 2000 sources

6   *"GNSS settings"* on page 32
    • Define the GPS settings and configure the GPS source

When the required start-up settings are done, you should page through all the remaining settings and confirm that they are as desired.

The settings dialog

The software setup is done from the settings dialog.
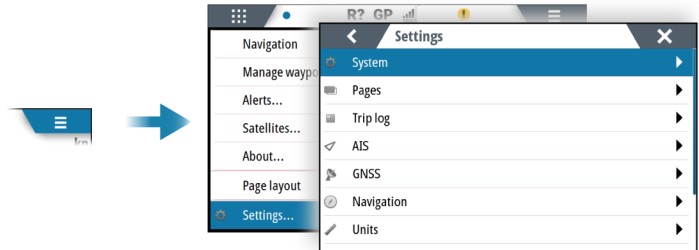
Access control

The parameters in the settings dialogs are intended for system setup and service engineers. These parameters are protected, and they are only available by entering the pin: **1947**.

When the password is entered, all settings are accessible.

The settings dialogs will be automatically closed after 5 minutes of inactivity.

System settings
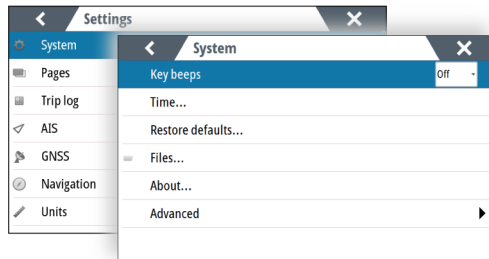
Language

Controls the language used on this unit.

→ **Note:** This option is not available for P3007.

Key beeps

Controls the loudness of the beep sound when a key is pressed.

Time

Controls the local time zone offset, and the format of the time and date.

Restore defaults

Restores selected settings to default factory values.

Files

File management system. Used to display selected content of the unit for export, and to browse storage devices connected to the unit.

About

Displays copyright information, software version, and technical information for this unit.

Advanced
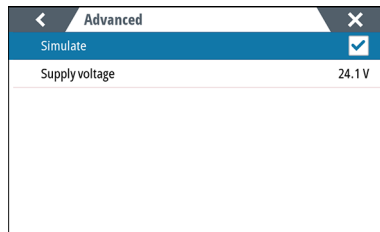
Page settings
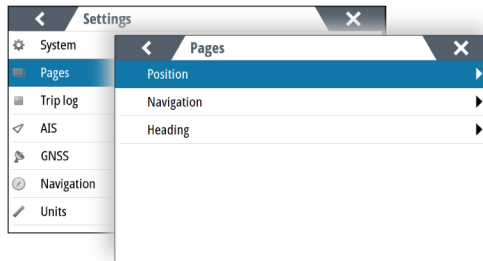
Changing page data

Some pages allow you to change which data is displayed on the page.
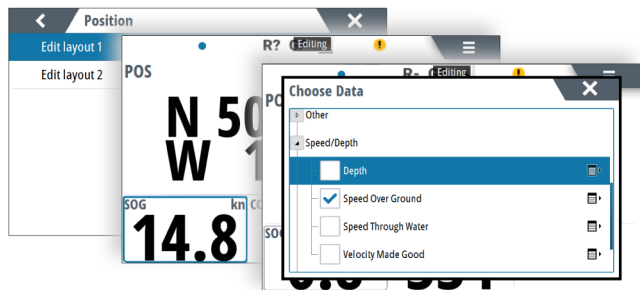
If the page has multiple data fields, select the field you want to change.

Use the menu option to save or cancel the changes.

Trip log settings
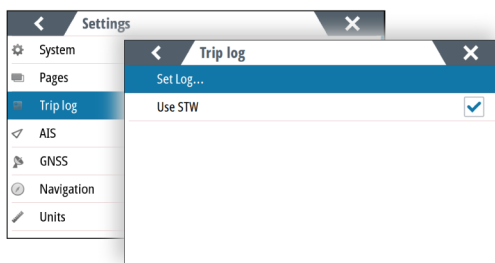
Use STW

Used for setting the speed source to be speed through water. When enabled, the speed data will be STW rather than speed over ground (SOG) on the trip log page.

Set log

Allows for manually entering the total trip log distance.

AIS settings
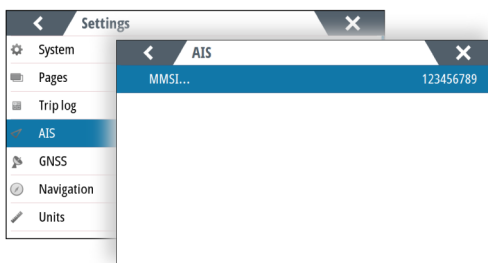
MMSI

Used for entering your own MMSI (Maritime Mobile Service Identity) number into the system. You need to have this number entered to receive addressed messages from AIS and DSC vessels. You also need to have your MMSI number entered to avoid seeing your own vessel as an AIS target.

GNSS settings
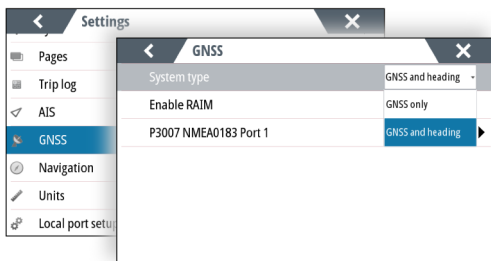
System type

Used for setting up the system to operate as a GNSS (GPS) only or as a combination of GNSS and heading.

When GNSS and heading is selected, and there is no valid heading data, an alert will be activated.

In GNSS only mode, there is no alert for missing heading data.

Enable RAIM

Used for enabling/disabling the RAIM (Receiver Autonomous Integrity Monitoring) alarm.

See description in *"The RAIM feature"* on page 11.

GNSS source configuration

Used for configuring the GNSS antenna.

The menu option varies with the antenna source.

➔ **Note:** All settings are stored in the connected antenna, not in the display.

RAIM protection radius

Sets the limit for the RAIM protection alarm.

See description in *"The RAIM feature"* on page 11.

Elevation mask angle

Used for setting the minimum angle (**A**) for the satellites that should be used to determine your position (**B**).
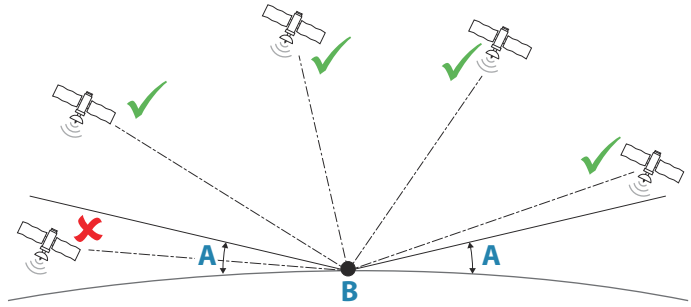
Satellites that appear near the horizon are subject to signal fade. They also pick up more atmospheric noise than satellites orbiting higher above the horizon.

A typical mask angle is between 10 and 15 degrees.

COG/SOG filter time

The COG/SOG filter is used to give a more stable reading of the velocity vectors calculated from the GPS signals. This filter does not affect the calculation of the GPS position.

The filter time defines the time frame for the filtering of the data.

Slow moving vessels, or vessels sailing in rough seas will benefit from a high setting. Vessels that can quickly change speed and direction will benefit from a low setting.

GNSS mode

Used for selecting if the position data will be determined using GPS satellites only, or a combination of GPS and GLONASS satellites.

DGPS mode

Controls the DGPS corrections to the GPS signals.

→ **Note:** It is recommended to turn the DGPS mode to OFF when navigating in areas where the land-based differential beacon signals are not available.

Beacon frequency

Used for manually setting the beacon frequency.

Mixed mode

This option is used if you want to include satellites that do not have DGPS or SBAS correction included.

WAAS PRN number

Used for manually setting the WAAS PRN number.

Reset option

→ *Note:* After a reset, a command is automatically sent to the antenna, configuring it to 19 200 baud and relevant NMEA 0183 messages.

Warm reset

Sets the baud rate to 4800 and the NMEA 0183 messages to default.

Cold reset

Sets the baud rate to 4800, the NMEA 0183 messages to default, and clears the oscillator, ephemeris and almanac data.

Navigation settings
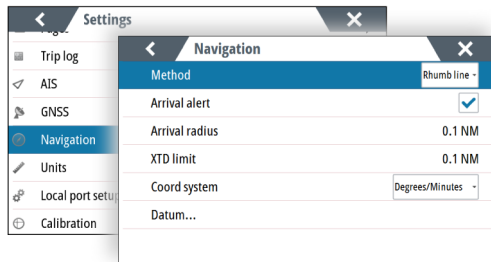
Navigation method

Different methods are available for calculating the distance and bearing between any two geographical points.

The Great circle route is the shortest path between two points. However, if you are to travel along such a route, it would be difficult to steer manually as the heading would constantly be changing (except in the case of due north, south, or along the equator).

Rhumb lines are tracks of constant bearing. It is possible to travel between two locations using Rhumb line computation, but the distance would usually be greater than if Great circle is used.

Arrival alert

When the arrival alert is enabled, an alert is activated when the vessel reaches the waypoint or when it is within the specified arrival radius.

Arrival radius

Sets an invisible circle around the destination waypoint. The vessel is considered arrived at the waypoint when it is within this radius.

When you are navigating a route, the arrival radius defines the point at which a turn is initiated.
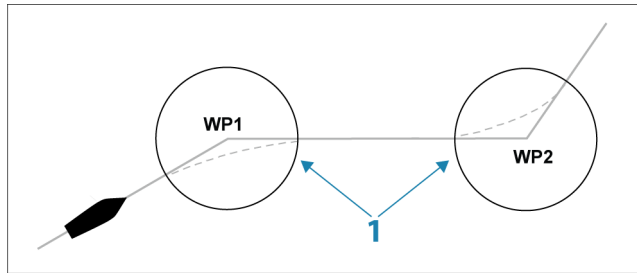
The arrival circle (**1**) should be adjusted according to boat speed. The higher the speed, the wider the circle.

The figure below may be used to select the appropriate waypoint circle when creating the route.
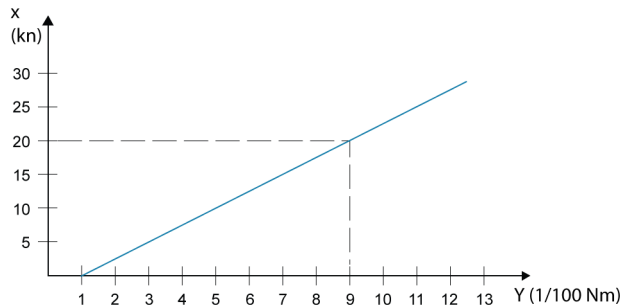
→ **Note:** The distance between any waypoints in a route must not be smaller than the radius of the waypoint arrival circle.

XTE limit

Defines how far the vessel can deviate from the selected route. If the vessel goes beyond this limit, an alert is activated.

Coordinate system

Used to set the geographic coordinate system used on your system.

Datum

This system uses the WGS datum format, which is a standard for use in cartography and satellite navigation (including GPS).

You can change the datum format to match other systems.

Units settings

Used for specifying the units of measurement.

Local port setup
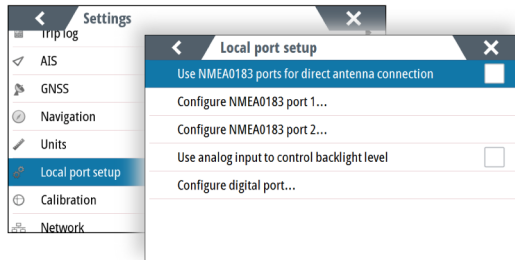
Use NMEA 0183 ports for direct antenna connection

Used if the antenna is directly connected to the NMEA 0183 ports.

When activated, there will be limited options for configuring the NMEA 0183 ports.

Configure NMEA 0183 ports
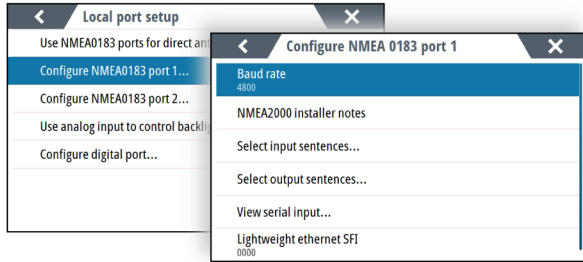
Baud rate

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.

NMEA 2000 installer notes

Used to identify a device in the NMEA 2000 device list.

Serial input sentences

This list allows control over which sentences that are received from other devices from the NMEA 0183 port.

Serial output sentences

This list allows control over which sentences that are 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.

View serial input

Used to confirm that the port setup is correct.

System Function ID (SFI)

A unique SFI must be assigned to each port that is to be part of the LWE network.

If no SFI is entered (remaining with the default 0000 value), the device will not be visible on the LWE network, and it will not share any data.

Use for BAM connection

This option is used to configure NMEA 0183 port 2 for a Bridge Alert Management system (BAM).

→ **Note:** This option is not available if the antenna is directly connected to the NMEA 0183 ports.
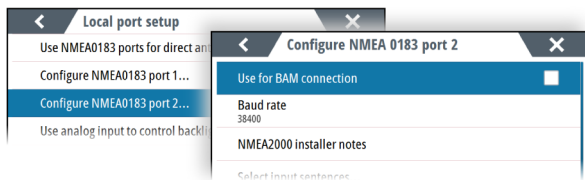
Use analog input to control backlight level

This option must be turned on if an external potentiometer is to be used to control the backlight level.

Configure digital port
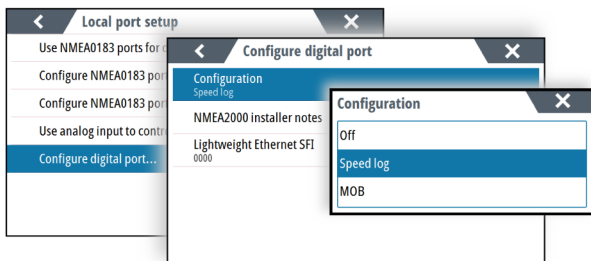
→ **Note:** A unique SFI must be assigned to the digital port if this is to be part of the LWE network.

Speed log input

It is possible to configure the digital port for speed input.

→ **Note:** Only speed logs outputting 200 pulses per nautical mile are supported.

MOB input

The digital port can be configured for MOB event input.

Calibration

Magnetic variation

Magnetic variation is the difference between true bearings and magnetic bearings, caused by different locations of the Geographic and the Magnetic north poles. Any local anomalies such as iron deposits might also affect the magnetic bearings.

When set to Auto, the system automatically converts magnetic north to true north. Select manual mode if you need to enter your own local magnetic variation.

Network settings
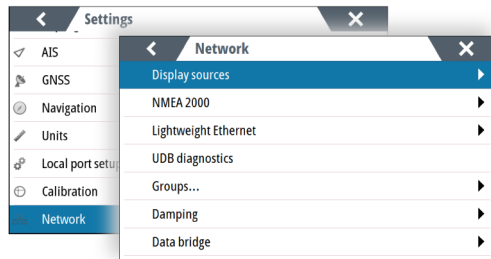
Display sources

Used for selecting sources for this device if these are to be different from the global NMEA 2000 sources.

The display sources can be either NMEA 2000, Lightweight Ethernet or local sources.

By default, NMEA2000 global sources will be selected.
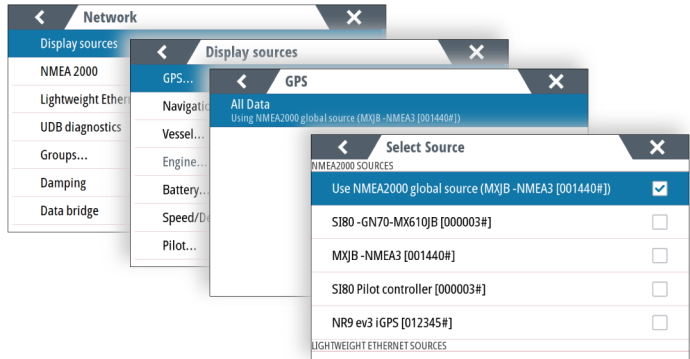
→ **Note:** Serial ports are represented as virtual NMEA 2000 devices.

NMEA 2000 setup
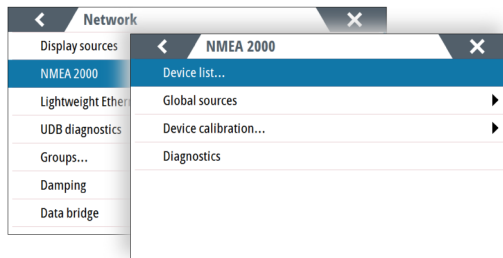
Device list

Selecting a device in this list will bring up additional details and options for the device.

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 the unit to distinguish between them. The data option shows all data being output by the device.

→ **Note:** In most cases, setting the instance number on a 3rd party product is not possible.

Configure a device

Devices may require configuration before use, they can be configured once connected to the network.

Some devices show additional options specific to the device. For example the Calibrate option, to allow easy setup of a device. For device specific details, refer to the device documentation.
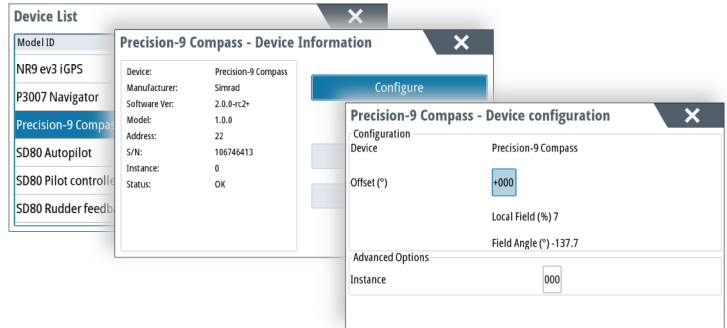
Global sources

Auto Select

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

Manual source selection

Manual selection is generally only required where there is more than one source for the same data, and the automatically selected source is not the one desired.
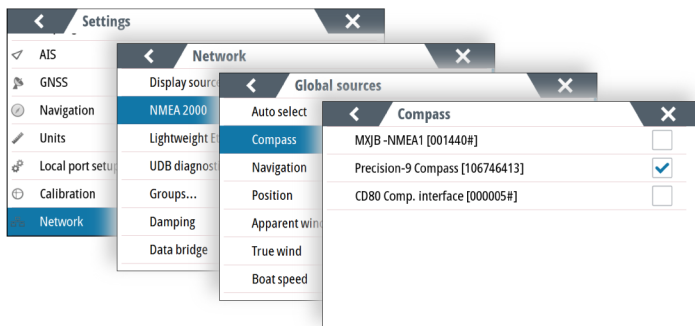
Calibration

An offset (positive or negative) can be applied to correct data inaccuracies from NMEA 2000 sources.

→ **Note:** Any calibrations made here will only be applied locally to this unit. Other devices on the network will not have these offsets applied.

Diagnostics

Provides information useful for identifying an issue with the network.

Lightweight Ethernet

This setting is used for identifying this device on the LWE network. Device specific settings can be shared with devices belonging to the same network group.

Ethernet setup

The Ethernet must be assigned with:

- an IPv4 address. Must be in the range 172.16.0.1 to 172.31.255.254, and the IP address must be unique for each device on the network
- a 4 digit Lightweight Ethernet SFI (System Function ID). The SFI must be unique for each device on the network.

→ **Note:** If no SFI is entered (remaining with the default 0000 value), the device will not be visible on the LWE network, and it will not share any data.

Functions

Displays all devices (excluding this device) sending data on the Lightweight Ethernet network.

Diagnostics

Provides information useful for identifying an issue with the network.

UDB

Provides information on Ethernet activity.

Groups

This function is used to control parameter settings, either globally or in groups of units. The function is used on larger vessels where several units are connected via a network. By assigning several units to the same group, a parameter update on one unit will have the same effect on the rest of the group members.

If any of the settings require discrete control, set the group to None.

Damping

If data appears erratic or too sensitive, damping may be applied to make the information appear more stable. With damping set to off, the data is presented in raw form with no damping applied.

Data bridge

One device on the NMEA 2000 can act as a databridge between Lightweight Ethernet and NMEA 2000 network.

Lightweight Ethernet to NMEA 2000

Up to five Lightweight Ethernet devices can be configured and bridged to the NMEA 2000 network.
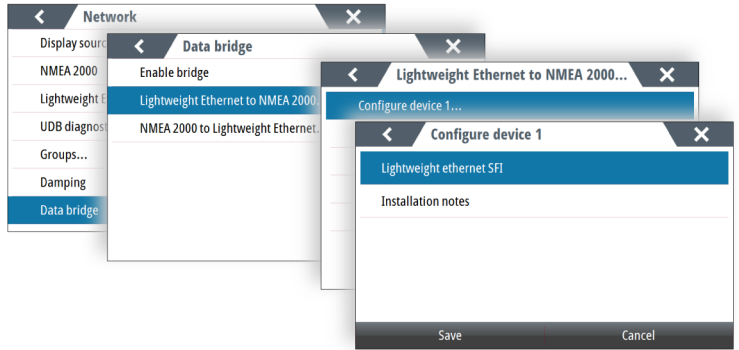
Each of the devices must be configured with:

- the Lightweight Ethernet SFI, selected from the list of available devices
- Installation notes, used to identify the source in the NMEA 2000 device list

NMEA 2000 to Lightweight Ethernet

Up to five NMEA 2000 devices can be configured and bridged to the Lightweight Ethernet network.
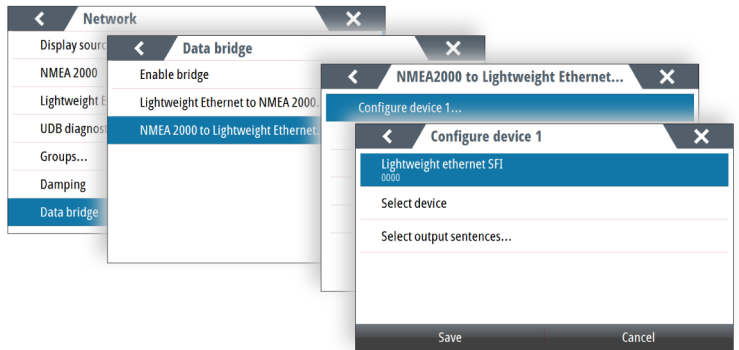
Each of the devices must be configured with:

- a unique 4-digit Lightweight Ethernet SFI for the selected serial port
- the NMEA 2000 source, selected from the list of available devices
- Installation notes, used to identify the device

Junction box setup

A junction box communicates with the display via NMEA 2000.

If a junction box is detected, each of the NMEA 0183 ports can be configured with the following information:
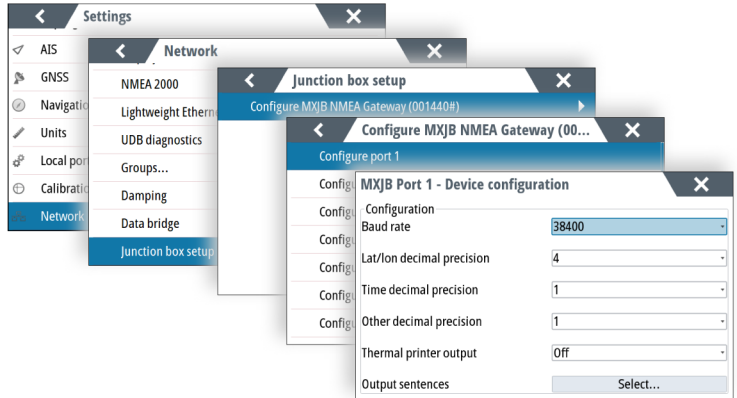
6

Maintenance

Preventive maintenance

The unit does not contain any field serviceable components. Therefore, the operator is required to perform only a very limited amount of preventative maintenance.

Cleaning the display unit

To clean the screen:

• A micro-fiber or a soft cotton cloth should be used to clean the screen. Use plenty of water to dissolve and take away salt remains. Crystallized salt, sand, dirt, etc. can scratch the protective coating if using a damp cloth. Use a light fresh water spray then wipe the unit dry with a micro-fiber or a soft cotton cloth. Do not apply pressure with the cloth.

To clean the housing:

• Use warm water with a dash of liquid dish soap or detergent.

Avoid using abrasive cleaning products or products containing solvents (acetone, mineral turpentine, etc.), acid, ammonia, or alcohol as they can damage the display and plastic housing.

Do not:

• use a jet or high pressure wash

Restoring factory default settings

A default restore will reset the memory to factory settings.

→ **Note:** Unless you need to clear all stored values during the installation setup procedure or service, you should not perform a restore of factory settings.
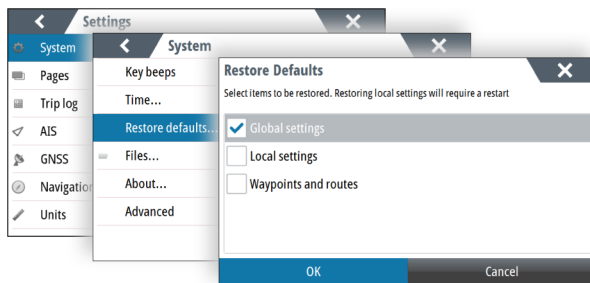
Restore global settings

This option clears the global NMEA 2000 source selection on all networked devices, and resets all local settings to factory default.

After a global reset you need to configure all NMEA 2000 and local sources again when the unit restarts.

Restore local settings

Resets all local settings to factory default.

After a local reset you need to configure local sources again when the unit restarts.

Restore waypoints and routes

Removes all waypoints and routes from the display.

Backup and restore of system data

The system includes a backup and restore function, making it possible to back-up and restore user settings.

→ **Note:** It is strongly recommended to make a backup when the system is installed and configured.
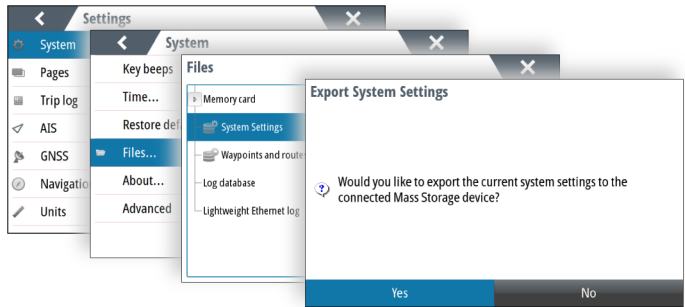
Software updates

Before initiating an update to the unit, be sure to back up any potentially valuable user data. Refer to *"Backup and restore of system data"* on page 47.

Installed software and software updates

The about dialog shows the software version currently installed on this unit (**A**).

The product website has information about available software updates.
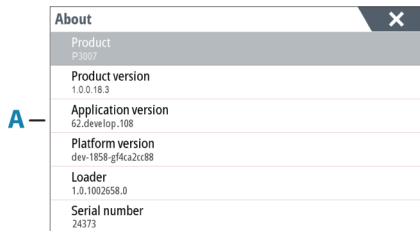
Update the software from a storage device

You can download the software update from www.navico.com/commercial.

Transfer the update file(s) to a compatible storage device, and then insert the storage device in the unit.

To update this unit only:

- restart the unit to start the update from the storage device

To update this unit or a connected device:

- Select the update file in the dialog

➔ **Note:** Do not turn off the unit or a connected device until the update is completed, or until you are prompted to restart the unit.
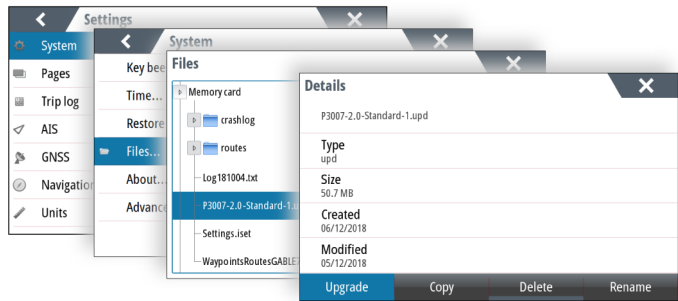
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Alerts

Type of alerts

The system has different alert types:

- **Warnings**: This type of alert announces conditions that could result in unwanted system response or eventual failure if no action is taken. A warning is accompanied by an audible signal (2 short signals, repeated as a Warning if not acknowledged). The warning icon flashes until the warning is acknowledged.
- **Cautions**: This is information about danger and caution objects that require attention. Cautions have no audible signal.

Alert notifications

When an alert is triggered, the following happens:

- the alert icon flashes
- the alerts pop-up opens listing the alert
- the alert is added to the alerts list

Acknowledging a message

An alert dialog has different options for acknowledging the message:

- Silence
  Mutes the siren locally for all units in the same network alert group. The alert dialog remains on the display.
- ACK / Acknowledge
  Sets the alert state to acknowledged. The siren/buzzer stops and the dialog is removed.
  However, the alert remains active in the alert listing until the reason for the alert has been removed.

There is no time-out on a message or the siren. They remain active until they are acknowledged or until the reason for the message is rectified.

Alert dialogs
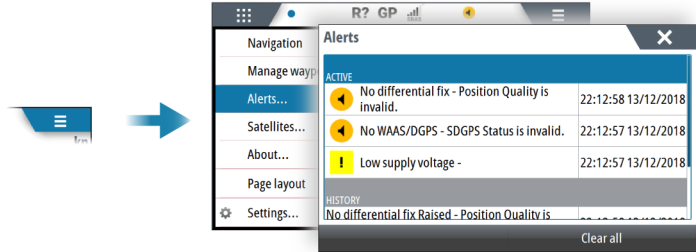
External bridge alert systems

The system supports Bridge Alert Management (BAM) and Bridge Navigational Watch Alarm Systems (BNWAS).

Bridge Alert Management (BAM)

All system alerts are transferred to the bridge alert system if this is connected to the system.

An alert generated by the system can only be acknowledged from the system itself. Global alerts can be acknowledged on both the system control unit and on the bridge alert system.

Bridge Navigational Watch Alarm Systems (BNWAS)

If a BNWAS is connected to the system, the system outputs an EVE sentence to the BNWAS when a user interaction with the system occurs. The EVE sentence remotely resets the BNWAS timer to confirm wheelhouse crew activity.

Alphabetic alert list

Alert type abbreviations:

- C: Caution
- W: Warning

Alert text	Description	Type
CAN voltage low	Power source to CAN is low in voltage	C
Data missing DGPS	No DGPS corrections to the GPS are received	W
DGPS (position quality)	Source failure of the DGPS corrections to the GPS is received	W
End of route/ last waypoint	Vessel is nearing the last waypoint in the route	W
Missing GPS	GPS source failure	W
Missing heading	Heading source is not providing heading data	C
RAIM (position integrity)	Position solution exceeds allowable distance error	W
XTE	Vessel is drifting out of the cross-track zone	W

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Appendix

Menu overview

Main menu

Level 1	Level 2
Navigation	Navigate to waypoint
	Navigate route
	Navigate to coordinate
	Cancel navigation
	Restart from here
	Skip
Manage waypoints and routes	Manage waypoints
	Manage routes
	Import
	Export
Alerts...	
Satellites...	
About...	
Page layout (not available for AIS and Trip log page	Layout 1
	Layout 2
AIS (only available for the AIS page)	
	Range
	Icon orientation
	Target list...
	Messages...
Trip log (only available for the Trip log page)	Start/Stop trip log
	Reset trip log
Settings...	See *"Settings menu"* on page 54

Settings menu

Level 1	Level 2
System	Language (not available for P2005)
	Key beeps
	Time...
	Restore defaults...
	Files...
	About...
	Advanced >
Pages	Position
	Navigation
	Heading
Trip log	Set log...
	Use STW
AIS	MMSI...
GNSS	System type
	Enable RAIM
	<GNSS source configuration>
Navigation	Method
	Arrival alert
	Arrival radius
	XTD limit
	Coord system
	Datum...

Level 1	Level 2
Units	Distance
	Distance small
	Speed
	Wind speed
	Angular speed
	Depth
	Heading
	Temperature
	Volume
	Pressure
	Baro pressure
Local port setup	User NMEA 0183 ports for direct antenna connection
	Configure NMEA 0183 port 1
	Configure NMEA 0183 port 2
	Use analog input to control backlight level
	Configure digital port
Calibration	Magnetic variation
Network	Display sources >
	NMEA 2000 >
	Lightweight Ethernet >
	UDB diagnostics
	Groups...
	Damping >
	Data bridge >
	Junction box setup >

Terms and abbreviations

AIS	Automatic Identification System
ATON	Aid to Navigation
BRG	Bearing
BTW	Bearing To Waypoint
BWW	Bearing Waypoint To Waypoint
COG	Course Over Ground
CRS	Course
CTS	Course To Steer
DGPS	Differential GPS
DR	Dead Reckoning
DSC	Digital Selective Calling
DTD	Distance To Destination
DTW	Distance To Waypoint
EGNOS	European Geo-Stationary Navigational Overlay System
EPIRB	Emergency Position Indicating Radio Beacon
ETA	Estimated Time Of Arrival
ETW	Estimated Time to Waypoint
GLONASS	Global Orbiting Navigation Satellite System
GMDSS	Global Maritime Distress And Safety System
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
HDG	Heading
HDOP	Horizontal Dilution Of Precision
MAG	Magnetic
MAN	Manual (speed input)
MMSI	Maritime Mobile Service Identity
MOB	Man Over Board

MSAS	Multi-functional Satellite Augmentation System
ODO	Odometer
RAIM	Receiver Autonomous Integrity Monitoring
ROT	Rate Of Turn
RTCM	Radio Technical Commission For Maritime
SAR	Search And Rescue
SBAS	Satellite Based Augmentation System
SFI	System Function ID
SOG	Speed Over Ground
STW	Speed Through Water
TTD	Time To Destination
UDB	Universal Database
UPS	Uninterruptible Power Supply
UTM	Universal Transverse Mercator (coordinate system)
VRM	Variable Range Marker
VTS	Vessel Traffic Services
WAAS	Wide Area Augmentation System
WPT	Waypoint
XTD	Cross Track Distance

Icons

GNSS mode icons

GP	GPS satellites
GN	GPS + GLONASS satellites

GPS and DGPS icons

.atll	Satisfactory autonomous GPS position
▲	No position fix
!.atl	Correction is not available
.atll SBAS	SBAS signal correction applied to augment signal
.atll DGPS	Differentially corrected signal (RTCM corrections)

The number of highlighted bars indicate the signal strength. The more highlighted bars, the stronger signal.

RAIM status indicators
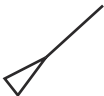
Icon	Status	Description
R+	Safe	Any position error is within the specified limit
R?	Caution	No RAIM, the system is receiving signals from less than five GPS satellites
R-	Unsafe	The statistical position error exceeds the specified limit.
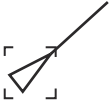
Alert icons

The table shows the alert icons depending on if the alert is active, acknowledged or rectified.

Alert type	Icon	State
Warning		Active - not acknowledged, not silenced
		Active - not acknowledged, silenced
		Active - acknowledged
		Rectified - not acknowledged
Caution		Active

AIS target symbols

	Sleeping AIS target (not moving or at anchor).
	Moving and safe AIS target with course extension line.
	Dangerous AIS target, illustrated with bold line. A target is defined as dangerous based on the CPA and TCPA settings.
	Lost AIS target. When no signals have been received within a time limit, a target is defined as lost. The target symbol represents the last valid position of the target before the reception of data was lost.

	Selected AIS target, activated by selecting a target symbol. The target returns to the default target symbol when the cursor is removed from the symbol.
	AIS SART (AIS Search And Rescue Transmitter).

Supported data

NMEA 2000 compliant PGN list

PGN	DESCRIPTION	TX	RX
59392	ISO Acknowledgement	x	x
59904	ISO Request	x	x
60928	Address Claim	x	x
126208	Group Function	x	x
126992	System Time	x	x
126993	Heartbeat	x	x
126996	Product Info	x	x
126998	Configuration Information	x	x
127233	Man Overboard Notification		x
127237	Heading/Track Control	x	x
127245	Rudder	x	x
127250	Vessel Heading	x	x
127251	Rate of Turn	x	x
127252	Heave		x
127257	Attitude		x
127258	Magnetic Variation	x	x
127488	Engine Parameters, Rapid Update	x	x
127489	Engine Parameters, Dynamic		x
127493	Transmission Parameters, Dynamic		x
127503	AC input status		x
127504	AC Output Status		x
127505	Fluid Level		x
127506	DC Detailed Status		x
127507	Charger Status		x
127508	Battery Status		x
127509	Inverter Status		x

PGN	DESCRIPTION	TX	RX
128259	Speed, Water referenced	x	x
128267	Water Depth	x	x
128275	Distance Log	x	x
129025	Position, Rapid Update	x	x
129026	COG & SOG, Rapid Update	x	x
129029	GNSS Position Data	x	x
129033	Time & Date		x
129038	AIS Class A Position Report		x
129039	AIS Class B Position Report		x
129040	AIS Class B Extended Position Report		x
129041	AIS aids to Navigation		x
129283	Cross Track Error	x	x
129284	Navigation Data	x	x
129285	Navigation - Route/WP Information	x	x
129539	GNSS DOPs	x	x
129540	AIS Class B Extended Position Report	x	x
129545	GNSS RAIM Output		x
129549	DGNSS Corrections		x
129551	GNSS Differential Correction Receiver Signal		x
129793	AIS UTC and Date Report		x
129794	AIS aids to Navigation		x
129798	AIS SAR Aircraft Position Report		x
129801	Cross Track Error		x
129802	AIS Safety Related Broadcast Message		x
129809	AIS Class B "CS" Static Data Report, Part A		x
129810	AIS Class B "CS" Static Data Report, Part B		x
130067	Route and WP Service - Route - WP Name & Position	x	

PGN	DESCRIPTION	TX	RX
130074	Route and WP Service - WP List - WP Name & Position	x	x
130306	Wind Data	x	x
130310	Environmental Parameters	x	x
130311	Environmental Parameters	x	x
130312	Temperature	x	x
130313	Humidity		x
130314	Actual Pressure		x
130316	Temperature, Extended Range		x
130576	Small Craft Status		x
130577	Direction Data	x	x
130578	Vessel Speed Components	x	x

NMEA 0183 supported sentences

TX / RX - AIS/DSC

	RX	TX
DSC	x	
DSE	x	
VDM	x	
VDO	x	

→ **Note:** AIS sentences are not bridged to or from NMEA 2000.

TX / RX - GPS

	RX	TX
DTM	x	
GGA	x	x
GGA5	x	
GLC		x
GLL	x	x
GNS	x	
GSA	x	x
GSV	x	x
RMC	x	x
VTG	x	x
ZDA	x	x

TX / RX - Navigation

	RX	TX
AAM		x
ABP		x
BOD		x
BWC		x
BWR		x
RMB		x
XTE		x
RTE	x	
WPL	x	

TX/RX - Echosounder

	RX	TX
DBT	x	x
DPT	x	x
MTW	x	x
VLW	x	x
VHW	x	x

TX / RX - Compass

	RX	TX
HDG	x	x
HDT	x	
THS	x	x
ROT	x	x

TX / RX - Wind

	RX	TX
MWD	x	x
MWV	x	x

TX / RX - Misc.

	RX	TX
ACK	x	
ACN	x	
HBT	x	
HDM	x	
MOB	x	
RPM	x	x
RSA	x	x
TRD	x	x
VBW	x	
XDR	x	x

LWE Transmission groups

	Input	Output
MISC	x	x
NAVD		x
PROP	x	
SATD	x	
TIME	x	
USR1 to USR8	x	
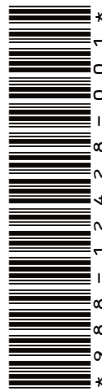
SIMRAD

Mackay

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Satellite Communications**

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