SAILOR 6390 Navtex Receiver

Installation manual

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Safety summary

Observe the following general safety precautions during all phases of operation, service and repair of this equipment. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture and intended use of the equipment. Thrane & Thrane A/S assumes no liability for the customer's failure to comply with these requirements.

Ground the equipment

To minimise shock hazard, connect the SAILOR 6390 Navtex Receiver to an electrical ground and follow the cable instructions.

Warranty limitation

The SAILOR 6390 Navtex Receiver is not a user maintainable unit, and under no circumstances should the unit be opened beyond the outer plastic cover, except by authorized personnel. Unauthorized opening of the unit will invalidate the warranty.

Installation and service

Installation and general service must be done by skilled service personnel. The SAILOR 6390 Navtex Receiver is intended for use in a protected environment (-15˚ to +55˚C) according to IEC-60945.

Compass safe distance

Compass safe distance: 20 cm (Standard magnetic compass), 20 cm (Emergency magnetic compass) from the SAILOR 6390 Navtex Receiver.

Preface

Approvals and standard compliance

SAILOR 6390 Navtex Receiver is approved to MED 2012/32/EU and fulfills the requirements in the following standards:

IEC-60945 (2002), IEC-60945 Corrigendum 1 (2008), IEC-61097-6 (2005-12), IEC-61162-1 (2010-11) (aligned with NMEA 0183 version 4.00), ITU-T X.27/V.11 (1996)

The SAILOR 6390 Navtex Receiver is approved to SOLAS Regulations IV/7, IV/14: ITU-R M.540-2 (06/90) and ITU-R M.625-3 (10/95).

The SAILOR 6390 Navtex Receiver is approved to FCC Equipment class: RNV, Part 80 NAVTEX Receiver 80.1101(c)(1).

The approvals of the SAILOR 6390 Navtex Receiver are constantly monitored. New national approvals will be applied for and granted and new test standards may come into force. Therefore the above list may not be complete. Contact your authorized dealer for more information.

Record of Revisions

Rev.	Description	Release Date	Initials
A	Original document	25 October 2013	UFO

Table of contents

About this manual

1.1 Intended readers

This is an installation manual for the SAILOR 6390 Navtex Receiver. It is intended for installers of the system and service personnel. Personnel installing or servicing the system must be properly trained by Cobham SATCOM. It is important that you observe all safety requirements listed in the beginning of this manual, and install the system according to the guidelines in this manual. For daily use see the SAILOR 6390 Navtex Receiver User manual.

1.2 Manual overview

This manual has the following chapters and appendices:

- *Introduction*
- *Installation*
- *Configuration*
- *Service & maintenance*
- *Technical specifications*
- *NMEA sentences*

1.3 Related documentation

The following table shows the documents related to this manual and to the SAILOR 6390 Navtex Receiver.

Title and description	Document number
SAILOR 6390 Navtex Receiver, User manual	98-137261
SAILOR 6004 Control Panel, Installation manual	98-136644
SAILOR 6390 Navtex Receiver, Installation guide	98-137263

Table 1-1: Related documents

1.4 Precautions

Warnings, Cautions and Notes

Text marked with "Warning", "Caution", "Note" or "Important" show the following type of data:

- **Warning**: A Warning is an operation or maintenance procedure that, if not obeyed, can cause injury or death, or jeopardize the safety on board.

- **Caution**: A Caution is an operation or maintenance procedure that, if not obeyed, can cause damage to the equipment.

- **Note**: A Note gives information to help the reader.

- **Important**: A text marked Important gives information that is important to the user, e.g. to make the system work properly. This text does **not** concern damage on equipment, travel safety nor personal safety.

General precautions

All personnel who operate equipment or do maintenance as specified in this manual must know and follow the safety precautions. The warnings and cautions that follow apply to all parts of this manual.

⚠ **CAUTION!** Do not use materials that are not equivalent to materials specified by Cobham SATCOM. Materials that are not equivalent can cause damage to the equipment.

⚠ **CAUTION!** The system contains items that are electrostatic discharge sensitive. Use approved industry precautions to keep the risk of damage to a minimum when you touch, remove or insert parts or assemblies.

Introduction

This chapter has the following sections:

- *Introduction to Navtex*
- *Navtex message (example)*
- *System components*
- *Part numbers*

2.1 Introduction to Navtex

2.1.1 Overview

The SAILOR 6390 Navtex Receiver receives Navtex messages on the international Navtex frequencies 490 kHz, 518 kHz and 4,209.5 kHz. It can hold 2000 messages per frequency. Messages are not affected by a power cycle. If not tagged to avoid deletion, messages are cleared from the message log after 66[1] hours. You can customise which stations to receive messages from and which message types you want to receive. The unit has an alarm relay which is only activated if a message of category D is received (i.e. SAR, Mayday relay, Pirate attack etc.). The SAILOR 6390 Navtex Receiver is always on when powered. With its LAN interface the transponder and the display can be separated, giving access to the Navtex information available where it is needed.

Figure 2-1: SAILOR 6390 Navtex Receiver

The SAILOR 6390 Navtex Receiver is delivered as a black box receiver which can either be connected to the SAILOR 6004 Control Panel, a 7" touch screen, or used as a standalone unit for integration with an INS, supporting NMEA0183. A printer can be connected to the receiver.

The SAILOR 6390 Navtex Receiver is approved according to GMDSS (EU Marine Equipment Directive).

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1. Default value.

2.1.2　Features

- 2000 messages per frequency, giving a total of 6000 messages

- Printing via SAILOR 6004 Control Panel and 3rd party line printer over LAN

- Integrated Navtex app for SAILOR 6004 Control Panel

- Low and high impedance antenna switch

- Dual LAN connector

- TMA (ThraneLINK Management Application) for software upgrade

- Prepared for 500 kHz NAVDAT (Software updatable)

2.1.3　Connector overview
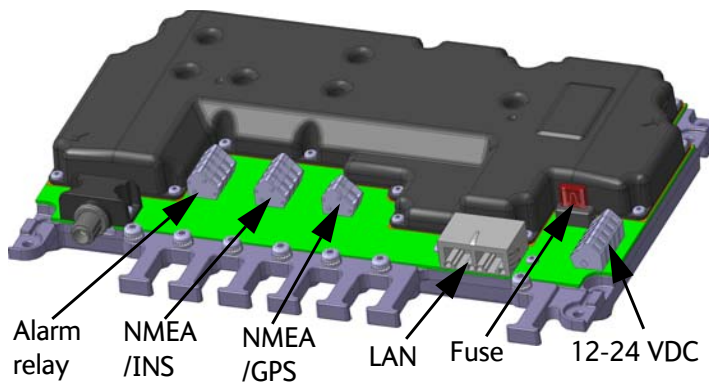
Figure 2-2: Connector overview and fuse location

2.2 Navtex message (example)

The following message shows an example of a Navtex message.

```
ZCZC XZ28
REYKJAVIK VIA GRINDAVIK
120350 UTC SEPT 2013

NO MESSAGE ON HAND
NNNN
```

Message item	Explanation
ZCZC	Start of message (not displayed)
X	Coast Station ID in the Navigational Area
Z	Message type (See *The following list shows the Navtex message types available.* on page 2-10 for a list of all message types.)
28	Serial number of message 01-99: (normal), 00: Priority
Message text	REYKJAVIK VIA GRINDAVIK 120350 UTC SEPT 2013 NO MESSAGE ON HAND
NNNN	End of message (not displayed)

Table 2-1: Navtex message, example

2.3 System components

The SAILOR 6390 Navtex Receiver can be used in the following contexts:

- *Use with the SAILOR 6004 Control panel*
- *Use as a stand-alone unit with an INS*

An optional printer can be connected in both use scenarios.

2.3.1   Use with the SAILOR 6004 Control panel

The SAILOR 6004 Control panel is the user interface for the SAILOR 6390 Navtex Receiver. The user interface is in English. All settings that are relevant for the user are accessed through the touch panel. Alarms and notifications are shown in the display and via NMEA. The SAILOR 6004 Control panel has a buzzer for alarm tones and the display supports night mode. The SAILOR 6390 Navtex Receiver has a Navtex application which is loaded into the SAILOR 6004 Control Panel during installation.

Figure 2-3: SAILOR 6004 Control panel

2.3.2   Use as a stand-alone unit with an INS

The SAILOR 6390 Navtex Receiver also works as a stand-alone unit, integrated in the vessel's INS. It supports the Navtex specific NMEA sentences according to the standard IEC 61097–6 and IEC 61162-1. For further details see the documentation of the INS.

2.4   Part numbers

This installation manual is for the SAILOR 6390 Navtex Receiver and the SAILOR 6391 Navtex system. See the part numbers below:

Part number	Description
406390A-00500	SAILOR 6390 Navtex Receiver
406391A-00500	SAILOR 6391 Navtex System (SAILOR 6004 Control Panel and SAILOR 6390 Navtex Receiver)
406004A-00500	SAILOR 6004 Control Panel

Table 2-2: Part numbers for the SAILOR 6390 Navtex Receiver

Installation

This chapter has the following sections:

- *Unpacking and initial inspection*
- *Installation of the SAILOR 6390 Navtex Receiver*
- *Installation of the SAILOR 6004 Control Panel*

3.1 Unpacking and initial inspection

3.1.1 Unpacking

The following items are included in the delivery of a SAILOR 6390 Navtex Receiver:

- SAILOR 6390 Navtex Receiver
- User manual SAILOR 6390 Navtex Receiver
- Installation guide SAILOR 6390 Navtex Receiver
- Cable RJ45 Cat5e STP, 5 m
- Mounting tool for terminal blocks
- Cable tie 5x200 mm (8 pieces)
- Fuse puller
- Fuse (1 A)
- Screw M4-x12 TORX 20 (5 pieces)
- Screw ST3.9x19 TORX (5 pieces)

3.1.2 Initial inspection

Inspect the shipping carton immediately upon receipt for evidence of damage during transport. If the shipping carton is severely damaged or water stained, request that the carrier's agent be present when opening the carton. Save the carton packing material for future use.

> ⚠️ **WARNING!** To avoid electric shock, do not apply power to the system if there is any sign of shipping damage to any part of the front or rear panel or the outer cover. Read the safety summary at the front of this manual before installing or operating the system.

After unpacking the system, inspect it thoroughly for hidden damage and loose components or fittings. If the contents are incomplete, if there is mechanical damage or defect, or if the system does not work properly, notify your dealer.

Installation

3.2 Installation of the SAILOR 6390 Navtex Receiver

You can mount the SAILOR 6390 Navtex Receiver on a desktop or on a wall. Provide sufficient space to access the connectors and the fuse. Allow sufficient space for the cables., see Figure 3-2: *Drilling plan* on page 3-3.

Compass safe distance

Make sure that the SAILOR 6390 Navtex Receiver is far enough from any magnetic compass. See the following table for the safe distance after magnetization between the nearest point of the device and the centre of the compass at which it will produce a deviation of 0.3˚.

Device	Compass safe distance
SAILOR 6390 Navtex Receiver	20 cm (Standard magnetic compass) 20 cm (Emergency magnetic compass)
SAILOR 6004 Control Panel	60 cm

Table 3-1: Compass safe distances

3.2.1 Dimensions
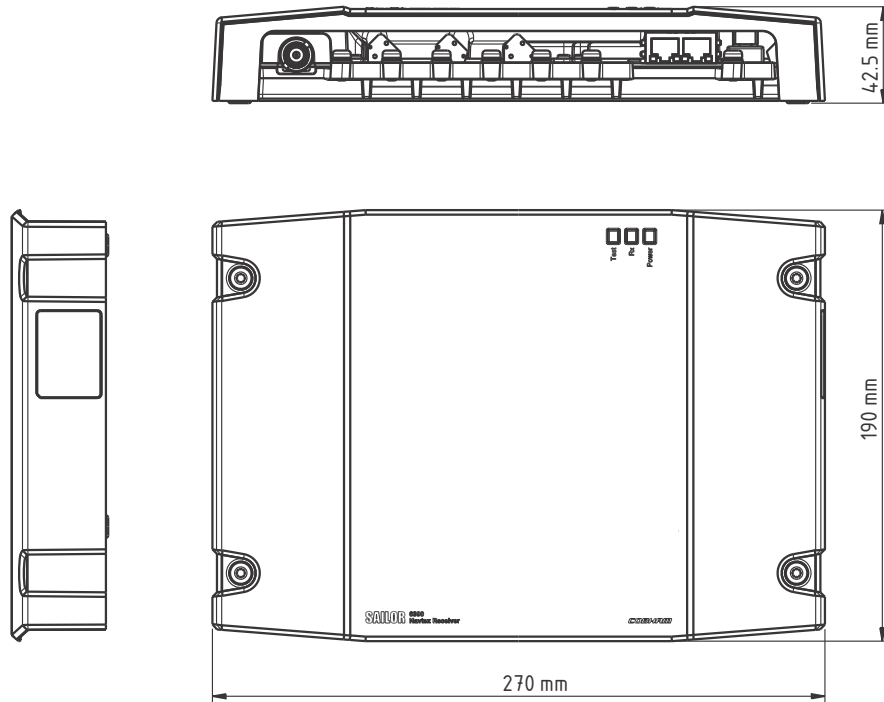
Figure 3-1: Dimensions

3.2.2   Drilling plan

See the following drilling plan for installing the SAILOR 6390 Navtex Receiver.

Installation
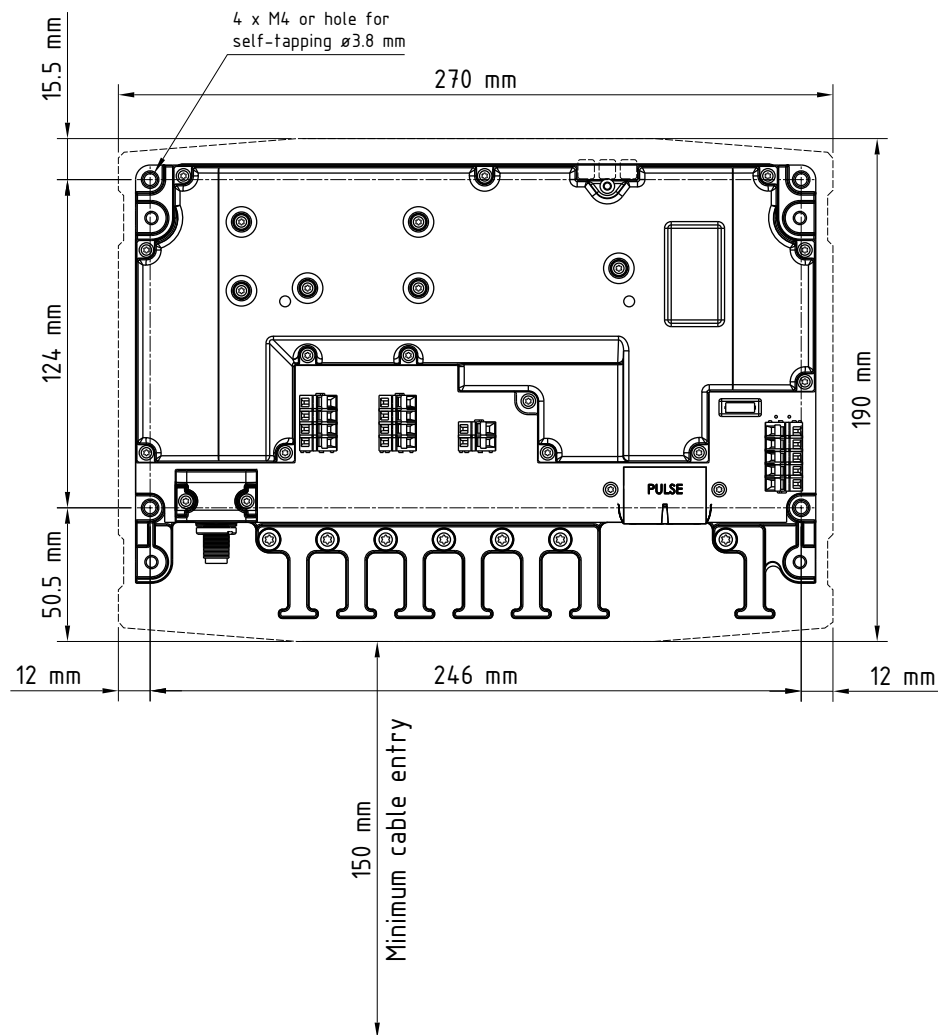
Figure 3-2: Drilling plan

Leave the lid of the SAILOR 6390 Navtex Receiver off until all connections to the spring-loaded terminals are made and initial testing is passed successfully.

3.2.3   Navtex antenna

You can fit a suitable active or passive antenna for Navtex reception. Cobham recommends to use an active antenna suitable for tri-band Navtex reception if the environment allows it.

Suitable antennas are:

- Navcom NA 3S

- Procom NTA 3E-SHT

- Sirius A159

or similar.

Placing the Navtex antenna

Place the Navtex receiver antenna, passive or active, as high as possible, unobstructed from large objects. Do not place the antenna close to a transmitting MF/HF antenna, as this will impair receiver performance.

3.2.4   Wiring

Passive Antenna

Active Navtex Antenna
12 VDC @ 60 mA max.

SAILOR 6390 Navtex Receiver

SAILOR 6004 Control Panel

ALARM RELAY (normally closed)
32 VDC @ 500 mA max.

NMEA OUT (to INS)

NMEA IN (from INS)
GND at talker end

NMEA IN (from eg. GPS)
GND at talker end

PE

ON IN

VBAT-
VBAT+
Shield

12-24 VDC
(internal fuse 1 A)

ON OUT

12-24 VDC
(internal fuse 3.15 A)

The device requires ON IN to be connected to VBAT- in order to power up.
This can be done by a dedicated switch, permanent wiring or connection
to a Cobham device supporting ON OUT (e.g. SAILOR 6004 Control Panel).

SAILOR H1252B Printer

12-24 VDC

Figure 3-3: Connecting the SAILOR 6390 Navtex Receiver

1. Connect the active Navtex antenna. Configuration is not necessary (auto-detect).
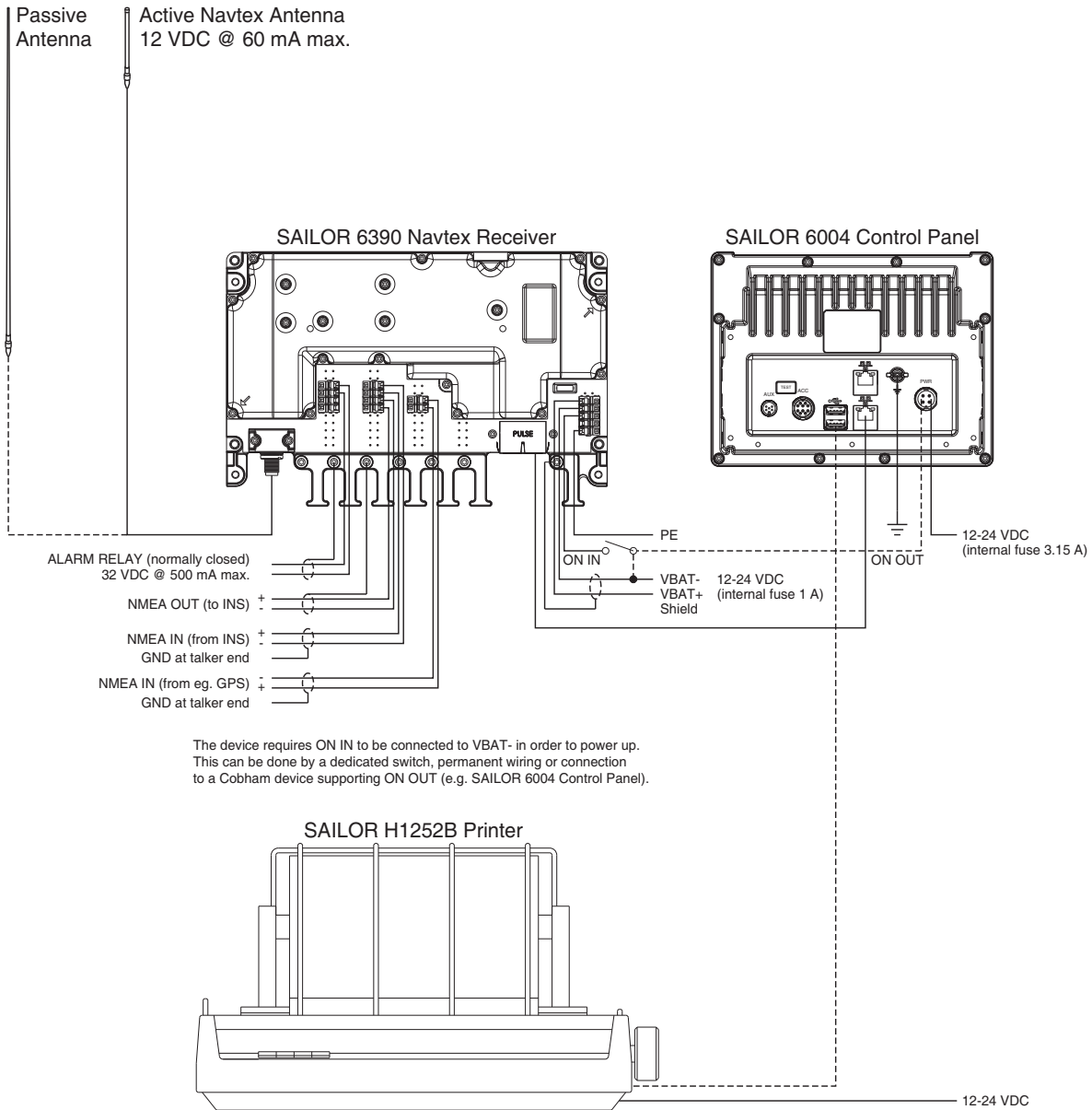
2. Connect to the spring-loaded terminals as shown in the above figure.
    – J9: ALARM RELAY
    – J10: NMEA OUT (to INS) and NMEA IN (from INS)
    – J11: NMEA IN (from e.g. GPS) and GND
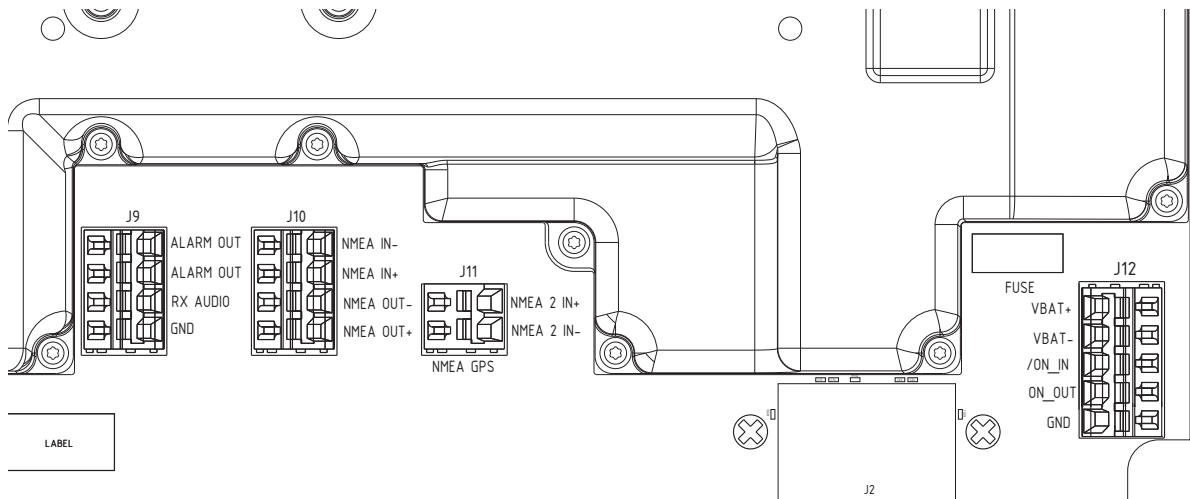   – PE (Protective Earth)
    – 12-24 VDC

Figure 3-4: Spring-loaded terminals of the SAILOR 6390 Navtex Receiver (zoom)

3. Connect the SAILOR 6004 Control Panel via LAN to the SAILOR 6390 Navtex Receiver or connect NMEA OUT (to INS) and NMEA IN (from INS).

4. Use the integrated cable relief to secure the cables with the provided cable ties.

5. Fasten the lid on the SAILOR 6390 Navtex Receiver with 4 screws (included in the delivery).

Navtex printer interface

The optional Navtex printer interface requires a printer attached to a LAN network. Two setups are supported:

1. Using a Control Panel as LPR print server (requires attaching a USB printer)

2. Using a third party LPR print server (requires IP address, port and queue name of that server)

3.2.5   Ethernet interfaces

The SAILOR 6390 Navtex Receiver has two Ethernet connectors (RJ45). The Ethernet connectors are identical, you can use any of the connectors to connect the SAILOR 6390 Navtex Receiver to the SAILOR 6004 Control Panel.

The Ethernet interface is also used for communication with the Service Interface (opens in a web browser). For more information see *Configuration with the Service Interface* on page 4-4.

LAN connector and cable

The SAILOR 6390 Navtex Receiver has two identical LAN connectors. Use one for connecting the SAILOR 6004 Control Panel. The two connectors are of the type RJ45 with 8 leads

Important ▶ **For GMDSS installations**: Only connect units that are part of the GMDSS LAN system. For safety and compliance reasons, the Ethernet interface is restricted to internal communication in an isolated system.

The figure and table below show the connector outline and pin assignments.

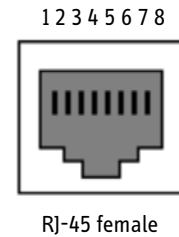| Pin	Pin function	Wire colour
1	Tx+	White/Orange
2	Tx-	Orange
3	Rx+	White/Green
4	Not connected	Blue
5	Not connected	White/Blue
6	Rx-	Green
7	Not connected	White/Brown
8	Not connected	Brown

1 2 3 4 5 6 7 8

RJ-45 female

Table 3-2: Pin allocation, LAN connector and cable

3.2.6 Recommended cables

Cable for:	Specification	Max. length
Active Navtex antenna	Coaxial RG 214 or similar	200 m[a]
DC supply (Power)	+/- PE shielded, 0.5 mm^2 (AWG20) 12 VDC 24 VDC	 30 m[a] 60 m
Alarm output	Shielded two wires (e.g. 0.15 mm^2, AWG26)	20 m[a]
LAN	Ethernet cable, shielded Cat 5e or better (STP)	100 m
NMEA IN and NMEA OUT	Shielded twisted pair (GPS / INS IN / INS OUT) (e.g. 0.15 mm^2, AWG26)	20 m[a]

Table 3-3: Recommended cables

a. At specified cable diameter.

3.3 Installation of the SAILOR 6004 Control Panel

For instructions how to install the SAILOR 6004 Control Panel see separate installation manual for the SAILOR 6004 Control Panel (part number 98-136644).

Connect the LAN connector at the SAILOR 6390 Navtex Receiver to the LAN connector at the SAILOR 6004 Control Panel.

Configuration

This chapter has the following sections:

- *Start up*
- *System and Navtex app installation*
- *Configuration with the Service Interface*
- *Verification*

4.1   Start up

4.1.1   To Power on and off

As soon as DC power is provided the SAILOR 6390 Navtex Receiver is on.

To switch on the SAILOR 6004 Control Panel push the power button. Operate the SAILOR 6004 Control Panel by tapping the touch screen. To switch off the SAILOR 6004 Control Panel push and hold the power button for 2 seconds and follow the instructions on the screen.

If the Control Panel cannot switch off normally (e.g. due to a fault): Push and hold for 12 seconds.

Note	When the remote switch in the SAILOR 6004 Control Panel is wired and it is switched on, you can only use the Power button to reboot the SAILOR 6004 Control Panel, you cannot switch it off.

4.1.2   Dim and night mode

Turn the dim knob of the SAILOR 6004 Control Panel to increase or decrease the display brightness. The display goes into **night mode** either when turning the dim knob on the front panel counterclockwise or when the internal light sensor detects the light level for changing to night mode.

To dim to level zero push the power button once. If an alarm appears while the display is in level zero, the display returns to the latest dim value and the alarm is displayed.

4.2　System and Navtex app installation

The System app is already installed in the SAILOR 6004 Control Panel. You use the System app to install the Navtex app.

4.2.1　System app

Having switched on the SAILOR 6004 Control Panel, an icon named **System** is always displayed, plus the icon(s) of the applications that are installed. Under **System** you can set up and manage the SAILOR 6004 Control Panel.

Figure 4-1: Screen to enter **System** (example)

Tap the icon **System** and the following topics are available:

- *Settings* for Network settings, Date/Time and Debugging.

- *Applications* to install and manage applications.

- *Self Test* for testing Touch, Controls, Display, Audio, USB, Light Sensor, Alarm Output, NMEA and LAN.

- *About* with Legal information, software versions and network information.

Settings

Tap **Settings** to enter the section for network configuration, date and time setting and debugging. Tap the section you want to work with and explore the touch screen for each setting. To change a setting you must enter the password for user level (user) and tap **OK**.
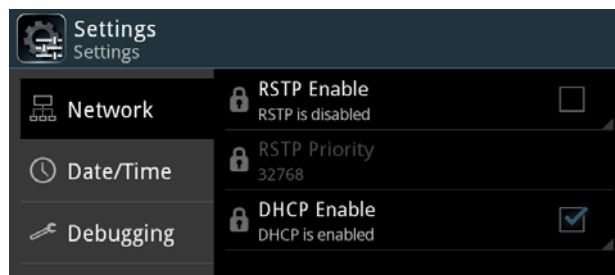

Figure 4-2: System - Settings, Display

Applications

Tap **Applications** to install, uninstall or update applications. This section has two tabs: **Available**, showing the apps that are available to the SAILOR 6004 Control Panel on the current network, and **Installed**, showing the apps already installed.
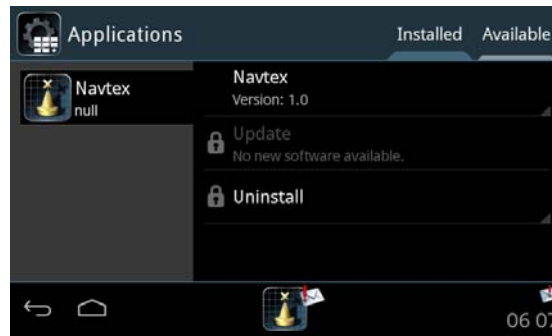
Figure 4-3: System – Applications (example)

To install an app, do as follows:

1. Tap **Available** to display the apps that are available to this SAILOR 6004 Control Panel.

2. Tap the app you want to install.
   - Tap the app name, e.g. **Navtex** Version 1.0.
   - **Install** to install this app on the SAILOR 6004 Control Panel.

3. Enter the password for user level (user) and tap **OK**.

To manage an already installed app, do as follows:

1. Tap **Installed** to display the apps that are installed on this SAILOR 6004 Control Panel.

2. Tap the app you want to manage. For each app there are the following items:
   - App name and version, e.g. Navtex Version 1.0.
   - **Update** (if available, else grayed out) – tap here to update this app. Enter the password for user level and tap **OK**.
   - **Uninstall** – tap here to uninstall this app from the SAILOR 6004 Control Panel.

3. Enter the password for user level (user) and tap **OK**.

Self Test

Tap **Self Test** to start the self test of the SAILOR 6004 Control Panel. For further details on the self test see the installation manual of the SAILOR 6004 Control Panel.

About

Tap **About** to view the following:

- **Legal** with legal and copyright information, open source licences, etc.

- **Version** with software versions and serial number of the SAILOR 6004 Control Panel.

- **Network** with IP address and MAC address of the SAILOR 6004 Control Panel.

4.2.2   Navtex app – daily use

The daily use of the Navtex app is described in the user manual for the SAILOR 6390 Navtex Receiver.

4.3 Configuration with the Service Interface

Before the SAILOR 6390 Navtex Receiver can be used on board you must set up several parameters. To do this, use the Service Interface.

The Service Interface is a web interface built into the software of the SAILOR 6390 Navtex Receiver. No installation of software is necessary. You access it from a computer with a standard Internet browser (Firefox or Chrome recommended).

4.3.1 Accessing the Service Interface

You can start the Service Interface in several ways:

- *Using a PC with ThraneLINK Management Application (TMA)*
- *Using a PC and an Internet browser* (Firefox or Chrome recommended)

Using a PC with ThraneLINK Management Application (TMA)

To access the Service Interface via the TMA do as follows:

1. Make sure that DC power is provided for the SAILOR 6390 Navtex Receiver.
2. Connect a PC to the same network as the SAILOR 6390 Navtex Receiver (preferably a direct connection to the Ethernet connector of the SAILOR 6390 Navtex Receiver).
3. Start the TMA (v. 1.04 or higher) and click on the SAILOR 6390 Navtex Receiver (TT-6390 NAVTEX).
4. Click the icon **Management** and then **Web interface**. The Service Interface opens in a browser window.

Figure 4-4: Accessing the web interface using the TMA

Using a PC and an Internet browser

To access the Service Interface with a PC and an Internet browser do as follows:

1. Switch on the SAILOR 6004 Control Panel and make sure that DC power is provided for the SAILOR 6390 Navtex Receiver.

2. Tap the menu item in the top right corner, swipe upwards and tap **Settings**.

3. In the section **Connection**, two IP addresses are listed:
   - Remote IP address – IP address of the SAILOR 6390 Navtex Receiver
   - Own IP Address – IP address of the SAILOR 6004 Control Panel

   These IP addresses are assigned automatically. Note down the IP address of the SAILOR 6390 Navtex Receiver.

4. Connect a PC to the same network as the SAILOR 6390 Navtex Receiver - or - SAILOR 6004 Control Panel.

5. Open an Internet browser (Firefox or Chrome recommended) and enter the IP address of the SAILOR 6390 Navtex Receiver (Remote IP address), e.g.:
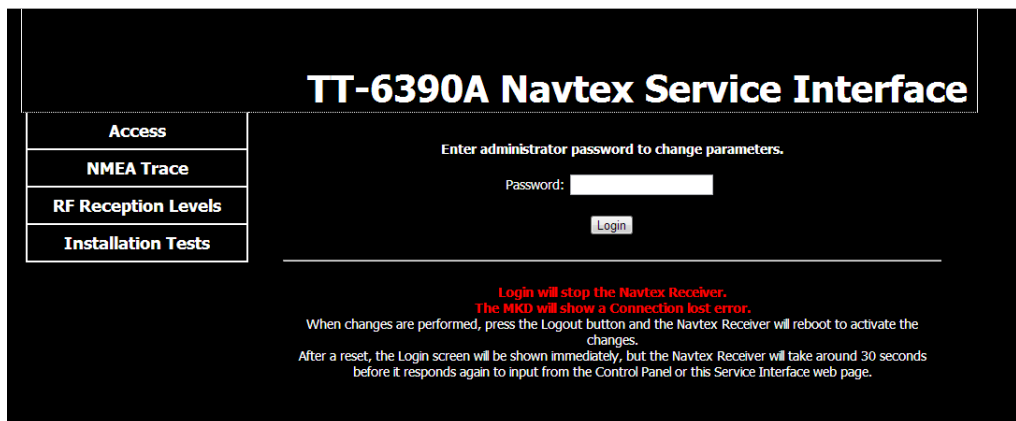   **http://169.254.45.10**

Figure 4-5: Start screen of the Service Interface in an Internet browser

Before logging in you have access to some tools for verification:

- NMEA Trace, more information on page 4-18.
- RF Reception Levels, more information on page 4-19.
- Installation Tests, more information on page 4-20.

4.3.2   Configuring the installation

To configure the installation you must log in to the Service Interface.

> **Important** | **The SAILOR 6390 Navtex Receiver is blocked for normal use for as long as communication with the Service Interface is ongoing.**
> The **SAILOR 6004 Control Panel** raises the alarm Connection lost, this will be displayed in the **SAILOR 6004 Control Panel** (also called MKD).
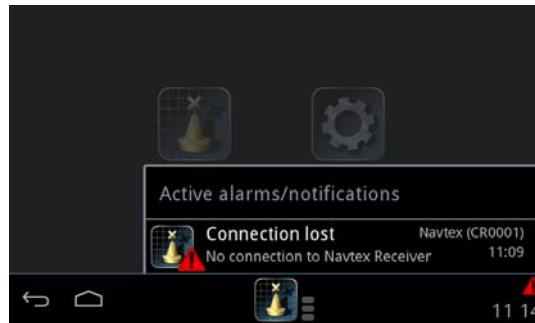

Figure 4-6: SAILOR 6004 Control Panel display: No connection when using the Service Interface

1. Enter the password and click **Login**.
   Password: **sailorsailor**
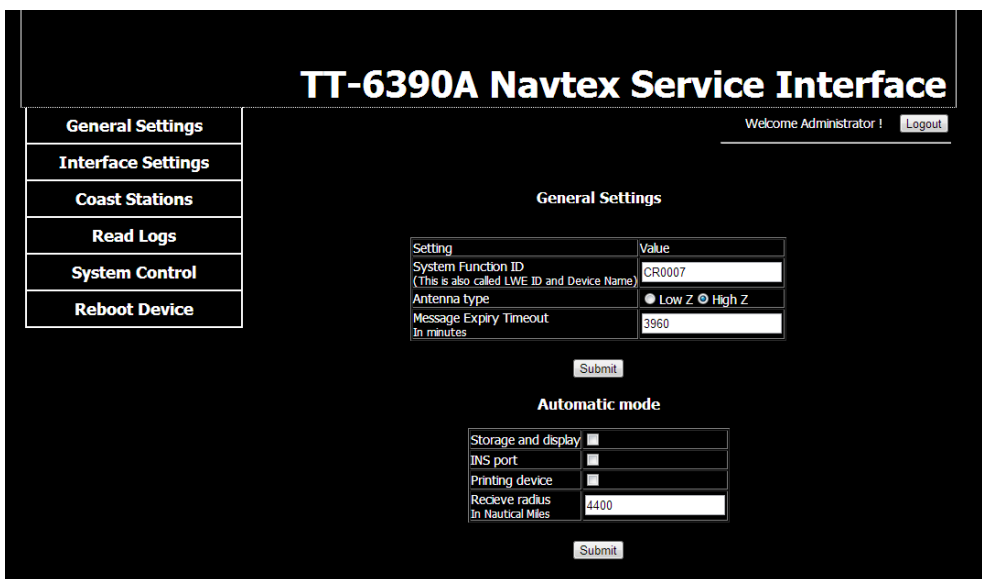   The Service Interface opens with the page General settings.

Figure 4-7: Service Interface – general settings

2. If needed, enter a new System Function ID (Remote Device Name in the Navtex app on the SAILOR 6004 Control Panel).

> **Note** | Change the System Function ID only if there is more than one SAILOR 6390 Navtex Receiver in the network.

The System Function ID is the identification of the SAILOR 6390 Navtex Receiver in the network. It must consist of the letters CR followed directly by 4 digits. This must be the same ID that has been set in the SAILOR 6004 Control Panel.

3. Select the antenna type: Low Z (Low impedance) for active antenna or High Z (High impedance).

4. **Automatic mode**: You can enable automatic filtering of coast stations for each filter category (Printing device, Storage and display and INS port) within the area of your own position.
   Select the filter (Printing device, Storage and display and INS port) you want to enable. This can also be set up in the Navtex app in the SAILOR 6004 Control Panel.

5. Enter the receive radius in NM in the last field. Within this radius, relative to own position, the SAILOR 6390 Navtex Receiver receives Navtex messages from all coast stations.

Note	Automatic mode requires a valid GPS input and that the coast station table is maintained (e.g. new coast stations added if necessary).
	If GPS fails for more than 10 minutes, a GPS alarm and an Auto mode alarm will occur. As a consequence, Automatic mode will be disabled stopping the coast station calculations. All stations are in the list again and the user can filter out coast stations manually, see the user manual.

   You can also select Automatic mode in the Navtex app, see the user manual.

6. Click **Submit** to save the settings in the SAILOR 6390 Navtex Receiver.

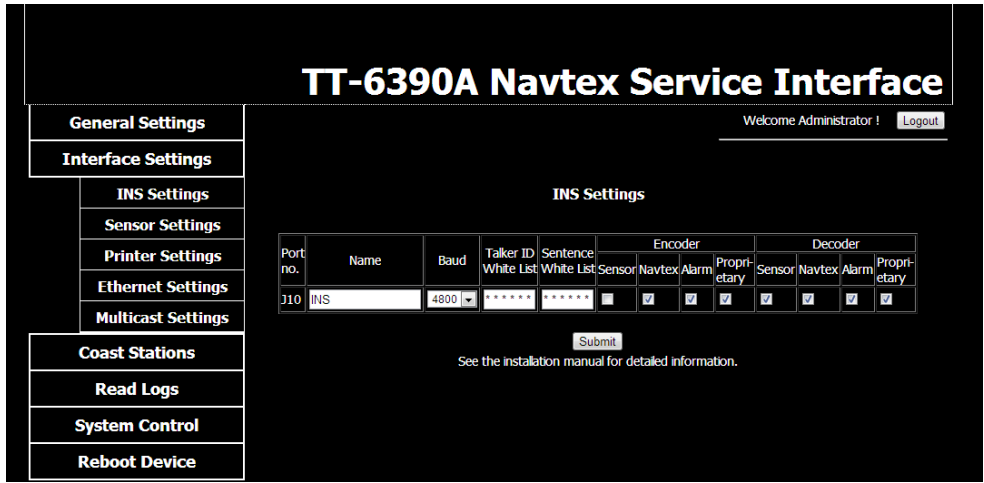Configuration

4.3.3   Interface settings

INS Settings

Figure 4-8: Service Interface: Interface Settings, INS Settings

Item	Description
Name	You can set the name according to your system requirements.
Baud	Use the drop-down list to change the baud rate, if needed (default: 4800 baud).
Talker ID White List	Enter NMEA talker IDs. Replace * from left to right. Example: AI ZZ BI CC GH ZI VA ST * * The talker ID white list is used to ensure that the SAILOR 6390 Navtex Receiver does not get identical information from more than one physical sensor device (identified by talker ID). If one of the inputs receives data that shall be ignored by the SAILOR 6390 Navtex Receiver, make a positive Talker ID white list for this port, listing only talker IDs that shall be used by the SAILOR 6390 Navtex Receiver on this interface. Talker IDs that are not listed will be filtered out. An empty list (* * * * * * * * * * - default) allows input from any talker ID.
Sentence White List	Enter NMEA sentences. Replace * from left to right. Example: RMC ZDA CRQ * * * * * * * * * * * * * * * * The Sentence white list is used to ensure that the SAILOR 6390 Navtex Receiver can be configured to receive specific NMEA sentences on a specific port. If several devices (defined by different talker IDs) are providing the same sentence type, make a positive sentence white list for a port to indicate where sentences shall be taken. Sentences that are not listed will be filtered out. An empty list (* * * * * * * * * * * * * * * * * * * - default) allows any sentence to be accepted on that port.
Decoder	Select which NMEA sentences you want to decode.

Table 4-1: Interface settings, Sensor Settings

Sensor Settings

The sensor port is connected to the GPS. It can be configured to decode different categories/purposes:

- Sensor specific NMEA sentences
- Navtex specific NMEA sentences
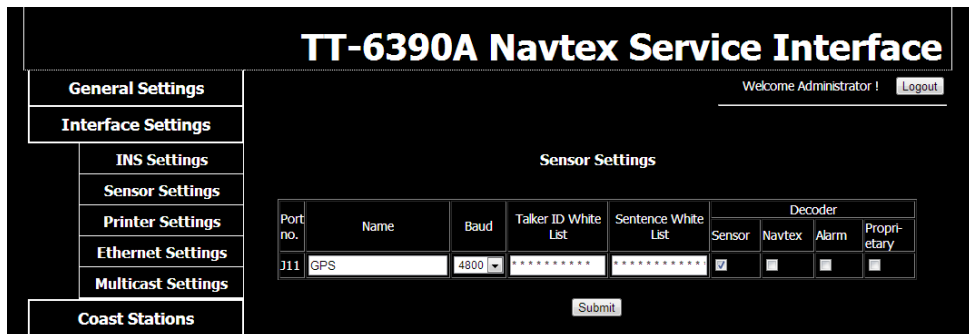- Alarm specific NMEA sentences
- Proprietary NMEA sentences

Figure 4-9: Service Interface: Interface settings – Sensor Settings

Item	Description
Name	You can set the name according to your system requirements.
Baud	Use the drop-down list to change the baud rate, if needed (default: 4800 baud).
Talker ID White List	Enter NMEA talker IDs. Replace * from left to right. Example: AI ZZ BI CC GH ZI VA ST * * The talker ID white list is used to ensure that the SAILOR 6390 Navtex Receiver does not get identical information from more than one physical sensor device (identified by talker ID). If one of the inputs (Sensor or LWE) receives data that shall be ignored by the SAILOR 6390 Navtex Receiver, make a positive Talker ID white list for this port, listing only talker IDs that shall be used by the SAILOR 6390 Navtex Receiver on this interface. Talker IDs that are not listed will be filtered out. An empty list (* * * * * * * * * * - default) allows input from any talker ID.
Sentence White List	Enter NMEA sentences. Replace * from left to right. Example: RMC ZDA CRQ * * * * * * * * * * * * * * * * * The Sentence white list is used to ensure that the SAILOR 6390 Navtex Receiver can be configured to receive specific NMEA sentences on a specific port. If several devices (defined by different talker IDs) are providing the same sentence type, make a positive sentence white list for a port to indicate where sentences shall be taken. Sentences that are not listed will be filtered out. An empty list (* - default) allows any sentence to be accepted on that port.
Decoder	Select which NMEA sentences you want to decode.

Table 4-2: Interface settings, Sensor Settings

Printer Settings

On this page you can enter the printer settings or disable the printer. You can also let the system detect automatically a printer connected.
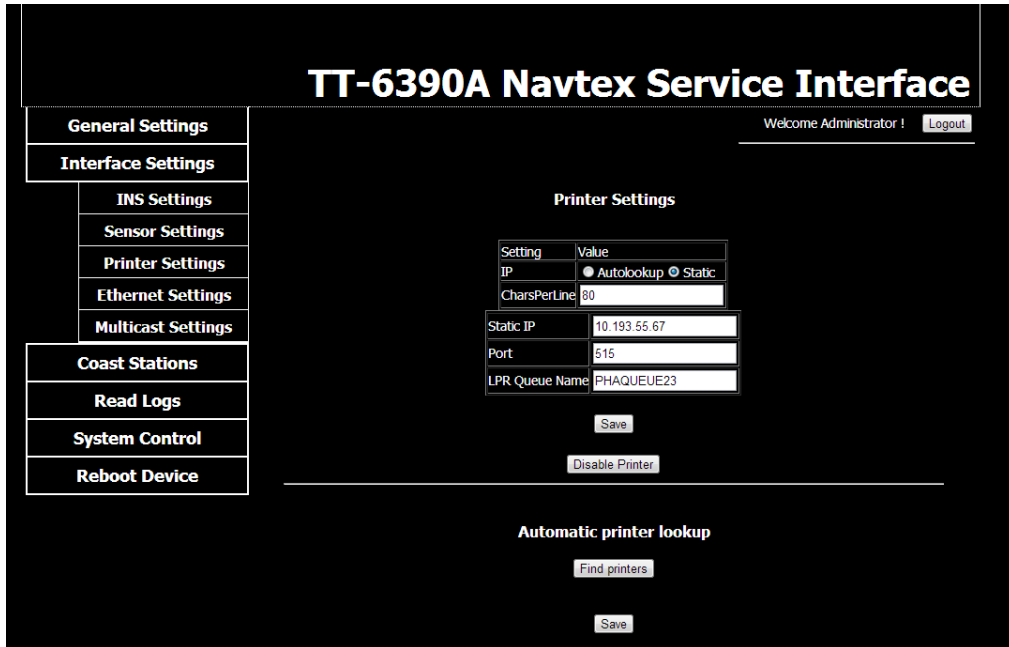

Figure 4-10: Interface Settings, Printer Settings

Item	Description
IP	Auto lookup or Static
CharsPerLine	Number of characters per line. If the printed message is longer than allowed on the printer, the printer inserts a ~ to indicate a line division, because the line to be printed is longer than the number of allowed characters per line., and the printer breaks the line.
Static settings	If you need a static IP you must enter the following: – Static IP (IP address) – Port number – LPR Queue Name See the documentation of the printer server.

Table 4-3: Interface settings, Printer Settings

Click **Save** to save the printer settings in the SAILOR 6390 Navtex Receiver.

Note ▷ Once the printer is configured in the SAILOR 6390 Navtex Receiver but not found in the network, the SAILOR 6390 Navtex Receiver raises an alarm.

Use scenario 1: **Printer and ThraneLINK compatible print server**

To set up a printer that is compatible with a ThraneLINK print server, e.g. the SAILOR 6004 Control Panel, do as follows:

1. Connect the printer to one of the two USB ports of the SAILOR 6004 Control Panel.

2. Switch on the SAILOR 6004 Control Panel and the printer attached.

3. Click **Find printers** in the section **Automatic printer lookup**. Then a list with serial numbers of the available ThraneLINK print servers with attached printers is displayed.

4. Click the serial number of the desired print server, e.g. a serial number of a SAILOR 6004 Control Panel.

5. Click **Save** to save the printer settings in the SAILOR 6390 Navtex Receiver.

Use scenario 2: **3rd party printer**

To set up a 3rd party printer do as follows:

1. At **Setting**, **IP** select **Static**.

2. Fill in the Static IP (IP address), Port number and LPR Queue Name. See the documentation of the printer server

3. Click **Save** save the printer settings in the SAILOR 6390 Navtex Receiver.

Use scenario 3: **Disable printer**

Click **Disable Printer** if you do not intend to install a printer for printing Navtex messages. Then the SAILOR 6390 Navtex Receiver will not give printer alarms.

Configuration

Ethernet Settings

The SAILOR 6390 Navtex Receiver and the SAILOR 6004 Control Panel communicate through Ethernet. Other equipment can also communicate using the same Ethernet. Therefore, it is necessary to configure an IP address and network ID for the SAILOR 6390 Navtex Receiver in the SAILOR 6004 Control Panel. I.e. the two devices must be paired.

The IP addresses of the SAILOR 6390 Navtex Receiver and the SAILOR 6004 Control Panel are acquired automatically. There is also the possibility to set a static IP address. The IP addresses are unique for each device connected to the Ethernet network.

There are two network IDs, one for the SAILOR 6390 Navtex Receiver and one for the SAILOR 6004 Control Panel. The ID for Navtex receivers consists of two letters (CR or NR) and four digits, e.g. CR0001. The ID must be unique for each device connected to the Ethernet network.
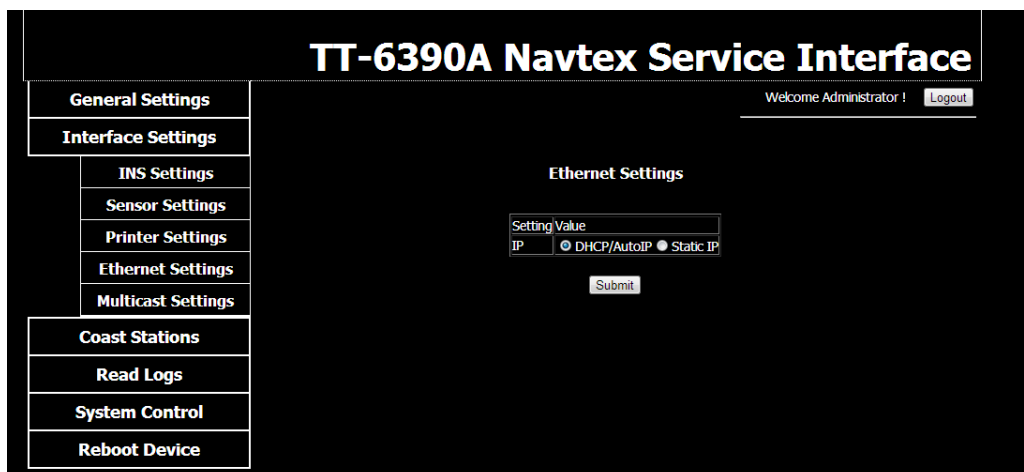

Figure 4-11: Service Interface: Interface Settings – Ethernet Settings

If needed you can set the SAILOR 6390 Navtex Receiver to have a static IP address.

Item	Description
IP	DHCP/Auto IP (recommended and default) or Static IP
Static settings	If you need a static IP you must enter the following: – IP address – Netmask – Gateway – DNS

Table 4-4: Interface settings, Ethernet Settings

Click **Submit** to send the new settings to the SAILOR 6390 Navtex Receiver.

Network ID (Multicast Settings)

When configuring the SAILOR 6390 Navtex Receiver you can set its network ID on the SAILOR 6004 Control Panel. Make sure that the SAILOR 6390 Navtex Receiver and the SAILOR 6004 Control Panel are connected to the same network.

Unit	Default network ID
SAILOR 6390 Navtex Receiver (default)	CR0001
SAILOR 6004 Control Panel (must be set if more than one SAILOR 6390 Navtex Receiver is connected)	II0001

Table 4-5: ID for SAILOR 6390 Navtex Receiver and SAILOR 6004 Control Panel

Both IDs are visible in the display of the SAILOR 6004 Control Panel in the Navtex app in the section **Settings > Connection**. The SAILOR 6390 Navtex Receiver ID is visible in the top bar of all Navtex screens of the SAILOR 6004 Control Panel.

You can change the IDs in two ways:

- Using the Navtex app, Settings > Connection, see the user manual for more detailed instructions.

- Using the Service Interface, General Settings, System Function ID.

See *Configuring the installation* on page 4-6 to learn how to set up the SAILOR 6390 Navtex Receiver using the Service Interface.

Set the Multicast Settings as shown in the figure below to make connection to the SAILOR 6004 Control panel.
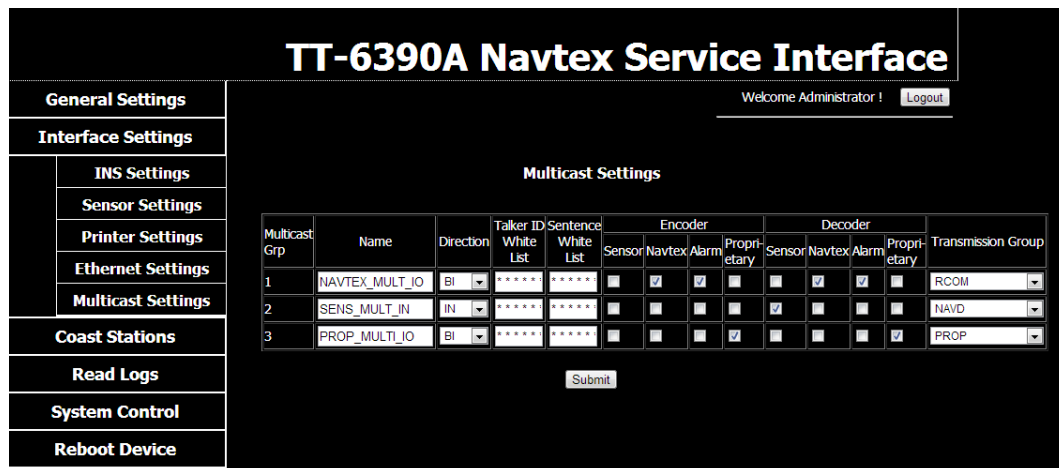

Figure 4-12: Service Interface: Interface Settings – Multicast Settings (default)

Item	Description
Name	You can name Multicast groups1 through 3 according to your system requirements.
Direction	There are three possibilities for the multicast group: • listen only (IN: input only), • talk (OUT: output only) • listen and talk (BI: bidirectional)
Talker ID White List	Enter NMEA LWE source IDs. Replace * from left to right. Example: AI0001 ZZ1234 BI0222 CC2222 GH0011 * * * * * The talker ID white list is used to ensure that the SAILOR 6390 Navtex Receiver does not get identical information from more than one physical sensor device (identified by talker ID). If one of the inputs (PI, Sensor or LWE) receives data that shall be ignored by the Navtex, make a positive Talker ID white list for this port, listing only talker IDs that shall be used by the Navtex on this interface. Talker IDs that are **not** listed will be filtered out. An empty list (* * * * * * * * * * - default) allows input from any talker ID.
Sentence White List	Enter NMEA sentences. Replace * from left to right. Example: RMC ZDA CRQ * * * * * * * * * * * * * * * * The Sentence white list is used to ensure that the SAILOR 6390 Navtex Receiver can be configured to receive specific NMEA sentences on a specific port. If several devices (defined by different talker IDs) are providing the same sentence type, make a positive sentence white list for a port to indicate where sentences shall be taken. Sentences that are **not** listed will be filtered out. An empty list (* * * * * * * * * * * * * * * * * * - default) allows any sentence to be accepted on that port.
Encoder	Select which NMEA sentences you want to encode.
Decoder	Select which NMEA sentences you want to decode.
Transmission Group	Select which lightweight Ethernet transmission group to use for the telegrams to use. Transmission groups must be unique for each port. For further information see Table B-1 on page B-1.

Table 4-6: Interface Settings, Multicast Settings

4.3.4   Managing Coast Station lists

You can manage the list of coast stations for each frequency and each Navtex area by editing, adding or deleting coast stations. Adding a coast station is necessary if a new coast station has been set up. Then you must add the new coast station to the list of existing coast stations to enable the SAILOR 6390 Navtex Receiver to receive Navtex messages from the new coast station.

1. Select the frequency and the area from the drop-down box and click **Search**.
    The current list of coast stations known to the SAILOR 6390 Navtex Receiver is displayed.

Figure 4-13: Service Interface: Coast Stations

2. Select the coast station by selecting the respective radio button and click **Edit**.

3. Make the changes and click **Update** to save the changes.

4. Add a coast station by filling in the fields, then click the **Add**. The new coast station will now be known to the SAILOR 6390 Navtex Receiver.

Note   A reset to factory default settings deletes all changes made to the coast station list.

4.3.5   System Control
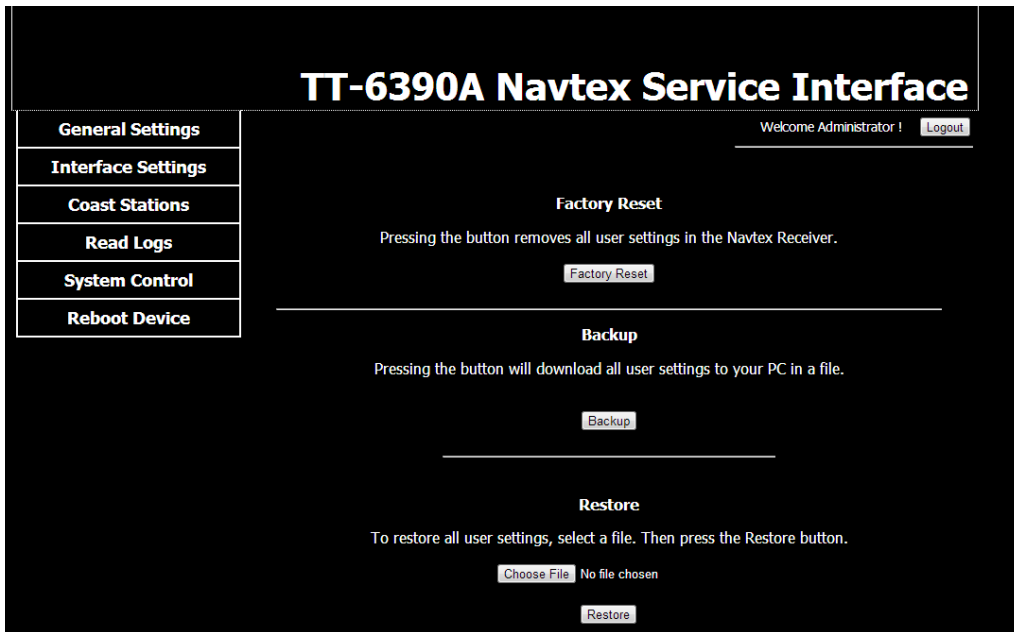
Figure 4-14: Service Interface: System control

System Control	Description
Factory Reset	Click **Factory Reset** to reset the SAILOR 6390 Navtex Receiver to default values. All user settings are deleted.
Backup	Click **Backup** to download a file with all user settings.
Restore	Click **Choose file** and **Restore** to restore settings from a file.

Table 4-7: Service Interface: System Control

4.3.6   Reboot Device

Figure 4-15: Reboot the device

Click the button **Reboot** or **Logout** to activate the changes, leave the Service Interface and put the SAILOR 6390 Navtex Receiver into normal operation. This may take up to 30 seconds.

After a reboot the received Navtex messages remain in the SAILOR 6390 Navtex Receiver.

4.4 Verification

The following sections provide a check list for verifying the installation and some tools for verification:
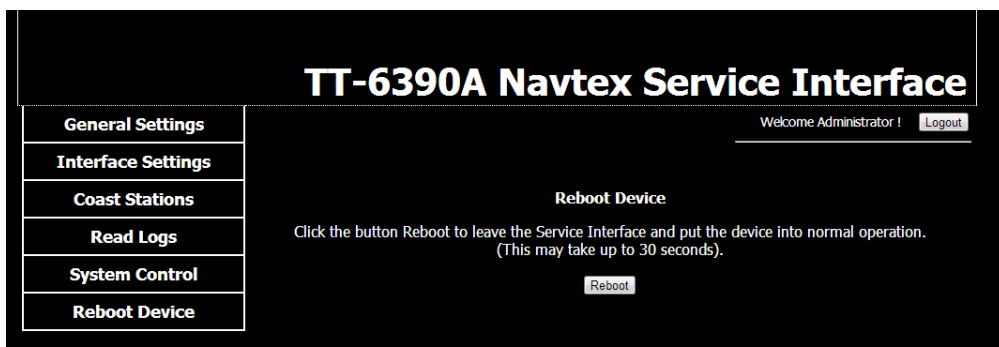
- *NMEA Trace tool*
- *Checking RF Reception Levels*
- *Installation Tests*

4.4.1 Verifying the installation

Check the following items:

Item	OK
Active Navtex antenna attached	
GPS attached (recommended but optional)	
INS attached (optional)	
Alarm interface attached (optional)	
Printer attached (optional) • Via LAN • SAILOR 6004 Control Panel – via USB (The SAILOR 6004 Control Panel acts as a LAN printer server)	
Apply power and check the three LEDs on the SAILOR 6390 Navtex Receiver • **Power LED** is lit as soon as power is turned on (Note: The device will not power on if terminal ON IN is left open) • **Test LED** is lit after the Navtex receiver has successfully passed the self test. Flashing indicates a self-test failure. This usually implies bad antenna connection. • **Rx LED** flashes when any of the three Navtex receivers are currently receiving valid Navtex data	
If the SAILOR 6004 Control Panel is attached, check that there are no warnings in the bottom right corner of the display.	

Table 4-8: Verifying the installation

You are now ready to receive Navtex messages. This of course depends on your current physical location. Navtex messages are not necessarily received immediately. You can check coast stations near you for a schedule when Navtex messages are sent.

4.4.2   NMEA Trace tool

To verify the installation of NMEA devices to the SAILOR 6390 Navtex Receiver you can start the NMEA Trace tool to see whether the connected device on a selected port receives and sends correct NMEA information. The NMEA Trace verifies the electrical connection, it does not guarantee that the NMEA sentence is parsed correctly. The NMEA Trace tool runs independently from the Service Interface and you can access the SAILOR 6390 Navtex Receiver as in normal operation.

To start the NMEA Trace tool, do as follows:

1. Access the front page of the Service Interface, see *Accessing the Service Interface* on page 4-4.

Note | Do not log in to the Service Interface! The NMEA Trace tool is started and works separately.

2. Click **NMEA Trace**.

Figure 4-16: NMEA trace (spring-loaded terminals J10 and J11)

3. In the drop down list select whether you want to run an NMEA trace on:
    - NMEA IN and OUT (spring-loaded terminal **J10**) or
    - NMEA IN from e.g. GPS (spring-loaded terminal **J11**).

    A new window opens and the tracing starts automatically.

Figure 4-17: NMEA Trace tool (example)

In this window the current data to and from the port selected in the drop-down list are displayed. At the same time you can monitor alarms related to the connected devices and configure the connected devices in the display of the SAILOR 6004 Control Panel.

4. After ended tracing, you can download the NMEA trace log file to the PC's default download folder.

4.4.3 Checking RF Reception Levels

To check RF reception levels, do as follows:

1. Access the log-in page of the Service Interface, see *Using a PC and an Internet browser* on page 4-4.

> **Note** Do not log in to the Service Interface! The tool to measure RF reception levels works separately.
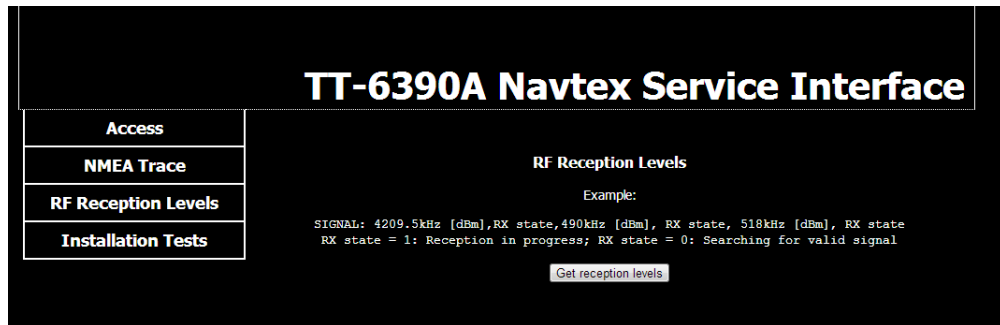
2. Click **RF Reception levels**.

Figure 4-18: Verification of RF reception levels

3. Click the button **Get reception levels**. RF levels are measured and sent to the service interface.
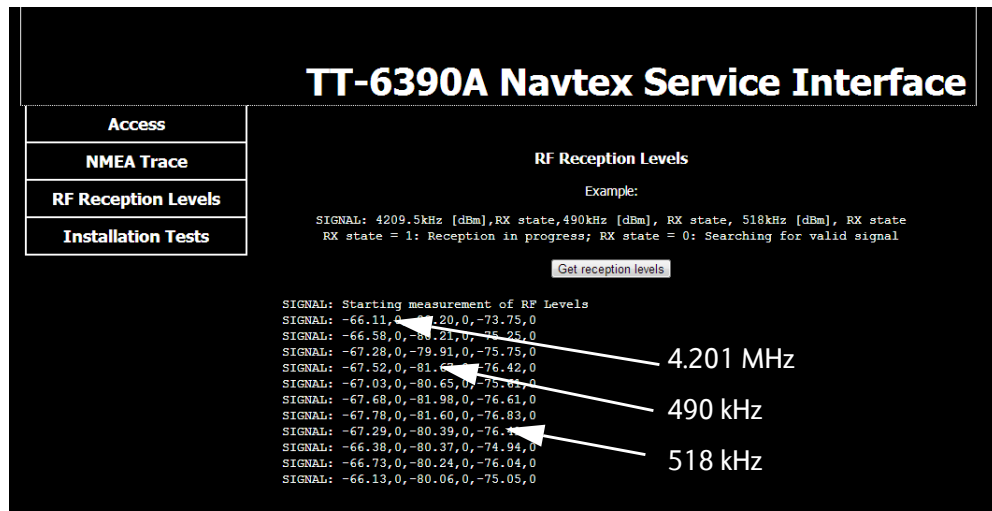

Figure 4-19: RF reception levels for all 3 frequencies

Example: SIGNAL: -67.28,0,-79.91,0,-75.75,0

4.201 MHz signal: -67.28 dBm, Searching for valid signal
490 kHz signal: -79.91 dBm, Searching for valid signal
518 kHz signal: -75.75 dBm, Searching for valid signal

4.4.4 Installation Tests

To run the available installation tests, do as follows:

1. Access the log-in page of the Service Interface, see *Using a PC and an Internet browser* on page 4-4.

Note ⟩ | Do not log in to the Service Interface! The installation tests can be run separately.
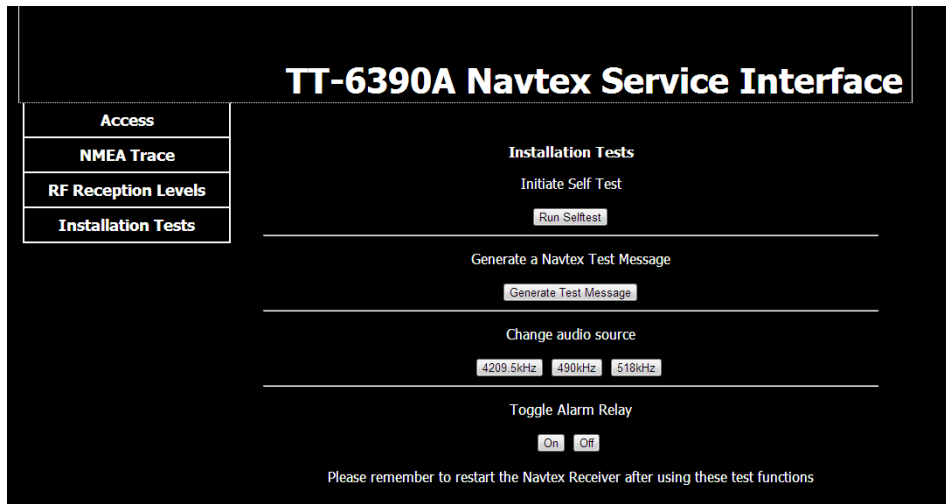
2. Click **Installation tests**.

Figure 4-20: Tests for verifying the installation

- Click the button **Run Self Test** to run a Self Test of the SAILOR 6390 Navtex Receiver.
- Click the button **Generate Test Message** to generate a Navtex test message. It is displayed in the SAILOR 6004 Control Panel.
- **Change audio source**: The demodulated signal (1700 Hz +/-85 Hz) received on 518 kHz is always present for debug on connector J9. If a receiver is not performing as expected, change the debug audio source to that receiver (490 kHz/518 kHz/4209.5 kHz) and listen for e.g. a constant tone, indicating a spurious on that receiver channel. The presence of a constant tone can then be compared to the RF reception level measurements (see 4.4.3).
  Note that changing the audio source is not saved to memory. After reboot the 518 kHz channel is always selected.
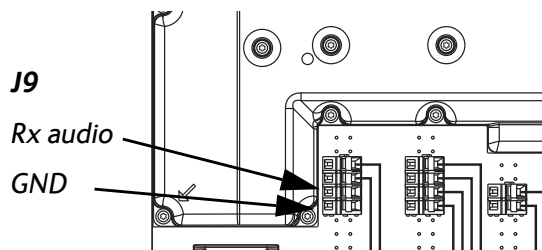

Figure 4-21: Checking the audio source, spring-loaded terminal J9

- To toggle the Alarm Relay click **On** and **Off** to check the connected alarm system.

Service & maintenance

This chapter has the following sections:

- *Maintenance*

- *Alarms and notifications*

- *Troubleshooting guide*

- *Warranty and returning units for repair*

5.1 Maintenance

Maintenance of the SAILOR 6390 Navtex Receiver can be reduced to a maintenance check at each visit of the service staff. Inspect the unit for mechanical damages, salt deposits, corrosion and any foreign material. Due to its robust construction and ruggedness the unit has a long lifetime. Anyway it must carefully be checked at intervals not longer than 12 months – dependent on the current working conditions.

Contact for support

Contact an authorized dealer for technical service and support of the SAILOR 6390 Navtex Receiver. Before contacting the authorized dealer you can go through the troubleshooting guide to solve some of the most common operational problems.

5.1.1 System Log

In the Service Interface you can display and download the system log. This is useful in service and troubleshooting situations.

Figure 5-1: Service Interface: Read Logs

Click the button **View System Log** to display the system log.

Click **Download System Log**. The systems log file is downloaded into the PC's default download folder.

5.1.2　Software update

You can update the SAILOR 6390 Navtex Receiver software in the following ways:

- *Software update using the Navtex app*
- *Software update with the TMA (ThraneLINK Management Application)*

Software update using the Navtex app

See *System and Navtex app installation* on page 4-2.

Software update with the TMA (ThraneLINK Management Application)

1. Download the TMA from the Cobham eSupport web site (Self-Service Center, SSC. You find the SSC in the Service and Support section, 24-7 Service). Make sure to use version 1.04 or higher.

2. Make sure that your PC is on the same network segment as the SAILOR 6390 Navtex Receiver.

3. Make sure that the SAILOR 6004 Control Panel is switched on.

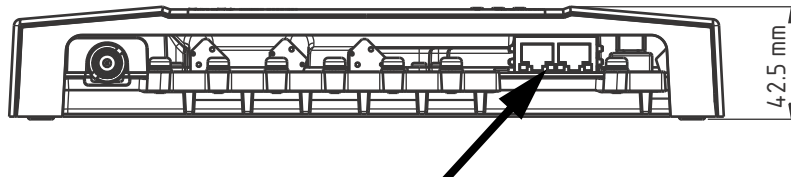4. Connect your PC to a free LAN interface of the SAILOR 6390 Navtex Receiver.

Figure 5-2: LAN connectors of the SAILOR 6390 Navtex Receiver

5. Start the TMA on your PC. The SAILOR 6390 Navtex Receiver is automatically detected. Click the icon for the SAILOR 6390 Navtex Receiver. The **Software Download Status** must show **Ready**.

6. The icon **Software update** pulsates yellow when a new software version is detected for the SAILOR 6390 Navtex Receiver.
   The TMA searches all devices connected via USB for new software. You can add an additional search path. To do so press the icon **Option**s on the software update screen and select **Search for software**. A dialog box is displayed and you can select a directory.

7. To start the software update click the icon **Software update** and select **Update**. The current and the new software version numbers are displayed.
   You can also select a specific software version. To do so press the icon **Option**s on the software update screen and select **Select software**. A list of available software versions is displayed. Select one and click the button **Update**.

5.1.3   Dissassembling − removing the cover

1. Remove the cover of the SAILOR 6390 Navtex Receiver by loosening the 4 screws marked in the figure below.
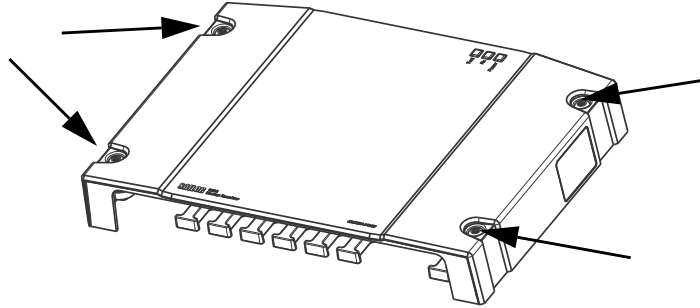

Figure 5-3: Removing the cover

2. Remove the cables from the spring-loaded terminals and the connectors.

3. Remove the SAILOR 6390 Navtex Receiver by moving it upwards, away from the mounting surface.

5.1.4   Replacing the fuse

One fuse is installed in the SAILOR 6390 Navtex Receiver. If this fuse is blown, do as follows:

1. Track down why the fuse was blown and solve the problem, e.g. incorrect polarity at the DC supply.

2. Remove the cover by loosening the 4 screws.

3. Take out the old fuse. Use the fuse puller.

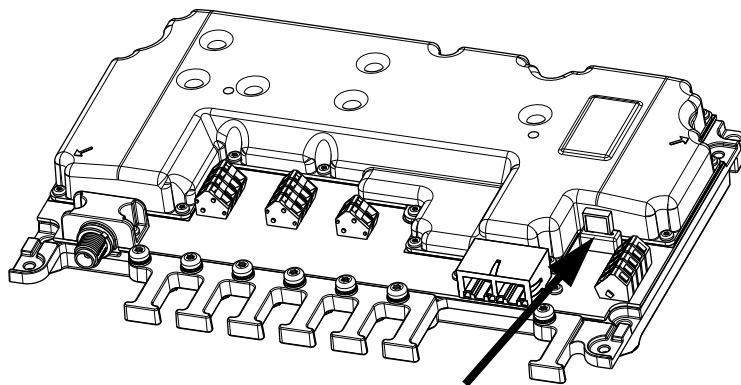4. Insert the new fuse. The fuse rating is 1 A.

Figure 5-4: Replacing the fuse

5.2   Alarms and notifications

If an alarm is reported from the SAILOR 6390 Navtex Receiver a flashing red triangle appears in the bottom bar of the SAILOR 6004 Control Panel display:

- Flashing, bright red triangle: Unacknowledged alarm(s).

- Faded red triangle: Acknowledged alarm(s).

Figure 5-5: Viewing alarms

To acknowledge an alarm do as follows:

1. Tap the flashing, bright red triangle to display the list with active alarms.

2. Tap the alarm to acknowledge the alarm.

When all active alarms are acknowledged the bright red triangle turns into a faded red triangle.

Alarms and notifications are either shown in the display of the SAILOR 6004 Control Panel or output via NMEA sentences and displayed in other equipment.

5.2.1   Installation with SAILOR 6004 Control Panel

Alarm	Description	Remedy
001	Navigational Warning	Read associated message.
002	Meteorological Warning	Read associated message.
003	Search and Rescue Information	Read associated message.
004	Receiver Malfunction	Contact your supplier.
005	Built-in Self Test Failure	Check antenna installation.
006	General Failure	Power cycle the unit. If this does not help, contact your suplier.
067	GNSS position lost	Check the GPS input.
068	Automatic mode disabled (no fix)	Check the GPS input. Without a valid GPS input the automatic mode does not work.

Table 5-1: Navtex alarms

If the connection between the SAILOR 6390 Navtex Receiver and the SAILOR 6004 Control Panel is lost, the SAILOR 6004 Control Panel shows an error "Connection lost". Make sure that no one is connected to the SAILOR 6390 Navtex Receiver using the Service Interface.

Alarm	Description	Remedy
060	Printer is offline	Set online.
061	Printer is busy	Wait until current print job is finished.
062	Printer is low on paper	Insert more paper.
063	Printer is out of paper	Insert more paper.
064	Printer not connected	Check the printer connection.[a]
065	Printer error	See the original printer documentation.
066	No default printer configured	This must be set up during installation. Contact your installation centre.

Table 5-2: Navtex alarms, printer

a. Alarm 064 is the only alarm output for 3rd party print servers.

5.2.2 Installation with an INS

Alarms and notifications are signalled via the NMEA sentence ALR. See the user documentation of the equipment connected to the SAILOR 6390 Navtex Receiver for further information on how alarms and notifications are displayed.

Example: $CRALR,246060,002,A,V,NAVTEX: Meteorological Warning*09

CR = Navtex
ALR = alarm sentence
246060 = time (hours,minutes, seconds)[1]
002 = alarm number (see Table 5-1 on page 4 and Table 5-2 on page 5)
A (A – active / V – not active)
V (A – confirmed / V – not confirmed)
NAVTEX: Meteorological Warning (text description)
*09 (checksum indicator and checksum)

1. 246060 indicates unknown time (invalid time stamp), e.g. if there is no or invalid GPS input.

5.3   **Troubleshooting guide**

Problem	Symptom	Remedy
The SAILOR 6390 Navtex Receiver will not turn on.	Green power LED on SAILOR 6390 Navtex Receiver is off.	If the power cable is connected directly to the SAILOR 6390 Navtex Receiver then check that ON IN is wired to VBAT-.
No message can be received.	Test LED flashes.	Check the antenna installation.
The Time column shows dashes, but not time	No valid message time.	Check the GPS connection.
Device failure		If any of the checks and tests described in this section do not assist in resolving the difficulties experienced in the operation and/or performance of the Navtex installation, a fault may have developed. When contacting an authorized representative be sure to provide as much information as possible describing the observed behaviour - also including the type of the Navtex units, serial number, and software release version. You find this information in the setup menu of the connected SAILOR 6004 Control Panel.
SAILOR 6004 Control Panel cannot be switched off.		If the SAILOR 6004 Control Panel cannot be switched off normally (e.g. due to a fault): Push and hold for 12 seconds. If a remote switch is installed, see the note on page 2-5.

Table 5-3: Troubleshooting guide

Problem	Symptom	Remedy
Password entered in the SAILOR 6004 Control Panel, but padlock does not open	Authorization failed. Wrong password or the connection to the SAILOR 6390 Navtex Receiver is lost	Check that you enter the correct password. Check the power supplies, cabling, Ethernet connection between the SAILOR 6390 Navtex Receiver and the SAILOR 6004 Control Panel. Restart both units: – SAILOR 6390 Navtex Receiver: remove and connect power, – SAILOR 6004 Control Panel: use on/off button. Check that no one has logged into the Service Interface. Password for Service Interface: sailorsailor Password for SAILOR 6004 Control Panel: user
RX self test failed		Check the antenna installation.

Table 5-3: Troubleshooting guide (Continued)

RX self test (with SAILOR 6004 Control Panel)

The RX self test runs automatically after start-up. You can also manually start an RX self test.

1. From the idle screen, tap the menu icon in the upper right corner.

2. Tap **Settings**.

3. Tap the menu icon and tap **RX self test**.

4. Tap **Yes** to start the RX self test. The result of the test is shown in the display. If the test has failed check the antenna installation.
   If a printer is connected and enabled the self test results are printed.

Service & maintenance

5.4   Warranty and returning units for repair

Should your Cobham SATCOM product fail, please contact your dealer or installer, or the nearest Cobham SATCOM partner. You will find the partner details on www.cobham.com/satcom where you also find the Cobham SATCOM Self Service Center web-portal, which may help you solve the problem.

Your dealer, installer or Cobham SATCOM partner will assist you whether the need is user training, technical support, arranging on-site repair or sending the product for repair.

Your dealer, installer or Cobham SATCOM partner will also take care of any warranty issue.

5.4.1   Repacking for shipment

Should you need to send the product for repair, please read the below information before packing the product.

The shipping carton has been carefully designed to protect the SAILOR 6390 Navtex Receiver and its accessories during shipment. This carton and its associated packing material should be used when repacking for shipment. Attach a tag indicating the type of service required, return address, part number and full serial number. Mark the carton FRAGILE to ensure careful handling.

Note > | Correct shipment is the customer's own responsibility.

If the original shipping carton is not available, the following general instructions should be used for repacking with commercially available material.

1. Wrap the defective unit in heavy paper or plastic. Attach a tag indicating the type of service required, return address, part number and full serial number.

2. Use a strong shipping container, e.g. a double walled carton.

3. Protect the front- and rear panel with cardboard and insert a layer of shock-absorbing material between all surfaces of the equipment and the sides of the container.

4. Seal the shipping container securely.

5. Mark the shipping container FRAGILE to ensure careful handling.

Failure to do so may invalidate the warranty.

Technical specifications

A.1 SAILOR 6390 Navtex Receiver

Item	Specification
Weight	1.3 kg
Dimensions	L x W x H: 190 x 270 x 42.5 mm
Input voltage	12-24 VDC (10.8 VDC to 31.2 VDC)
Power consumption	Typical 6.5 W
Heat dissipation	<10 W
Temperature	-15 ˚C to +55 ˚C (Operational) -15 ˚C to +55 ˚C (Storage)
Compass Safe Distance	20 cm (Standard magnetic compass) 20 cm (Emergency magnetic compass)
IP rating	IP22 (estimated)
Navtex receivers	490 kHz, 518 kHz and 4209.5 kHz simultaneous reception. Software updatable for 500 kHz NAVDAT
Antenna support	Active and passive antenna (12 V @ 60 mA antenna supply)
Sensitivity 490/518 kHz 4209.5 kHz:	<12 dBμV@10 Ω/150 pF <-6 dBμV@50 Ω <12 dBμV@10 Ω/150 pF <6 dBμV@50 Ω
Interfaces	TNC antenna connector Alarm relay output (normally closed) 2 LAN connectors Remote on NMEA0183 in and out for INS support NMEA0183 in for e.g. GPS input 600 Ω single ended audio interface for troubleshooting
Printer	Support via LAN connector
NMEA sentences	NMEA0183 input, EN61162-1: ACK, NRM, CRQ sentences NMEA0183 output, EN61162-1: ALR, NRM, NRX sentences GPS input: RMC, ZDA sentences Proprietary sentences

Table A-1: SAILOR 6390 Navtex Receiver specifications

A.2 NMEA PCB in SAILOR 6390 Navtex Receiver

(Extract from IEC 61162-1)

- NMEA + (A) and - (B) are indicated at the terminals on the PCB
- Max output drive is 40 mA
- A list of supported sentences and data fields are given in
- Load of the input circuit is 1.8 mA @ 1.85 V
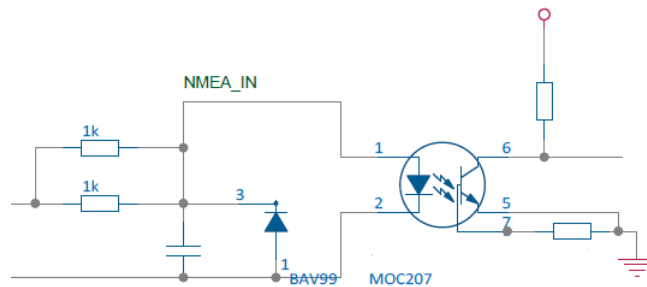- Compliance with IEC61162-1 (4th edn.)
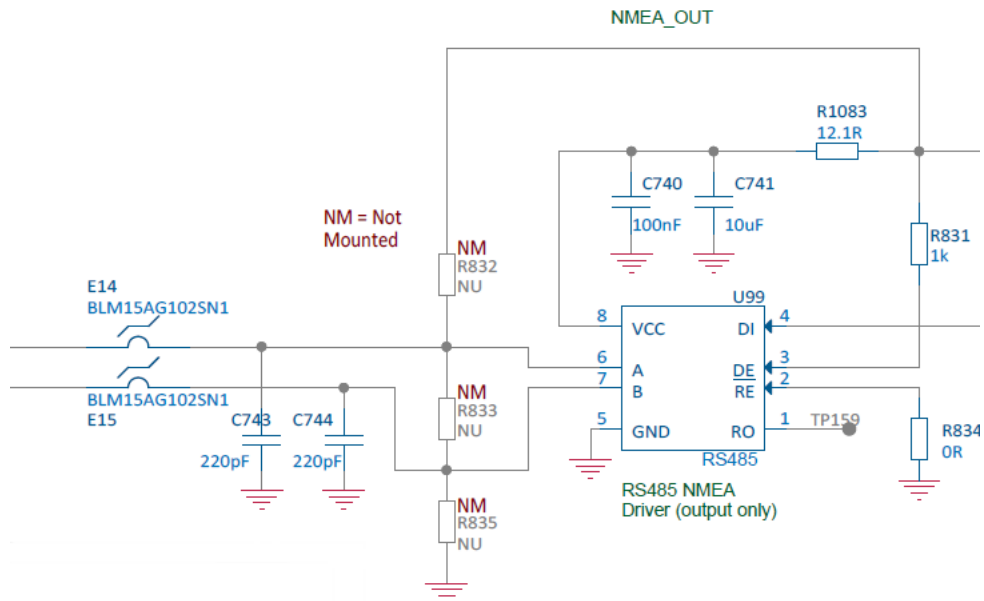

Figure A-1: NMEA_IN diagram

Figure A-2: NMEA_OUT diagram

U99 is a MAX3483 which is an RS-485/RS-422 transceiver. In this circuit it is only used as a transmitter. E14, E15, C743 and C744 is for EMC immunity filtering. R834 is to disable the receiver in U99. R831 is to enable the transmitter in U99. C740,C741 and R1083 are for de-coupling and to filter the supply voltage to U99.

NMEA sentences

B.1   NMEA sentences used

All sentences are defined according to NMEA 0183 version 4.10 and IEC 61162-1 Ed. 4.0 and IEC 61162-2.

B.1.1   Light Weight Ethernet − LWE

Sentences may be configured to be received and transmitted over serial INS and sensor interfaces, but also over Light Weight Ethernet (IEC 61162-450[1]). The following table shows the available transmission group multicast addresses and ports which can be set up in the Service Interface.

Transmission group	Category	Multicast address	Destination port
MISC	SF not explicitly listed below	239.192.0.1	60001
TGTD	Target data (AIS), tracked target messages (Radar)	239.192.0.2	60002
SATD	High update rate, for example ship heading, attitude data.	239.192.0.3	60003
NAVD	Navigational output other than that of TGTD and SATD groups	239.192.0.4	60004
RCOM	Radio communication equipment	239.192.0.6	60006
TIME	Time transmitting equipment	239.192.0.7	60007
PROP	Proprietary and user specified SFs	239.192.0.8	60008
USR1 to USR8	User defined transmission group 1 to 8	239.192.0.9 to 239.192.0.16	60009 to 60016

Table B-1: Destination multicast addresses and port numbers

---

1. When used with a SAILOR 6004 Control Panel the network IP traffic load may increase to a level where IEC 61162-450 compliance cannot be guaranteed.

B.1.2 Sentence characteristics and their linkage with port configuration

The following table lists all the supported sentences. The Encoder/Parser column reflects the group of sentences which can be configured for a specific port. See *Interface settings* on page 4-8.

- Maximum Transmission Interval indicates the time after which a renewed sentence must be received. Otherwise sentence data will be invalidated.

- Recommended Transmission Interval is the typical value to set up for the sourcing device.

- Restore Time indicates the time an invalidated sentence shall be received from the same source with the proper transmission interval until it can be qualified for input.

Encoder/Parser	Sentence	Maximum Transmission Interval	Recommended Transmission Interval	Restore time (s)
ENCODER_NAVTEX output sentences	NRM, NRX	N.A.	N.A.	N.A.
PARSER_NAVTEX input sentences	NRM	-	-	-
ENCODER_PROPRIETARY output sentences	PTHRTSR, PTHRROS, PTHRNRX	N.A.	N.A.	N.A.
PARSER_PROPRIETARY input sentences	PTHRNAR	-	-	-
	PTHRMAC	-	-	-
	PTHRPRT	-	-	-
	PTHRAPT	-	-	-
	PTHRTSI	-	-	-
ENCODER_SENSOR output sentences	ZDA	N.A.	N.A.	N.A.
PARSER_SENSOR input sentences	RMC	10 min	10 s	10 s
	ZDA	10 min	10 s	10 s
ENCODER_ALARM output sentences	ALR	N.A.	N.A.	N.A.
PARSER_ALARM input sentences	ACK	-	-	-

Table B-2: Supported sentences and their characteristics

B.2   Sentence use reference

B.2.1   Overview

You find detailed description of the following sentences in this appendix:

- *ACK - Acknowledge alarm (input)*
- *ALR - Set alarm state*
- *CRQ*
- *NRM - NAVTEX receiver mask (input/output)*
- *NRX - NAVTEX received message (output)*
- *RMC - Recommended minimum specific GNSS data (input)*
- *ZDA - Time and Date (input/output)*

B.2.2   ACK - Acknowledge alarm (input)

$--ACK,xxx*hh>CR><LF>

Field	Data format	Description	Comment
1	ACK	Sentence Id	Used
2	xxx	Unique alarm number (identifier) at alarm source	Used

Table B-3: NMEA sentence: ACK

B.2.3 ALR - Set alarm state

Local alarm condition and status. This sentence is used to report an alarm condition on a device and its current state of acknowledgement.

$--ALR,hhmmss.ss,xxx,A, A,c--c*hh<CR><LF>

Field	Data format	Description	Comment
1	ALR	Sentence Id	Used
2	hhmmss.ss	Time of alarm condition change, UTC	Used
3	xxx	Unique alarm number (identifier) at alarm source	Used
4	A	Alarm's acknowledge state, A=Acknowledged, V=Unacknowledged	Used
5	A	Alarm condition, A=Threshold exceeded, V=Not exceeded	Used
6	c--c*hh	Alarm description text	Used

Table B-4: NMEA sentence: ALR

B.2.4 CRQ

$--CRQ,NRM*hh<CR><LF>

Field	Data format	Description	Comment
1	CRQ	Query	Used
2	NRM	Filter settings	Used

Table B-5: NMEA sentence: CRQ

B.2.5 NRM - NAVTEX receiver mask (input/output)

$--NRM,x,x,hhhhhhhh,hhhhhhhh,a*hh<CR><LF>

Field	Data format	Description	Comment
1	NRM	Sentence Id	Used
2	x	Function code, 0 to 9	Used
3	x	Frequency table index, 1 to 9	Used
4	hhhhhhhh	Transmitter coverage area mask	Used
5	hhhhhhhh	Message type mask	Used
6	a	Sentence status flag, R or C	Used (output) Optional (input)

Table B-6: NMEA sentence: NRM

B.2.6 NRX - NAVTEX received message (output)

$--NRX,xxx,xxx,xx,aaxx,x,hhmmss.ss,xx,xx,xxxx,x.x,x.x,A,c--c*hh<CR><LF>

Field	Data format	Description	Comment
1	NRX	Sentence Id	Used
2	xxx	Total number of sentences, 001 to 999	Used
3	xxx	Sentence number, 001 to 999	Used
4	xx	Sequential message id, 00 to 99	Used
5	aaxx	NAVTEX message code	Used
6	x	Frequency table index, 0 to 9	Used
7	hhmmss.ss	UTC of receipt of message	Used
8	xx	Day, 1 to 31	Used
9	xx	Month, 1 to 12	Used
10	xxxx	Year	Used
11	x.x	Total number of characters in this series of NRX sentences	Used
12	x.x	Total number of bad characters	Used
13	A	Status indication	Always 'A'
14	c--c	Message body	Used

Table B-7: NMEA sentence: NRX

NMEA sentences

B.2.7   RMC - Recommended minimum specific GNSS data (input)

$--RMC, hhmmss.ss,a,llll.ll,a,yyyyy.yy,a ,x.x,x.x, xxxxxx, x.x,a*hh<CR><LF>

Field	Data format	Description	Comment
1	RMC	Sentence Id	Used
2	hhmmss.ss	UTC of position fix	Used
3	a	Status (A or V)	Used
4	llll.ll	Latitude	Used
5	a	Latitude N/S	Used
6	yyyyy.yy	Longitude	Used
7	a	Longitude E/W	Used
8	x.x	Speed over ground, knots	Not Used
9	x.x	Course over ground, degrees true	Not Used
10	xxxxxx	Date: ddmmyy	Used
11	x.x	Magnetic variation, degrees	Not Used
12	a	Magnetic variation, E/W	Not Used
13	a	Mode indicator	Not Used
14	a	Navigational status	Not Used

Table B-8: NMEA sentence: RMC

B.2.8   ZDA - Time and Date (input/output)

$--ZDA, hhmmss.ss,xx,xx,xxxx,xx,xx*hh<CR><LF>

Field	Data format	Description	Comment
1	ZDA	Sentence Id	Used
2	hhmmss.ss	UTC	Used
3	xx	Day, 01 to 31 (UTC)	Used
4	xx	Month, 01 to 12 (UTC)	Used
5	xxxx	Year (UTC)	Used
6	xx	Local zone hours (00 to +/-13h)	Used
7	xx	Local zone minutes (00 to +59)	Used

Table B-9: NMEA sentence: ZDA

D

DC	Direct Current
DHCP	Dynamic Host Configuration Protocol. A protocol for assigning dynamic IP addresses to devices on a network. With dynamic addressing, a device can have a different IP address every time it connects to the network.
DNS	Domain Name System. A system translating server names (URLs) to server addresses.

G

GMDSS	Global Maritime Distress and Safety System. The system is intended to perform the following functions: alerting (including position determination of the unit in distress), search and rescue coordination, locating (homing), maritime safety information broadcasts, general communication, and bridge-to-bridge communication.
GNSS	Global Navigation Satellite System
GPL	General Public License
GPS	Global Positioning System

I

INS	Integrated Navigation System

L

LAN	Local Area Network. A computer network covering a small physical area, like a home, office, school or airport. The defining characteristics of LANs, in contrast to wide-area networks (WANs), include their usually higher data-transfer rates, smaller geographic area, and lack of a need for leased telecommunication lines.
LGPL	Lesser General Public License
LPR	Line Printer Remote. Simple network protocol.

N

NAVDAT	High Speed NAVtex DATa sent out on 500 kHz. Not yet part of mandatory Navtex reception, but mentioned in ITU-R M.2010 and ITU-R M.2201.

NMEA	National Marine Electronics Association (standard). A combined electrical and data specification for communication between marine electronic devices such as echo sounder, sonars, anemometer (wind speed and direction), gyrocompass, autopilot, GPS receivers and many other types of instruments. It has been defined by, and is controlled by, the U.S.-based National Marine Electronics Association.

R

Rx	Receive

T

TMA	Thrane Management Application
Tx	Transmit (Ethernet)

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