SAILOR®

SAILOR 6110 GMDSS System

Thrane & Thrane

SAILOR 6110 GMDSS System

Installation manual

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Safety summary

The following general safety precautions must be observed 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 assumes no liability for the customer's failure to comply with these requirements.

Observe marked areas
Under extreme heat conditions do not touch areas of units that are marked with this symbol, as it may result in injury.

Microwave radiation hazards
During transmission the antenna in this system radiates Microwave Power.This radiation may be hazardous to humans close to the antenna. When the system is powered, make sure that nobody gets closer than the recommended minimum safety distance of 0.3 meters (1 ft.).

Keep away from live circuits
Operating personnel must not remove equipment covers. Only qualified maintenance personal must make component replacement and internal adjustment. Under certain conditions, dangerous voltages may exist even with the cable removed. To avoid injuries, always disconnect power and discharge circuits before touching them.

Compass safe distance
Minimum safety distance: 5 m from the GMDSS Terminal.

Failure to comply with the rules above will void the warranty!

About the manual

Intended readers

This manual is an installation manual for the SAILOR 6110 GMDSS System. The manual is intended for installers of the system and service personnel. Personnel installing or servicing the system must be properly trained and authorized by Thrane & Thrane. 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.

Manual overview

Note that this manual does not cover how to use the system. For information on usage refer to the user manual. Part numbers for related manuals are listed in the next section.

This manual has the following chapters:

- *Introduction* contains an overview of the system.
- *Unpacking and activation* describes initial inspection and explains how to activate the service.
- *Installing the system* explains how to mount the units.
- *Connecting the system* explains how to connect the units in the system and shows wiring, pin-out and cable requirements.
- *Installation check and test* contains a check list for verifying the physical installation and guidelines for testing the installation.
- *Maintenance* contains guidelines for handling, maintaining and repacking the SAILOR 6110 system.

Related documents

The below list shows the documents related to this manual and to the SAILOR 6110 GMDSS System.

Ref	Title and description	Document number
[1]	SAILOR 6110 GMDSS System, User manual	98-130753
[2]	SAILOR 6006 and 6007 Message Terminal, Installation manual	98-130088
[3]	SAILOR 6101 and 6103 Alarm Panel, Installation and user manual	98-130981
[4]	SAILOR 6081 PSU and Charger, Installation and user manual	98-130980
[5]	System 6000 Console, Installation manual	98-131571
[6]	THRANE 6194 Terminal Control Unit, Installation and user manual	98-131593

Typography

In this manual, typography is used as indicated below:

Bold is used for the following purposes:

- To emphasize words.
  Example: "Do **not** touch the antenna".

- To indicate what the user should select in the user interface.
  Example: "Select **SETTINGS** > **LAN**".

Italic is used to emphasize the paragraph title in cross-references.

Example: "For further information, see *Connecting Cables* on page...".

`COURIER` is used to indicate low level commands or text in the display.

Example: "The display shows `Distress`".

Contents
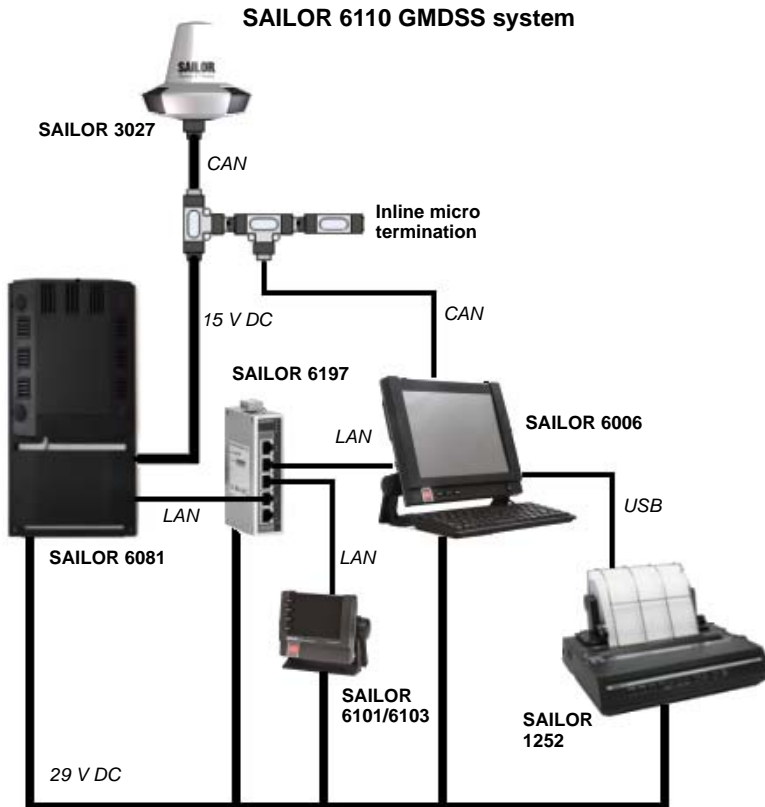
Introduction

This chapter introduces the SAILOR 6110 system and briefly describes each unit in the system. It has the following sections:

- *SAILOR 6110 system overview*
- *SAILOR 3027 GMDSS Terminal*
- *SAILOR 6006 Message Terminal*
- *SAILOR 6081 PSU and Charger*
- *SAILOR 1252 Printer*
- *SAILOR 6197 Ethernet switch*
- *SAILOR 6101/6103 Alarm Panel*
- *SSA option*

1.1 SAILOR 6110 system overview

The drawing below shows an example of a SAILOR 6110 system.

SAILOR 6110 GMDSS system

SAILOR 3027

CAN

Inline micro
termination

15 V DC

CAN

SAILOR 6197

LAN

SAILOR 6006

LAN

USB

SAILOR 6081

LAN

SAILOR
6101/6103

SAILOR
1252

29 V DC

The SAILOR 6110 is a Global Maritime Distress Safety System (GMDSS) used for sending and receiving messages and distress alerts through the Inmarsat C satellite network.

Each unit is briefly described in the following sections. For a description of the services supported by the Inmarsat C system and the SAILOR 6110 system, see the user manual for the SAILOR 6110 GMDSS System *[1]*.

1.2 SAILOR 3027 GMDSS Terminal

The SAILOR 3027 is a GMDSS approved Inmarsat GMDSS Terminal for the SAILOR 6110 system. It has a built-in LNA/HPA and an omni-directional antenna designed to operate on vessels. The housing is sealed and contains no user serviceable parts.

The SAILOR 3027 is very compact and is designed to operate in extreme weather conditions. It has a highly sensitive built-in GPS module with 50 channels (Galileo ready). The antenna has an elevation angle of -15°, ensuring optimum communication even in rough weather.

The SAILOR 3027 connects to other equipment using a CAN bus interface, capable of carrying power as well as bi-directional communication.

For information on how to install the SAILOR 3027, see *Mounting the SAILOR 3027* on page 16.

1.3   SAILOR 6006 Message Terminal

The SAILOR 6006 Message Terminal is a GMDSS approved message terminal for the SAILOR 6110 system. With the SAILOR 6006 you can send distress alerts, read and write messages, monitor system status, change the configuration and test the system. The SAILOR 6006 has a Distress button for sending distress alerts.

The SAILOR 6006 has a touch-screen interface and can be operated without a keyboard. However, a keyboard is mandatory in a GMDSS system.

A CAN interface connects to the SAILOR 3027 GMDSS Terminal and an Ethernet interface connects to other equipment, such as alarm panels.

For information on how to install the SAILOR 6006, see the installation manual enclosed with the SAILOR 6006 *[2]*.

1.4   SAILOR 6081 PSU and Charger

Note	If you are using a different type of power supply than the SAILOR 6081, you must install a voltage monitor.

The SAILOR 6081 PSU and Charger is used to supply power to the units in the SAILOR 6110 GMDSS System. It has five DC outputs of 24 V DC to 31.5 V DC (nominal 29 V DC) each and provides 300 W continuous (370 W peak). It also has a 15 V DC output, which should be used to supply power to the GMDSS Terminal through the CAN bus.
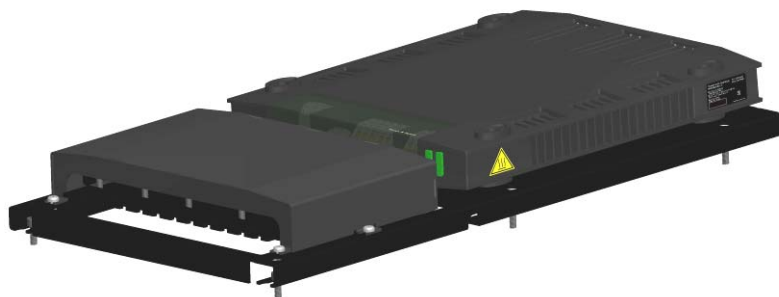
The SAILOR 6081 PSU and Charger provides automatic switch-over to a connected backup battery if 115/230 VAC is not available. It also has a charger function for charging the battery when 115/230 VAC is available. Note that a backup battery is mandatory in the GMDSS System.

On the SAILOR 6006 you can read status information such as AC alarm, backup battery status and other status information from the SAILOR 6081, through the Ethernet connection.

For further information on the SAILOR 6081, see the manual enclosed with the SAILOR 6081 *[4]*.

1.5 SAILOR 1252 Printer

The SAILOR 1252 printer is a standard matrix printer which connects to one of the USB connectors on the SAILOR 6006. In the SAILOR 6110 system it is primarily used to print SafetyNet EGCs with Distress priority.

1.6 SAILOR 6197 Ethernet switch

The Ethernet switch connects the system units that have an Ethernet interface.

In the SAILOR 6110 system, the local network is primarily used for monitoring purposes, alarm reporting and service.

1.7   SAILOR 6101/6103 Alarm Panel

In addition to the Distress button on the SAILOR 6006, you must have one more distress button in order to comply with GMDSS regulations. For this purpose you can use an alarm panel. Two types of alarm panel are available from Thrane & Thrane:

•   **SAILOR 6101 Alarm Panel**
    This SAILOR 6101 has one Distress button, used for remote initiation of distress alert transmissions and for indication of incoming distress and urgency messages on Inmarsat-C GMDSS systems.

•   **SAILOR 6103 Multi Alarm Panel**
    Like the SAILOR 6101, the SAILOR 6103 is also used for remote initiation of distress alert transmissions and for indication of incoming distress and urgency messages, but the SAILOR 6103 is designed for use with both VHF, MF/HF and Inmarsat-C and has 3 Distress buttons, one for each system.
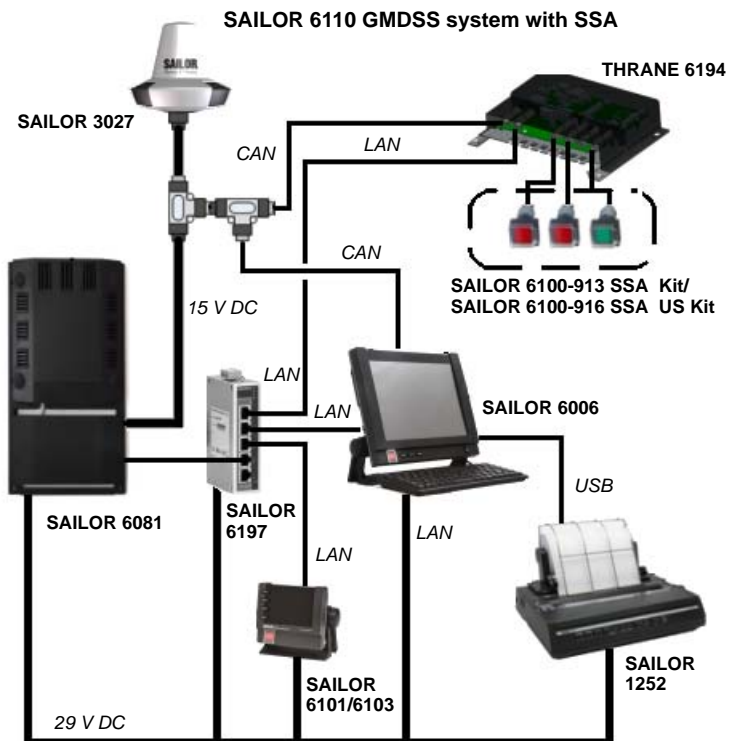
For further information on the SAILOR 6101/6103, see the manual enclosed with your alarm panel *[3]*.

1.8   SSA option

The Ship Security Alert System provides ships with alarm buttons, which can be activated in case of a piracy or terrorist attack. The alarm is a covert signal that has no sound and no flashing lights, so it is not seen nor heard by any intruders on board the ship.

The SSA option consists of three SSA buttons (two alarm buttons and one test button). It connects to the SAILOR 6110 system through the THRANE 6194 Terminal Control Unit. The CAN interface, which connects the SAILOR 6110 system to the THRANE 6194, also provides the power for the SSA option.

SAILOR 6110 GMDSS system with SSA

The GMDSS Terminal must be configured with the recipient(s) of the Ship Security Alert. For further information on the SSA option, refer to the manual for the THRANE 6194 *[6]*.

Unpacking and activation

This chapter describes initial inspection of the SAILOR 6110 system and provides information on how to register the system for service activation. It has the following sections:

- *Initial inspection*
- *Registering your SAILOR 3027*

2.1 Initial inspection

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

Warning!   To avoid hazardous electric shock, do not perform electrical tests if there is any sign of shipping damage to the outer cover. Read the safety summary at the front of this manual before installing or operating the SAILOR 6110 system.

Check that the contents of the shipment are as listed in the enclosed packing list. If the contents are incomplete, if there is mechanical damage or defect, or if the system components do not work properly, notify your dealer.

After you unpack the system do as follows:

- Inspect the system thoroughly for hidden damaged or loose components or fittings.
- Inspect the cable harness for stress, loose or broken wires, and broken cable ties.
- Examine all the components for loose or missing hardware.
- Fasten any loose hardware.

2.2 Registering your SAILOR 3027

2.2.1 Service Activation Registration Form

Before using the SAILOR 3027 GMDSS Terminal on the Inmarsat C system you must register the terminal to the system.

> **Note** In most cases the distributor registers the system for the customer.

For this purpose, use the SARF (Service Activation Registration Form) supplied with the SAILOR 3027. A copy of page 1 of the SARF is shown in the next page. As a guide, some of the most important fields are filled in with red color.

The SARF for registration of Maritime MES (Mobile Earth Station - in this case the SAILOR 3027) can also be found on www.inmarsat.com/Support under **Activation**, including notes on how to complete the maritime form.

The Service Activation Registration Form contains different abbreviations that are explained here.

The SAILOR 3027 must be registered at either a PSA company or directly to the ISP. A PSA is a company handling the activation of Inmarsat mobiles and is short for Point of Service Activation. ISP is the company that provides the Inmarsat service and is short for Inmarsat Service Provider. In many cases the PSA and ISP is the same company that also operates a Land Earth Station (LES). The local PSA or ISP can be obtained by following the guidelines in the registration form.

The Service Activation Registration Form also includes information needed to find out how to pay the bill for the Inmarsat C service. This payment will be made directly to the Accounting Authority. In many cases the Accounting Authority (AA) is also the same company as the Inmarsat Service Provider (ISP).

In addition to the general information like name, address, etc. the ISN of the SAILOR 3027 must be specified. The ISN is found on the Delivery Note and on the label in the bottom of the SAILOR 3027 GMDSS Terminal.

inmarsat

Registration for service activation of Maritime Mobile Earth Station

PSA use only code						

Sections 1-4, 6 and 8 are to be completed by all customers
Tick Boxes as appropriate.
Please write in block capitals

Application number _____

Date   Day   Month   Year

Customer's reference number _____

1.Your details (See note A) PLEASE NOTIFY YOUR PSA IF ANY OF THESE DETAILS CHANGE OR YOU ARE NO LONGER THE OWNER OF THE INMARSAT EQUIPMENT. (THIS IS A LEGAL REQUIREMENT AS STATED IN THE INMARSAT TERMS AND CONDITIONS WHICH ARE ATTACHED TO THE BACK OF THIS SARF)

Your name or the name of your organisation:

Address:

Town/city: State/province:

Post/ZIP code: Country:

Telephone + Country code (   ) Area code (   )   Telephone number (   )

Facsimile + Country Code (   ) Area code (   )   Facsimile number (   )

Email address:

Contact person:

Title: Department:

What is their telephone number and/or extension? + Country code (   ) Area code (   ) Telephone number (   )

2.   Paying the bill (See note B) PLEASE NOTIFY YOUR PSA URGENTLY IF YOU CHANGE YOUR BILLING ENTITY (AA or ISP.) (THIS IS A LEGAL REQUIREMENT AS STATED IN THE INMARSAT TERMS AND CONDITIONS WHICH ARE ATTACHED TO THE SARF)

Note: ALL MARITIME MESs that are part of GMDSS installations MUST have an Accounting Authority as the billing entity,
Apart from the FLEET F77 MES which may use either an ISP or an AA as the billing entity.

Is the MES part of a GMDSS installation?   Yes   ☒   No   ☐

If YES, enter the Accounting Authority Code (AAIC):   ☐ ☐ ☐ ☐
If Fleet F77 please see the Note above.
        If the Code is unknown, enter the name of the AA:

If NO, have you arranged payment of calls for this MES through (tick one)
        (a) Accounting Authority (AA)   ☐   (b) Inmarsat Service Provider (ISP)   ☐

        Enter ISP or AA Code: ☐ ☐ ☐ ☐

        If the Code is unknown enter the name of the ISP or AA:

3.   What type of Mobile Earth Station (MES) are you registering? (See note C)

NOTE: If the terminal is activated as **Maritime Fixed** and placed on a vessel, you could be **Endangering Lives At Sea.**

Environment usage		The System		What will be the primary use of the MES?			
Maritime	☐	Inmarsat-B	☐	Trading	☐	Yachts	☐
Maritime Fixed	☐	Inmarsat-C/mini C	☒	Passenger/Cruise	☐	Other (IMO Number Mandatory)	☐
		Inmarsat-M	☐	Offshore	☐	Other (IMO Number NOT Mandatory)	☐
		Inmarsat mini-M	☐	Government	☐	please specify	
		Inmarsat Fleet	☐	Fishing	☐		

What will be the country of registry of this MES?

Mobile Earth Station (MES) manufacturer   Thrane & Thrane A/S   Mobile Earth Station (MES) model   SAILOR 3027 GMDSS Terminal

2.2.2 Entering the mobile number in the SAILOR 3027

When the SAILOR 3027 GMDSS Terminal is registered at the ISP, the ISP returns a mobile number for the SAILOR 3027. This mobile number must be entered in the SAILOR 3027 using the SAILOR 6006 Message Terminal.

To enter the mobile number in the SAILOR 3027, do as follows:

1. In the Message Terminal display, select **Network**.

2. Select **Settings** > **Network ID**.

3. Enter the mobile number from your ISP and select **OK**.

   The mobile number is loaded into the SAILOR 3027. When the mobile number has been successfully loaded, the SAILOR 3027 can be used on the Inmarsat C network.

Installing the system

This chapter describes the mechanical installation of the units in the SAILOR 6110 system. For information on cables and wiring of the system, see *Connecting the system* on page 27.

For information how to configure the system, see the user manual *[1]*.

The following sections describe

- *General installation requirements*
- *Mounting the SAILOR 3027*
- *Mounting the SAILOR 1252 printer*

Mechanical installation of all other units in the system is described in the individual installation manuals. The names and numbers of the manuals are listed in *Related documents* on page v in the beginning of this manual.

Installing the system

3.1 General installation requirements

The GMDSS system can be installed separately or in a dedicated console. For information on how to install the system in the console, see the installation manual for the SAILOR System 6000 Console *[5]*.

| Important | Only the SAILOR 3027 GMDSS Terminal must be placed outdoors. **Place all other units in the system indoors!** For information on environmental requirements to the units, refer to *Technical specifications* on page 61 or the individual installation manuals for the units. |

3.1.1 Power requirements

A SAILOR 6110 GMDSS System operates on either 115 VAC, 230 VAC or a 24 V floating DC (nominal value). The SAILOR 6081 PSU and Charger provides automatic switch over to a battery supply in case a drop out occurs in the Mains supply.

Power consumption

The total power consumption varies primarily due to system activities. Make sure the backup battery is capable of providing the required power. As a guideline, note the power consumption of the following equipment:

Unit	Idle power	Max. power
SAILOR 3027 GMDSS Terminal	1.85 W @15 V DC	30 W @15 V DC
SAILOR 6006 Message Terminal (12 V DC - 24 V DC)	12 W	20 W
SAILOR 6101 Alarm Panel	1 W	2 W
SAILOR 6103 Multi Alarm Panel	1 W	4 W

Unit	Idle power	Max. power
SAILOR 1252 Printer	3 W	30 W

Fuses

Before exchanging a fuse, check that the unit has not been damaged.

Note Only units with a replaceable fuse are listed in the table below.

The units in the SAILOR 6110 system have the following replaceable fuses:

Unit	Location	Fuse type
SAILOR 6081 PSU and Charger.	AC input: Externally accessed, next to Power switch. For other fuses, see the Installation and User manual for the SAILOR 6081 PSU and Charger *[4]*	6.3 AT, 5x20 mm
SAILOR 1252 Printer	Internally accessed, remove top cover	6.3 AT, 5x20 mm

3.1.2 Grounding availability

Use a suitable location as close as possible to the SAILOR 6081 for connecting the units to ship ground (hull).

Installing the system

3.2 Mounting the SAILOR 3027

3.2.1 Placing the SAILOR 3027 GMDSS Terminal

Place the terminal outdoors on the ship. Before mounting the terminal, consider the following:

- **Safety distance: 1 ft. (0.3 meters).**
  Place the terminal so that no person can accidently get closer to the terminal than the safety distance 1 ft. (0.3 meters).

- **Distance to exhaust fumes.**
  Do not place the terminal close to the funnel directly exposed to exhaust fumes.

- **Distance to other equipment.**
  Keep the following distances between the terminal and other equipment:

  - Compass Safe Distance: 5 m (distance to magnetic compass)

  - HF antennas: > 5 meter

  - VHF antennas: > 4 meter

  - Other Inmarsat C terminals: > 0.5 meter

- **Line of sight.**
  Place the terminal in an area as free from obstructions as possible in all directions down to 15° below the horizon.

Zenith

SAILOR.
Thrane & Thrane

Horizon   Horizon

15°   15°

Obstructions should be below these lines
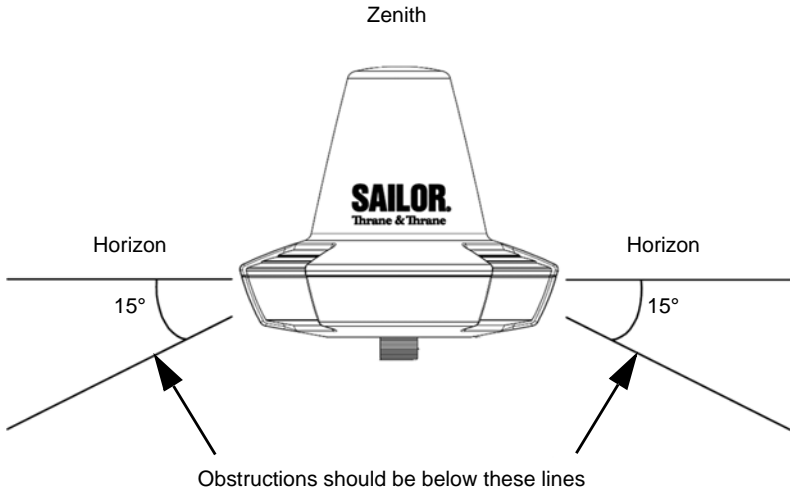
If obstructions cannot be avoided, place the receiver so that the obstruction covers no more than 2° of the view from the terminal. To obtain this, the distance between the obstruction and the terminal must be **minimum 29 x diameter of the obstruction.**

SAILOR 3027
Mini-C Transceiver

0.1 m diameter
obstruction

2.9 m apart to ensure the obstruction covers no more than 2°
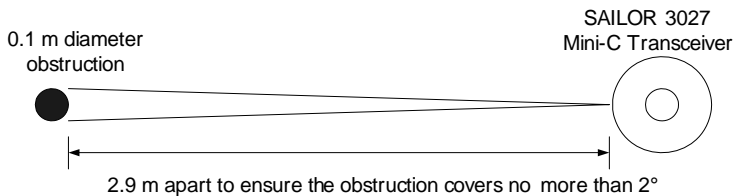
Example: The obstruction is a pole of 0.1 m diameter. This means the terminal must be placed 29 x 0.1 m = 2.9 m from the obstruction.

Installing the system

- **Power source available.**
  The power source must be placed as close as possible to the terminal.

- **Grounding available.**
  Make sure that the shield of the CAN cable is connected to a proper ground, i.e. the ship's structure/hull. This is very important in order to protect persons and equipment from lightning and safely bypass interference from Radar, VHF/MF/HF radio equipment and other environmental sources of interference.

  > **Important** Do **not** make the ground connection at the SAILOR 3027 end of the CAN cable. Instead, connect the shield of the CAN cable to the ⏚ symbol in the 15 V DC output (X2) on the SAILOR 6081.

3.2.2 Mounting the SAILOR 3027 GMDSS Terminal

The GMDSS Terminal has one CAN connector and is designed primarily for pole mounting.

> **Note** For mechanical drawings, see *Mechanical outline drawing, SAILOR 3027 GMDSS Terminal* on page 22.
>
> For information on wiring, see *Connecting the system* on page 27.
>
> For part numbers of the mounting accessories, see *Available parts* on page 59.

Pole mount 1"

The pole mount kit is included with your GMDSS Terminal. Follow the instructions included with the pole mount kit.

1. Lead the cable through the pole and pole mount adapter.

2. Connect the CAN cable to the terminal.

   > **Note** The connector is waterproof. Do not attempt to seal the connection any further.

3. Mount the adapter on the terminal using screws.

4. Tighten the adapter to the pole.

> **Note** The pole mount adapter must be removed from the terminal before the cable can be connected or disconnected.

You may use the adjustable pole/railing mount as an alternative to the pole mount. See the next section for details.
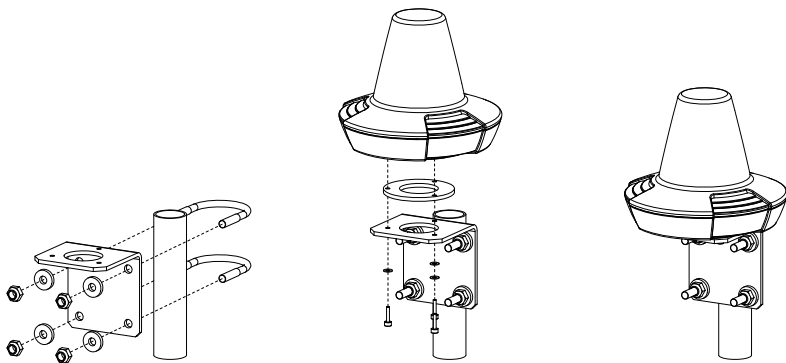
Installing the system

Adjustable pole/railing mount 1" and 1½" (optional)

The adjustable pole/railing mount kit is available from Thrane & Thrane (see *Available parts* on page 59). When mounting the adjustable pole/railing mount follow the instructions included with the kit. The adjustable pole/railing mount fits 1" and 1½" poles and can be mounted on a vertical or horizontal pole.
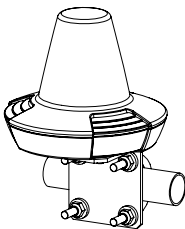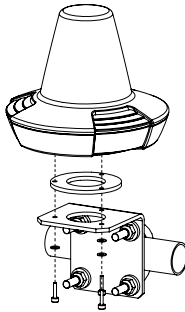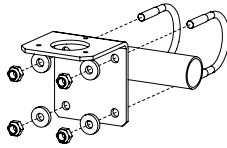
Do as follows:

1. Attach the pole/railing mount to the pole using the included nuts and spacers. The drawing below and on the next page show the vertical and the horizontal assembly.

2. Tighten the nuts.

3. Place the large spacer between the SAILOR 3027 GMDSS Terminal and the pole/railing mount.

4. Fasten the GMDSS Terminalto the pole/railing mount using the 3 screws and spacers.

5. Tighten the screws.

6. Connect the CAN cable to the connector in the bottom of the GMDSS Terminal.
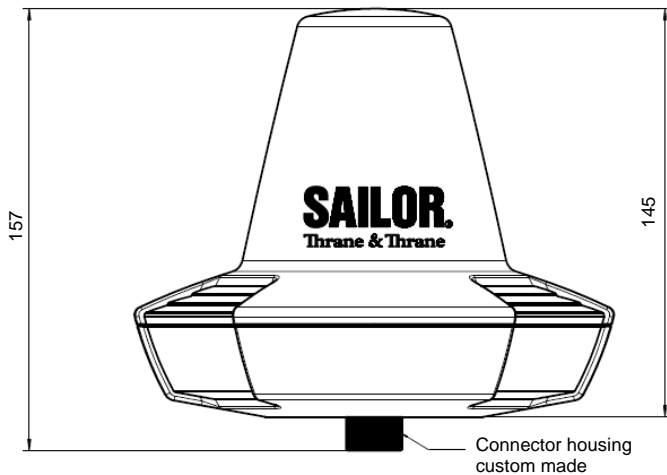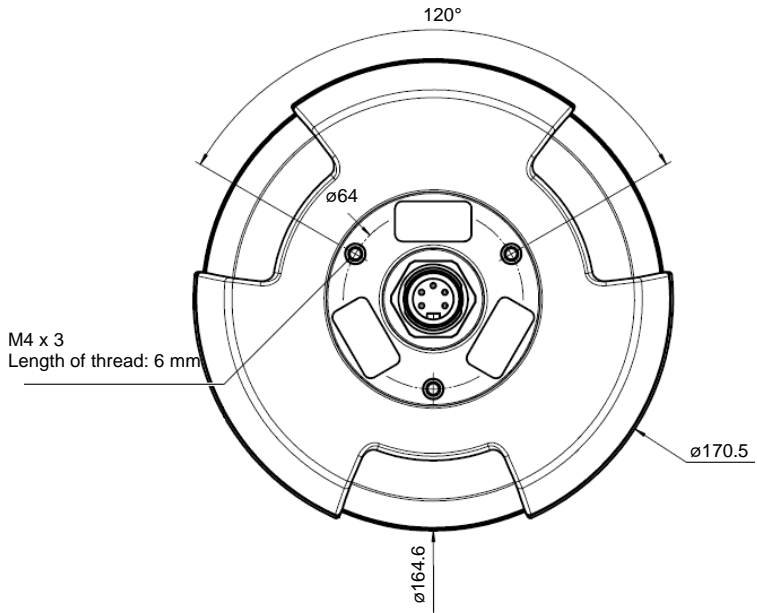
Vertical pole:

Horizontal pole:

Mechanical outline drawing, SAILOR 3027 GMDSS Terminal

120°

ø64

M4 x 3
Length of thread: 6 mm

ø170.5

ø164.6

157

145

Connector housing
custom made

3.3 Mounting the SAILOR 1252 printer
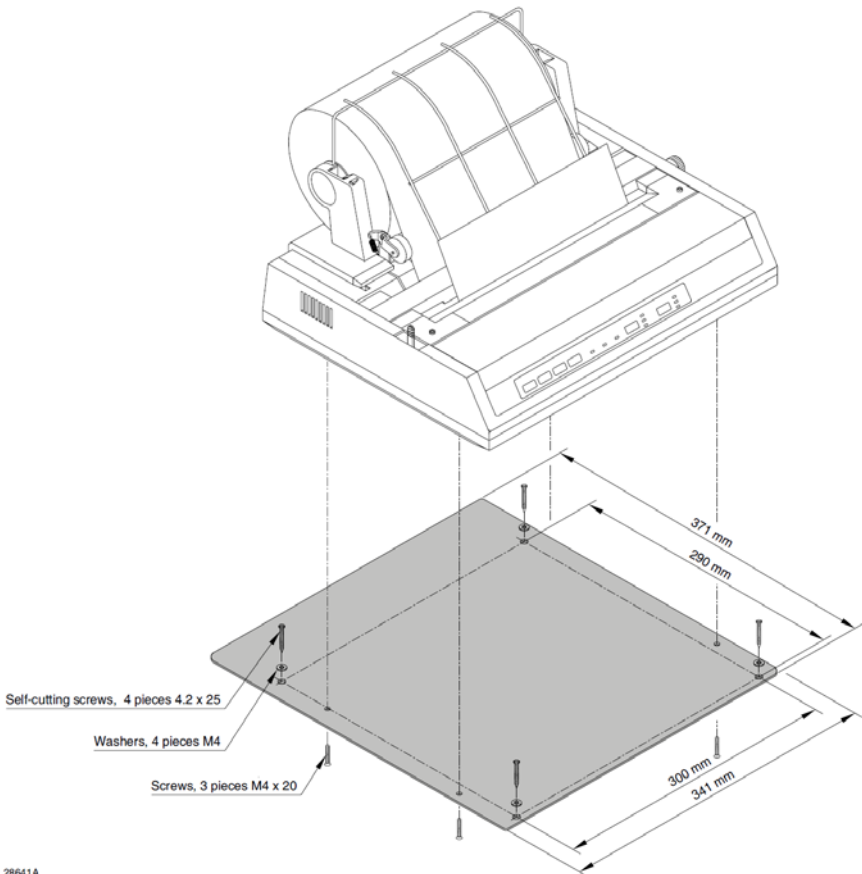
3.3.1 Placing the printer

The printer must be placed indoors in a dry location, close to the SAILOR 6006 Message Terminal. The Message Terminal and the printer are connected with a USB cable, which means the maximum distance between the two units is 5 m.

If your printer is to be installed in a System 6000 Console, see the installation manual for the System 6000 Console *[5]*.
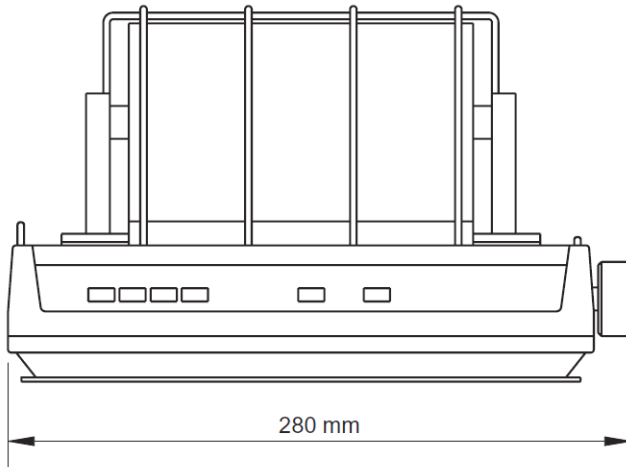
3.3.2 Mounting the printer

To mount the SAILOR 1252 with the included mounting kit H1250, do as follows:

1. Fasten the plate to the printer with the 3 M4 x 20 screws included in the kit.

2. Fasten the plate with printer to the mounting surface using the 4 self-cutting screws M4.2 x 25 and washers included in the kit.
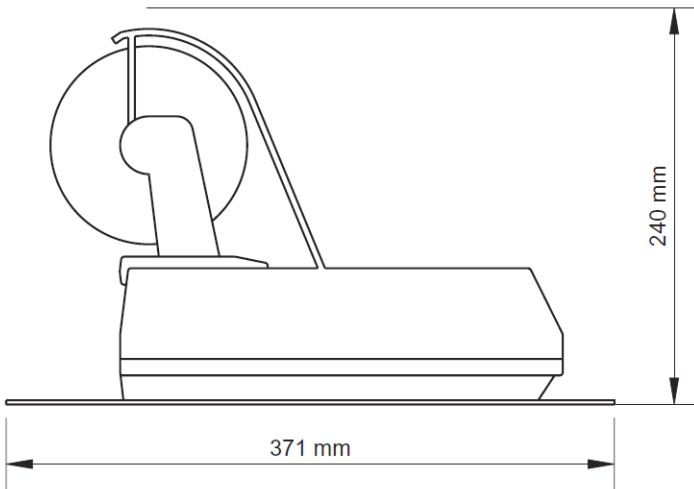
Self-cutting screws, 4 pieces 4.2 x 25

Washers, 4 pieces M4

Screws, 3 pieces M4 x 20

371 mm
290 mm

300 mm
341 mm

28641A

Mechanical outline drawing, SAILOR 1252 Printer

280 mm

28709

240 mm

371 mm

Connecting the system

This chapter explains how to connect the units in the SAILOR 6110 system and describes connectors, pin-out and cable requirements. It has the following sections:

- *Connecting the units*
- *Grounding the units*
- *The CAN backbone*
- *Connecting power*
- *Connectors and pin-out*

## 4.1   Connecting the units

Important	Do not connect and switch on the SAILOR 6081 PSU and Charger until all other units are connected!

Before connecting the units, read all sections in this chapter.

Connect the units according to the Wiring overview on the next page and the requirements in this chapter.

4.1.1   Wiring overview

The drawing below shows the wiring of a basic SAILOR 6110 system.
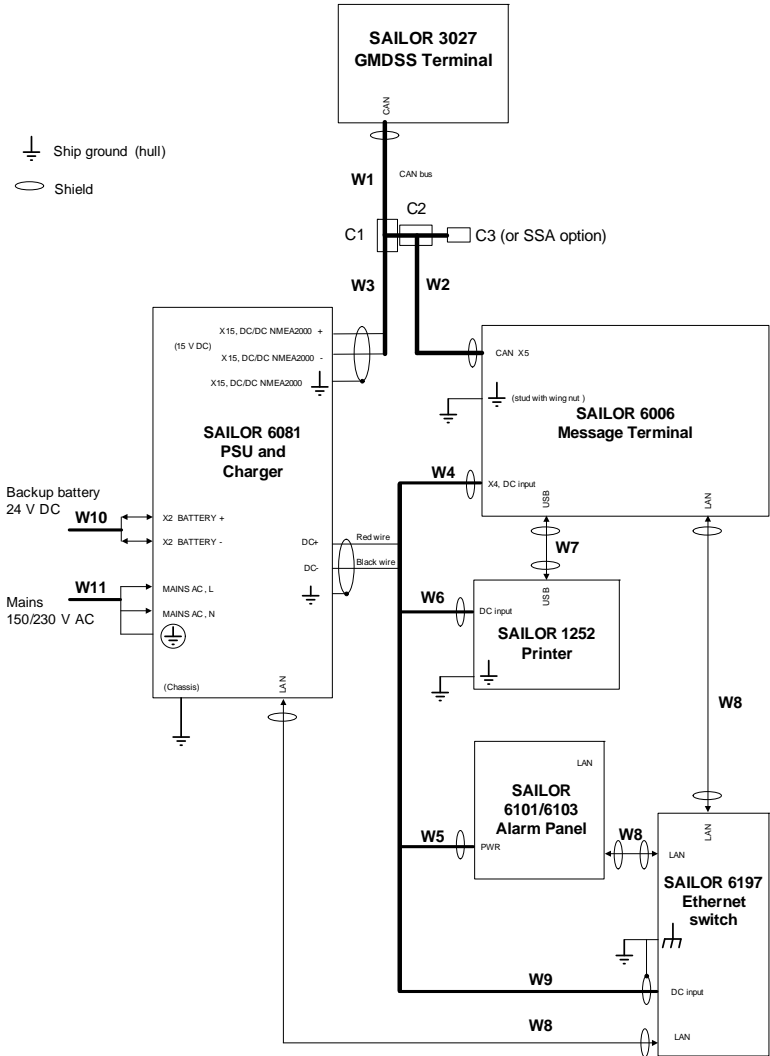
Connectors, pin-out and cable requirements are listed in the next sections.

4.1.2 Cables and connectors

To see where the cables (W) and connectors (C) are located, refer to the drawing on the previous page. The below table lists the cables and connectors from the drawing.

Cable	Type	Included/not included
W1	NMEA 2000 Mini Device Cable	Included (20 m) with SAILOR 6110
W2	NMEA 2000 Micro Device Cable	Included (6 m) with SAILOR 6110
W3	NMEA 2000 Mini Device Cable	Included (6 m) with SAILOR 6110
W4 W5 W6	Power cables to Message Terminal, Alarm Panel and printer	Included with each unit
W7	USB cable	Included (1 m) with printer
W8	Cat. 5E LAN cables, shielded	**Not included, must be purchased separately**
W9	DC power cable to Ethernet switch, shielded	**Not included, must be purchased separately**
W10	DC cable to battery	**Not included, must be purchased separately**
W11	AC Power cable with ground wire to SAILOR 6081 PSU and Charger	**Not included, must be purchased separately**

Connecting the system

Cable	Type	Included/not included
C1	Mini/Micro NMEA 2000 T-connector	Included (1 pcs.) with SAILOR 6110
C2	Micro NMEA 2000 T-connector	Included (1 pcs.) with SAILOR 6110
C3	Inline Micro termination Connector, or termination in last unit in CAN backbone.	Included (1 pcs.) with SAILOR 6110

As an alternative to the NMEA connectors you may use a CAN connection box, part number 406208A.

If you are going to use the SSA option, you must also acquire

• a THRANE 6194 Terminal Control Unit
• an SSAS kit including cable
  SAILOR 6100-913 SSA Kit or SAILOR 6100-916 SSA US Kit

For a list of additional cables and connectors available from Thrane & Thrane, see *Available parts* on page 59.

4.2 Grounding the units

Make sure you have a suitable grounding location for grounding the units, preferably close to the power supply. See *Grounding availability* on page 15.

4.2.1 SAILOR 3027 GMDSS Terminal

Important ▶ | The shield of the CAN cable from the terminal must be grounded through the power supply, **not** at the terminal. This is to ensure that any lightning strike at the terminal will be directed straight to the ship ground, and away from equipment operated by personnel.

You may use a special CAN cable, containing only the power wires and shield, to connect to the power supply. Using a T-connector, this cable can be connected to the full CAN bus (and thus to the SAILOR 3027 terminal).

On the SAILOR 6081 PSU and Charger, connect the following wires from the CAN cable:

Wire	Terminal on X15 connector (15 V DC output in SAILOR 6081 PSU and Charger)
DC+, red wire	+
DC-, black wire	-
Shield	⏚

Connecting the system

4.2.2 SAILOR 6006 Message Terminal

Connect a ground wire between the ground stud on the Message Terminal and ship ground.

Ground stud

Ground plane
connected to ship hull
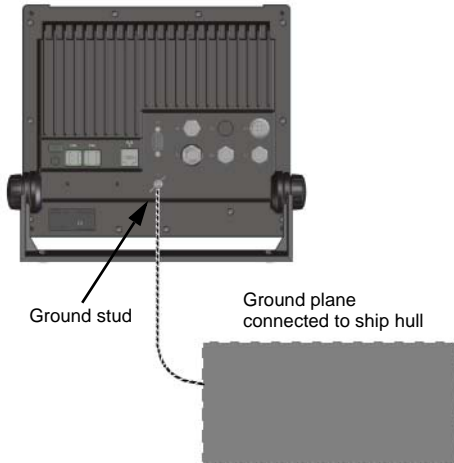
4.2.3 SAILOR 6081 PSU and Charger

Important When installing the power supply, make sure you connect the chassis of the power supply to ship ground. This grounding ensures that any lightning strike at the GMDSS Terminal will be directed straight to the ship ground.

For further information on how to install the SAILOR 6081 PSU and Charger, see the installation manual for the power supply *[4]*.

4.3 The CAN backbone

When connecting the CAN backbone, be aware of the following requirements:

- The CAN bus is already terminated with 120 Ω inside the GMDSS Terminal. **You must provide the CAN bus with a termination resistance of 120 Ω** at the other end of the CAN backbone, either with a separate termination resistance or inside the last device on the CAN backbone.

- The cable length from each device to the CAN T-connector must be maximum 6 m.

- The total length of the backbone must be maximum 200 m.

- The distance between the GMDSS Terminal and the power supply must be maximum 55 m.

- Make the ground connection to ship ground (hull) at the power supply – and only there.

- Connect the shield of the CAN cable to the connectors throughout the system, but only connect to ship ground at the power supply.
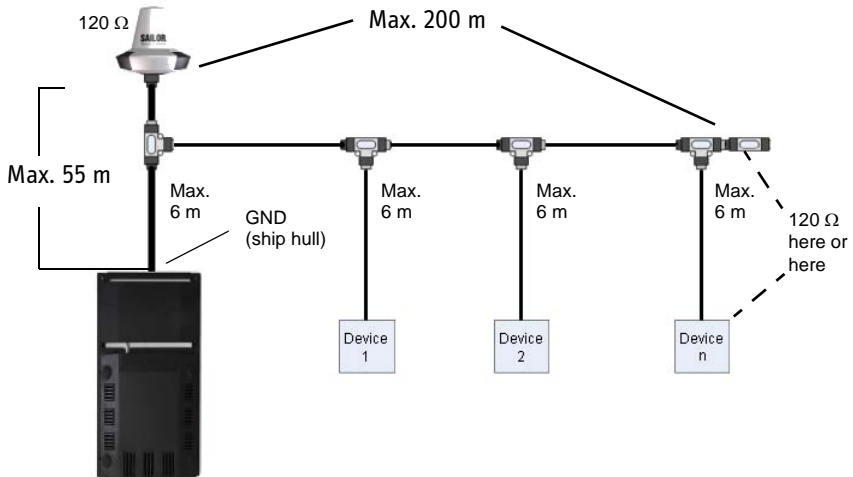
4.4   Connecting power

4.4.1 Power source

The power source for the SAILOR 6110 GMDSS System consists of a 24 V battery system and an AC power source.

A suitable power supply, the SAILOR 6081 PSU and Charger, is delivered with the system.

| Note | If you are not using the SAILOR 6081 you must provide a voltage monitor for your power supply. |

If you are using the SAILOR 6081, connect the power wires in the CAN bus from the GMDSS Terminal to the 15 V DC output from the SAILOR 6081 PSU and Charger. Other units in the system may be connected to one of the standard DC outputs in the power supply. For power requirements from these units, refer to the specifications in their respective installation manuals.

4.4.2 Calculating power cables for the SAILOR 3027

The SAILOR 3027 GMDSS Terminal has one CAN connector, which is also used for power input. If possible, use the cables included with your SAILOR 6110 system. See *Wiring overview* on page 28.

If you want to use other cables, use the guidelines in this section to calculate the maximum length of your power cables. Note, however, that the maximum length of cables between the GMDSS Terminal and the power supply must not exceed 55 m.

Source impedance

The length of the power cable depends on the type of cable used and the source impedance of the DC power source.

The maximum allowed source impedance depends on the utilization of the power range of the DC input (9 – 32 V DC; 2.8 – 0.8 A for the SAILOR 3027).

At the point where the extension cable is to be connected, measure the source impedance as described in *Measuring the ship source impedance* on page 37.

> **Note** If the total impedance is higher than the limits stated in the beginning of the next section, the system may become unstable.

The total impedance is made up of the source impedance of the power supply plus the impedance of connected cables including connectors and joints where cables are extended.

Calculating the maximum power cable extension

For 15 V DC operation (which is used in the GMDSS system), the total impedance must be max. 800 mΩ, including the source impedance in the ship installation.

The total impedance is made up of the following:

- the source impedance in the ship installation
- the cable impedance of the supplied power cables, including the impedance in the joint of the two cables. In the following example, the measured source impedance includes the impedance of the supplied cables.
- the extension cable impedance.

To calculate the maximum cable extension, do as follows:

1. First measure the source impedance in the ship installation, including supplied cables, as shown in *Measuring the ship source impedance* on page 37.

2. Then find the resistance per meter for the cable type you are going to use. The table below shows typical cable resistance - note that your cable type may differ from this. Refer to the data sheet for the cable you are using.

Cross section (mm^2)	0.5	1	1.31 (AWG 16)	1.5	2	2.5
Resistance (mΩ/m)	32.2	16.1	13	10.7	8.05	6.76

Connecting the system

3. Calculate the maximum allowed impedance in the extension cable as follows:

    Max. allowed impedance in extension cable = max. total impedance - measured source impedance including impedance of the supplied cable.

4. Then calculate the max. extension cable length as follows:

$$\text{Max. length} = 0.5 \times \frac{\text{Max. impedance in extension cable (from step 3)}}{\text{impedance/meter (from step 2)}}$$

(The length is multiplied by 0.5 above because there are two conductors in the cable.)

Example:

Ship supply voltage: 15 V DC
Ship source impedance (measured): 50 mΩ
Extension cable type: 1.31 mm^2 (AWG 16)

$$\text{Max. cable extension} = 0,5 \times \frac{800m\Omega - 50m\Omega}{(13,0m\Omega)/m} = 28,8m$$

In this case, the power cable can be extended with up to 28.8 m.

If you need more length, you can double the maximum allowed length by connecting two cables instead of one, or you can use a cable with a larger diameter.

Note   The maximum allowed total length of cables between the GMDSS Terminal and the SAILOR 6081 PSU and Charger is 55 m.

Measuring the ship source impedance

To measure the source impedance including supplied cables, do as follows:

1. Connect the supplied power cable to the 15 V DC output from the power supply.

2. Connect the other end of the power cable to the Mini part of the Mini/Micro T-connector.

3. Connect the cable for the GMDSS Terminal to the T-connector, but do not connect the other end to the terminal.

4. At the unconnected end of the CAN cable, measure the source impedance of the ship installation as described below.

• Measure the voltage without load (R.var disconnected).

• Set the current to e.g. 1 A by adjusting R.var.

• Measure the corresponding voltage change.

Example: 1 A and 50 mV. Source impedance: 50 mV/1 Amp = 50 mΩ.
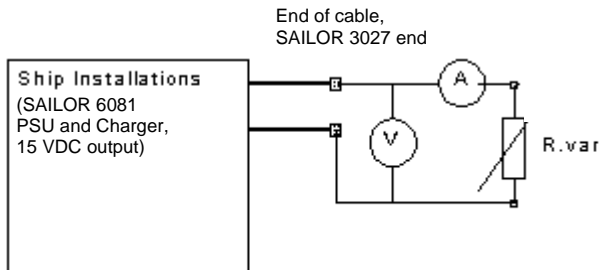
4.5 Connectors and pin-out

4.5.1 SAILOR 3027 GMDSS Terminal

The GMDSS Terminal has one male CAN socket for connecting to power as well as communication interfaces. The table and drawing below show the pin-out for the connector.

Important Secure the CAN cable at the terminal to avoid stressing the CAN connector and the housing of the terminal.

Front view on SAILOR 3027

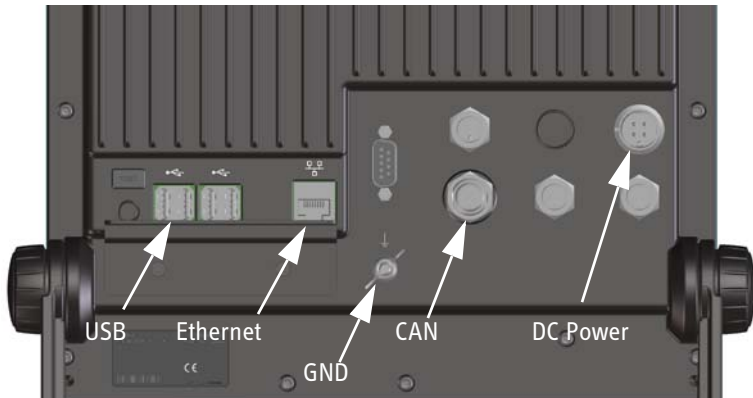| Pin	Function	Wire color
1	Not connected	None
2	+ Power	Red
3	– Power	Black
4	CAN H	White
5	CAN L	Blue
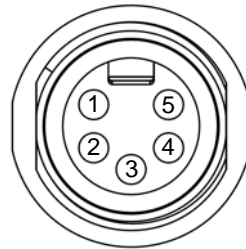
4.5.2 SAILOR 6006 Message Terminal

Overview

The drawing below shows the connector panel of the Message Terminal.

In the basic SAILOR 6110 system, the following connectors on the Message Terminal are used:

- USB interface.
  Connects to the SAILOR 1252 Printer and to the keyboard.

- Ethernet interface.
  Connects to the SAILOR 6197 Ethernet Switch.

- $\perp$, ground stud.
  Connects to ship ground.

- CAN interface.
  Connects to the GMDSS Terminal and optionally other equipment using the CAN interface.

- DC Power input.
  Connects to the SAILOR 6081 PSU and Charger

The next sub-sections show the pin-out for these 4 connectors.

For a complete description and pin-out for all connectors on the Message Terminal, see the Installation Manual for the Message Terminal *[2]*.

Connecting the system

USB interface

The USB connectors are USB Type A. The figure and table below show the connector outline, wire colors and pin assignments.

Pin number	Pin function	Wire color
1	5 V	Red
2	D–	White
3	D+	Green
4	GND	Black

USB Type A socket
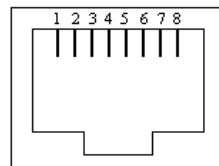
Ethernet

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

Pin number	Pin function	Wire color
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

RJ-45 female
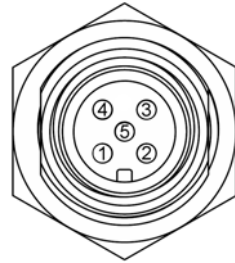
X5, CAN interface

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

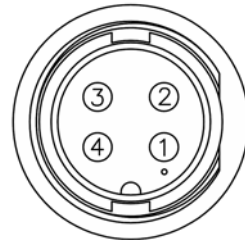| Pin number	Pin function	Wire color
1	Not connected	None
2	CAN_S	Red
3	CAN_C	Black
4	CAN_H	White
5	CAN_L	Blue

M12 Panel screw connector 5 pin male

X4, Power input

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

Pin number	Pin function
1	DC+
2	DC-
3	ON_IN
4	NC

Panel lock, 4 pin male

Connecting the system

4.5.3 SAILOR 6101/6103 Alarm Panel

Overview

> | Note > | The alarm panel is not included as a part of the system.

If you need a Distress function for the Inmarsat-C GMDSS system only, you can use the SAILOR 6101 Alarm Panel (one Distress button).

If, however, you need to use the Distress function for VHF or MF/HF as well, you should use the SAILOR 6103 Multi Alarm Panel, which has 3 Distress buttons, one for each system.

Both alarm panels have the following connectors:

* DC input.
  Connects to the SAILOR 6081 PSU and Charger

* Ethernet interface.
  Connects to the SAILOR 6197 Ethernet Switch

The drawing below shows the connectors on the SAILOR 6101/6103.
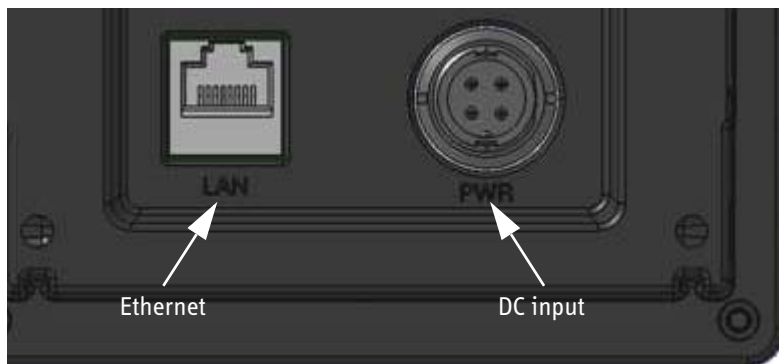
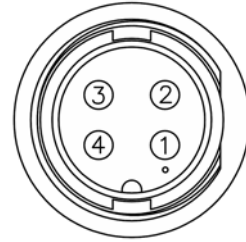The next sub-sections show the pin-out for these 2 connectors.

For a complete description of the SAILOR 6101/SAILOR 6103 Alarm Panel, see the Installation manual for the alarm panel *[3]*.

DC input

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

Pin number	Pin function
1	DC+
2	DC-
3	ON_IN
4	NC

Panel lock, 4 pin male
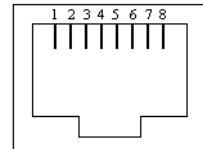

Ethernet interface

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

Pin number	Pin function	Wire color
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

RJ-45 female

Connecting the system

4.5.4 SAILOR 6197 Ethernet Switch

| Note | The Ethernet Switch is not included as a part of the system. |

The Ethernet switch has the following interfaces:

- Ethernet connectors connect to:

    - SAILOR 6081 PSU and Charger, LAN connector

    - SAILOR 6101 or SAILOR 6103 Alarm Panel, LAN connector

    - SAILOR 6006 Message Terminal, LAN connector

    - VHF Radio, LAN connector

    - MF/HF Radio, LAN connector

- DC input connects to:
  SAILOR 6081 PSU and Charger, DC output X10, X11, X12, X13 or X14.

4.5.5 SAILOR 6081 PSU and Charger

| Note | The SAILOR 6081 PSU and Charger is not included as a part of the system. |

The SAILOR 6081 PSU and Charger has a number of spring terminals. In the SAILOR 6110 system, connect the spring terminals as follows:

- MAINS AC.
  Connects to Mains 150/230 V AC.

- X2: 15 V output.
  Connects to the CAN bus with the SAILOR 3027 GMDSS Terminal (CAN power)

- X10, X11, X12, X13 or X14: DC outputs
  Connect to:

    - the DC power input on the SAILOR 6006 Message Terminal

    - the DC power input on the SAILOR 1252 Printer

    - the DC power input on the SAILOR 6101/6103 Multi Alarm Panel

    - the DC power input on the SAILOR 6197 Ethernet Switch

- BATTERY.
  Connects to a 24 V DC emergency battery used for backup when Mains AC is not available.

  | Note | The SAILOR 6081 has a charger function so that you can charge the battery while Mains AC is available, If you are using another power supply without the charger function, the battery must have a separate charger.

  For further information on requirements to the battery, refer to COMSAR/Circ.32 from the Committee on Radio communications and Search and Rescue.

- LAN.
  Connects to one of the LAN interfaces on the SIALOR 6197 Ethernet Switch.

For a complete description and pin-out for all connectors, see the manual for the SAILOR 6081 PSU and Charger *[4]*.

4.5.6 SAILOR 1252 Printer

The following interfaces on the SAILOR 1252 Printer are used in the SAILOR 6110 system:

- USB Type A connector.
  Connects to the USB interface in the SAILOR 6006 Message Terminal.

- DC input connector.
  Connects to the SAILOR 6081 PSU and Charger.

4.5.7 SSA option

The SSA option consists of the SSA buttons and a THRANE 6194 Terminal Control Unit. On the THRANE 6194, the following interfaces are used:

- CAN connector.
  Connects to the CAN bus in the SAILOR 6110 system.

- Ethernet connector.
  Connects to the SAILOR 6197 Ethernet switch in the SAILOR 6110 system.

- Spring terminals X7 to X14:
  Connect to the SSA buttons (if installed).

For further information, see the Installation and user manual for the THRANE 6194 *[6]*.

Installation check and test

This chapter provides a check list to verify that the installation was made correctly, and shows how to make an initial test of the system. It has the following sections:

- *Installation check list*
- *Testing the system*
- *Generating a diagnostic report*

5.1   Installation check list

After installing the SAILOR 6110 system, you can use the following check list to make sure you have installed the system correctly.

| Important | Make the installation check before applying power to the system! |

Check item	Reference	OK
Is the GMDSS Terminal placed correctly?		
No blocking objects	*Placing the SAILOR 3027 GMDSS Terminal* on page 16	
Away from exhaust fumes		
Minimum safety distance to people		
Minimum distance to other equipment		

Check item	Reference	OK
Are all cables connected correctly?		
Power cables	*Wiring overview* on page 28 and *Connecting power* on page 34	
CAN cables	*Wiring overview* on page 28 and *The CAN backbone* on page 33	
USB cable from Message Terminal to printer	*Wiring overview* on page 28	
Ethernet cables		
Do all cables meet the requirements in this manual?		
Power cables	*Connectors and pin-out* on page 38	
CAN cables		
USB cable		
Ethernet cables		
Is the shield of the CAN cable connected correctly to the ship ground (hull)?	*Wiring overview* on page 28	
Is the polarity of power connections correct? Red wire = DC+ and Black wire = DC-	*Wiring overview* on page 28	

5.2 Testing the system

Important | Never test the installation by sending an alert on-air!

If an alert is sent by mistake, inform the relevant authorities immediately.

Note | The SAILOR 6110 system must be registered with the Service Activation Registration Form before you can test the system. Refer to *Registering your SAILOR 3027* on page 10 for details.

5.2.1 Basic system verification

After powering the system, check that the upper right corner of the Message Terminal display shows that the system is logged in and ready for use.

The system is logged in and ready when there is a green check mark at the satellite icon and the display shows the current position and the Ocean Region to which the system is logged on.

If the system is not ready, the status field may show one of the following:

The GMDSS Terminal is logged out of the Inmarsat C network, but is synchronized with the satellite.

The GMDSS Terminal is not synchronized with a satellite, but is scanning for the best signal.

There is no connection between the GMDSS Terminal and the Message Terminal.

5.2.2 Distress button test

When the SAILOR 6110 system is fully installed, we recommend making a Distress button test.
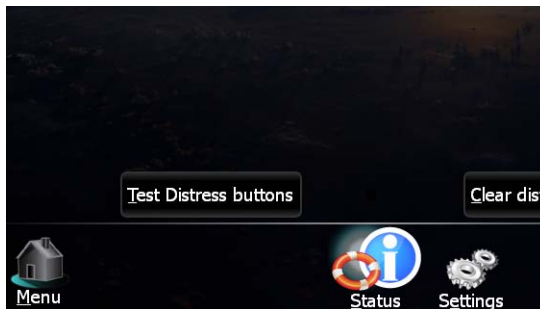
The SAILOR 6006 Message Terminal has a test function that allows test of the Inmarsat C Distress Buttons, Distress LEDs and wiring.

To test the Inmarsat C Distress buttons in the system, do as follows:

1. In the Message Terminal display, select **Distress**.

2. Select **Status** at the bottom of the page.

3. Select **Test Distress buttons**.

The test is initiated.

Wait until the following window appears.

Important Before pressing any Distress buttons, make sure the
display of the SAILOR 6006 shows Test in progress.
Otherwise you may accidently send a real Distress alert!

As long as the **Test in progress** window is showing, you can use Distress
buttons connected to the system under test, without sending a real
Distress Alert.

Note Before pressing any Distress buttons, check the units as follows:

- On the alarm panel, make sure the display shows "Test" next
to the Inm C unit that is active (marked with a bullet), before
pressing the **Inm-C Distress** button.
- On the Message Terminal, make sure the display shows "Test
in progress" before pressing the **Distress** button on the
Message Terminal.

Installation check and test

4. Test the **Inmarsat C** Distress buttons on the connected units and on the Message Terminal by pressing them as you would in a real Distress situation.

> **Important** | Only **Inmarsat C** Distress buttons are included in this test. **Do not** press any other Distress buttons, unless it is a distress situation!

The light and buzzer in the Distress buttons should work the same way as in a real Distress situation. For details on the Distress buttons, see the user manual for the SAILOR 6110 GMDSS System *[1]*.

5. When you have finished testing, or you need to send a real Distress alert, press **Cancel** in the **Test in progress** window.

5.2.3 Testing the SAILOR 6101/6103 Alarm Panel

| Note | This test only verifies the function of the Alarm Panel itself, not of any connected equipment nor the total system. |

When the system is connected and started up, check that the Alarm Panel display shows all connected units.

*   SAILOR 6101 may show Inm-C 1 and/or Inm-C 2

*   SAILOR 6103 may show Inm-C 1, Inm-C 2, VHF 1, VHF 2, MF/HF 1 and/or MF/HF 2

To test the light and sound indicators in the Alarm Panel, do as follows:

1. Press and hold the **Test** button on the Alarm Panel.
    Verify that all light indicators and alarm buttons are flashing.

2. While holding the **Test** button, press any other button on the Alarm Panel, including the **Distress** button.

The buzzer sounds to indicate that the pressed button and the buzzer are working.

5.2.4 Backup supply test

With the system connected and switched on, switch off or remove the AC input to the SAILOR 6081 PSU and Charger. The system should continue to work uninterrupted from the 24 V DC backup battery.

You can check the status of the backup battery in the bottom left corner on the SAILOR 6006.
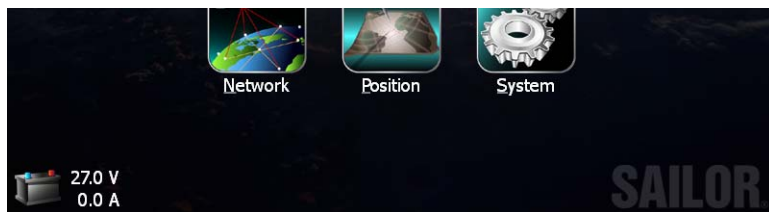
For detailed Power status, Select **System > Power**.

5.2.5 Link test

Using the SAILOR 6006 Message Terminal you can test the satellite link from
the GMDSS Terminal to the Land Earth Station.

| Important | When you perform a link test, the Message Terminal has limited functionality. The link test can take several minutes.

We do **not** recommend using the link test. Instead you can send a message to yourself to check the connection.

If you still want to run a link test, first make sure the SAILOR 3027 is properly
commissioned and logged in. The top right corner of the Message Terminal
display shows the status.

To run a link test using the Message Terminal, do as follows:

1. In the Message Terminal display, select **Network**.

2. Select **Status**.

3. Select **Link test...**
    The Link test window shows the result of the latest link test if any.

4. Select **Perform link test**.

5. Select **Yes**.
    A window shows **Link test in progress**. When the test is complete, the
    window shows the results of the test.

6. Select **OK** to exit the Link test window.

5.3 Generating a diagnostic report

If the system is not working properly, a diagnostic report may help service personnel troubleshooting the system.

To generate a diagnostic report, do as follows:

1. Select **System**.

2. Select **Advanced** at the bottom of the page.

3. Select **Generate diagnostic report**.

4. Choose the location where you want to save the file. You can save the file on a USB memory stick connected to the Message Terminal.

Generating a diagnostic report

Maintenance

This chapter describes how to maintain and handle the units in the system. This chapter has the following sections:

- *Maintenance guidelines*
- *Repacking for shipment*
- *Available parts*

6.1 Maintenance guidelines

When properly installed the system needs no maintenance.

The life time of the clock battery in the SAILOR 6006 Message Terminal is 10 years. If the battery is no longer functional, the SAILOR 6006 is not able to keep the correct time when power is disconnected.

The clock battery in the SAILOR 6006 Message Terminal must be replaced by qualified personnel.

6.1.1 Handling precautions for SAILOR 3027

- Do not expose the joints of the SAILOR 3027 GMDSS Terminal or the connector to high-pressure water jets.
- Do not expose the connector on the terminal to mechanical stress. Secure the cable with cable relief.
- Do not expose the terminal to chemicals containing alkalis. It may result in physical degradation of the terminal.
- Do not expose the terminal to acid curing silicone.
- Avoid contact with solvents.
- Do not paint the terminal. It may result in degradation of the terminal.

6.2 Repacking for shipment

If you need to return a unit for repair or for other reasons, use the guidelines below.

The shipping cartons for the SAILOR 6110 system have been carefully designed to protect the equipment during shipment. The cartons and their associated packing material should be used when repacking for shipment. Attach a tag indicating the type of service required, return address, model 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 repackaging with commercially available material.

- Wrap the equipment in heavy paper or plastic. Attach a tag indicating the type of service required, return address, model number and full serial number.

- Use a strong shipping container, e.g. a double-walled carton made of 160 kg test material.

- Seal the shipping container and mark it "FRAGILE" to ensure careful handling.

6.3   Available parts

The following parts are available from Thrane & Thrane.

6.3.1   Cables and connectors

Part number	Item
406100-930	Mini/Micro NMEA 2000 T-connector
406100-931	Micro NMEA 2000 T-connector
406100-932	Inline Micro termination Connector
406100-933	Male Mini NMEA 2000 Field Connector
406100-934	Male Micro NMEA 2000 Field Connector
406100-940	6 m NMEA 2000 Micro Device Cable
406100-941	20 m NMEA 2000 Micro Device Cable
406100-942	50 m NMEA 2000 Micro Device Cable
406100-943	6 m NMEA 2000 Power Cable
406100-944	30 m NMEA 2000 Mini Device Cable
406208A	SAILOR 6208 Control Unit Connection Box

6.3.2 Adjustable pole/railing mount kit

Part number	Item
403027-103	Adjustable pole/railing mount kit for SAILOR 3027

Technical specifications

This appendix holds the specifications for the SAILOR 6110 GMDSS System and the SAILOR 3027 GMDSS Terminal.

For specifications on the other units in the GMDSS System, refer to the installation manuals for the individual units.

A.1   SAILOR 6110 system specifications

Item	Specification
Compliance	Inmarsat C GMDSS type approved/Wheelmark approved

A.2 SAILOR 3027 specifications

Item	Specification
Type	SAILOR 3027 GMDSS Terminal
Compliance	Inmarsat C GMDSS type approved/Wheelmark approved
Rx Frequency Band Tx Frequency Band	1525- 1545 MHz 1626.5 - 1646.5 MHz
G/T	-23,7 dBk at 5 degree elevation.
EIRP	Min. EIRP: 7 dBW at 5 degrees elevation
Inmarsat Protocol services	Message transmission and reception with IA-5, ITA-2 and binary transfer to/from: • Telex PSTN (telephone modems and fax modems) • EGC message reception with automatic geographical area selection. • E-mail Polling and data reporting with automatic transmission of position reports down to a recommended minimum of 1 per 5 minutes. Special Access Codes DNID Messaging Program Unreserved Data reporting Receive storage: up to 32 Kbyte.

Technical specifications

Item	Specification
Global services Data:	1200 symbols/sec BPSK. Data rate: 600 bit/sec
Max. Transmission size	10 Kbyte
Interface in SAILOR 3027	NMEA 2000 DeviceNet Mini-style, Male
Power input	9 V - 32 V DC from CAN compliant power supply. 15 V DC Nominal Input Power Max. Power: 30 W Max. continuous current: 2.8 A Max. peak current: 4 A (startup)
Standby power, Rx mode	< 2 W
Sleep Mode power	< 10 mW
Compass safe distance	5 m
Weight	1.10 kg (without pole mount)
Dimensions	Diameter: 170.5 mm, Height: 145 mm (without pole mount)
Water and dust	IP66 and IP67
Ambient Temperature	Operating range -35°C to 55°C Storage -40°C to 80°C

Item	Specification
Operation humidity	100%, condensing
Relative Humidity	Up to 95% at 40°C
Precipitation	Up to 100 mm/hour, droplet size 0.5 to 4.5 mm
Ice, survival	Up to 25 mm
Velocity	Max velocity up to 140 km/hour (87 mph)
Wind	Wind speed up to 200 km/hour (124 mph)
Vibrations, operational	• Random 5-20 Hz: 0.005 g^2/Hz • 20-150 Hz: -3dB/oct. (0.5g RMS).
Vibrations, survival	• Random 5-20 Hz: 0.05 g^2/Hz • 20-150 Hz: -3 dB/oct. (1.7 g RMS).
Shock	Half sine 20 g/11 ms
Solar radiation	Max. flux density 1200 W/m^2.
Equipment category	IEC 60945 Environmental test

A

AC   Alternating Current

C

CAN   Controller–Area Network (CAN) is a message based protocol
              designed to allow microcontrollers and devices to communicate
              with each other within a vehicle without a host computer.

D

DC   Direct Current

E

EGC   Enhanced Group Call. A type of broadcast data for ships.

G

GMDSS   Global Maritime Distress Safety System. GMDSS consists of
              several systems, some of which are new, but many of which have
              been in operation for many years. 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 communications, and bridge-to-bridge
              communications.

GPS   Global Positioning System

H

HF   High Frequency. Radio frequencies between 3 and 30 MHz. Used
              for direct, long-distance (often inter-continental)
              communications.

HPA   High Power Amplifier

I

IEC   International Electrotechnical Commission. The international
                standards and conformity assessment body for all fields of
                electrotechnology.

IMSO   International Maritime Satellite Organisation. An
                intergovernmental body established to ensure that Inmarsat
                continues to meet its public service obligations.

ISN   Inmarsat Serial Number. A unique number assigned by a terminal
                manufacturer to each newly manufactured terminal for Inmarsat's
                satellite networks.

ISP   Inmarsat Service Provider. The company providing the Inmarsat
                services.

L

LAN   Local Area Network. A computer network covering a small
                physical area, like a home, office, school or airport.

LNA   Low Noise Amplifier

M

MES   Mobile Earth Station. An Earth station in the mobile-satellite
                service intended to be used while in motion or during halts at
                unspecified points. The SAILOR 3027 is the MES in the SAILOR 6110
                GMDSS system.

MF   Medium Frequency. Radio frequencies (RF) in the range of 300
                kHz to 3 MHz. Navtex, which is part of the current Global Maritime
                Distress Safety System occupies 518 kHz and 490 kHz for important
                digital text broadcasts.

N

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.

P

PSA Point of Service Activation. A company handling the activation of Inmarsat mobiles.

S

SARF Service Activation Registration Form

SSA Ship Security Alert

U

USB Universal Serial Bus. A specification to establish communication between devices and a host controller (usually personal computers). USB is intended to replace many varieties of serial and parallel ports. USB can connect computer peripherals such as mice, keyboards, digital cameras, printers, personal media players, flash drives, and external hard drives.

V

VHF Very High Frequency. The radio frequency range from 30 MHz to 300 MHz. Ideal for short-distance terrestrial communication.

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