

COBHAM

SAILOR 6018 Message Terminal

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. Cobham SATCOM assumes no liability for the customer's failure to comply with these requirements.

DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE

Do not operate the equipment in the presence of flammable gases or fumes. Operation of any electrical equipment in such an environment constitutes a definite safety hazard.

KEEP AWAY FROM LIVE CIRCUITS

Operating personnel must not remove equipment covers. Component replacement and internal adjustment must be made by qualified maintenance personnel. Do not service the unit with the power cable connected. Always disconnect and discharge circuits before touching them.

DO NOT SUBSTITUTE PARTS OR MODIFY EQUIPMENT

Because of the danger of introducing additional hazards, do not substitute parts or perform any unauthorized modification to the equipment.

COMPASS SAFE DISTANCE

Minimum compass safe distance: 0.6 m.

INSTALL WITH POWER SOURCE THAT CAN BE SWITCHED OFF.

The **Message Terminal** must be powered from a source that has a readily available switch for cutting power in case of critical failure in terminal.



Warning! If the Message Terminal is flush-mounted in a console with high ambient air temperature (above 45°C), caution shall be taken to avoid skin burns when servicing the rear metal part of unit.

About the manual

Intended readers

This manual is an installation manual for the SAILOR 6018 Message Terminal. The manual is intended primarily for installers of the system and service personnel. Personnel installing or servicing the system must be properly trained and authorized by Cobham SATCOM. It is important that you observe all safety requirements listed in the beginning of this manual, and install the Message Terminal according to the guidelines in this manual.

Manual overview

This manual has the following chapters:

- ***Introduction*** — a short description of the Message Terminal.
- ***Installation*** — a description of how to unpack, store and install the Message Terminal.
- ***Connectors & controls*** — descriptions and pin-out for the connectors, guidelines for connecting the Message Terminal.
- ***Setup and verification*** — instructions how to install applications and verify a successful installation.
- ***Service & repair*** — a short description of how to handle defective units.
- ***Specifications*** — technical specifications for the Message Terminal.

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Introduction

1.1 The SAILOR 6018 Message Terminal

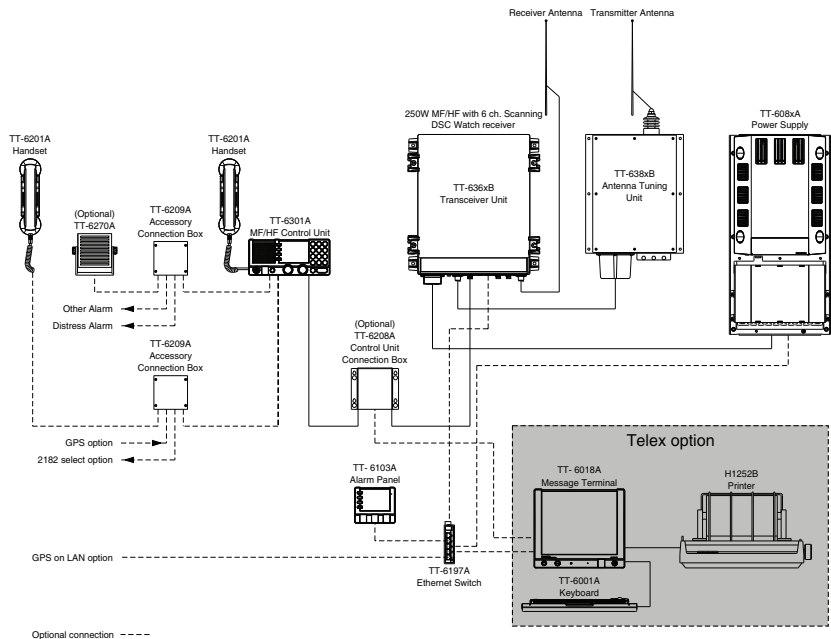
1.1.1 General description

The SAILOR 6018 Message Terminal is a maritime terminal for use in GMDSS installations, providing several types of interfaces for connection to external equipment, such as a Mini-C transceiver, MF/HF Radio Telex applications and an Alarm panel. The Message Terminal has a touch-screen for operating the terminal. However, in GMDSS installations a keyboard is mandatory. An approved keyboard is available from Cobham SATCOM.

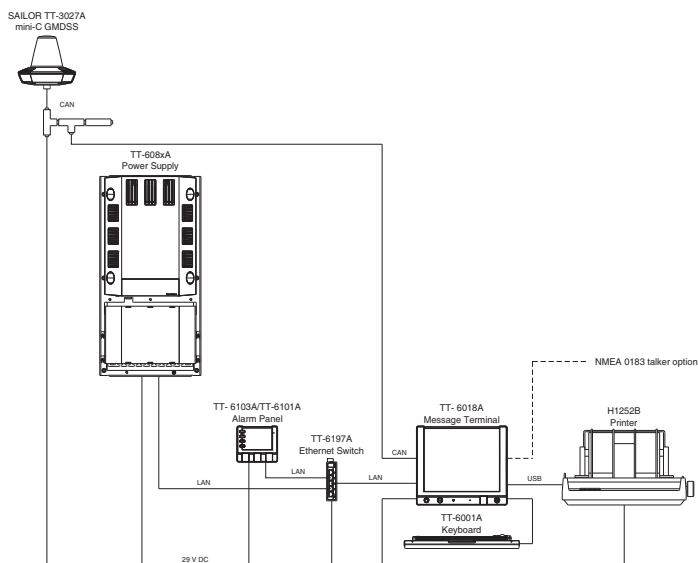


1.1.2 System configuration examples

1.1.2.1 MF/HF system



1.1.2.2 mini-C GMDSS



Installation

This chapter provides a description of how to unpack, store and install the Message Terminal. It contains the following sections:

- *Unpacking*
- *Installing the Message Terminal*

For information on cable connections see chapter 3 *Connectors & controls*.

2.1 Unpacking

2.1.1 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 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.

2.1.2 Storage

The Message Terminal may be stored or shipped in temperatures between -30° C and +80° C. Protect the Message Terminal from extreme temperature variation which can cause condensation.

2.2 Installing the Message Terminal

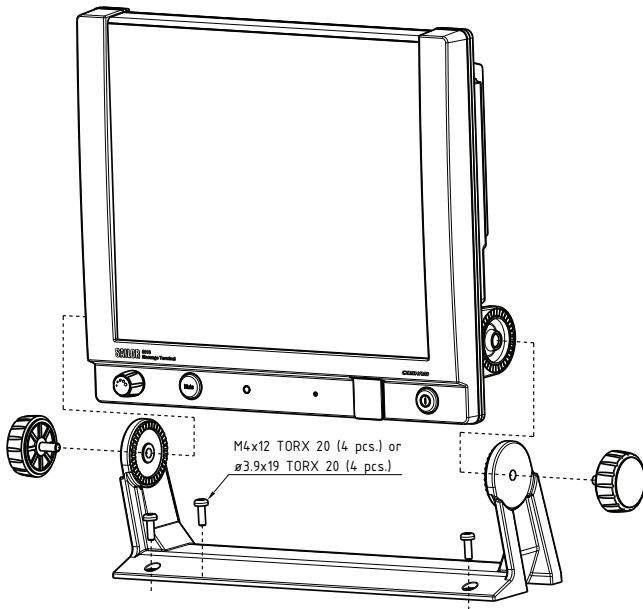
When installing, make sure the Compass Safe Distance of 0.6 m is maintained.

The Message Terminal can be mounted in two ways, if needed with the cable relief:

- *Desktop mounting*
- *Flush mount* — typically in a console

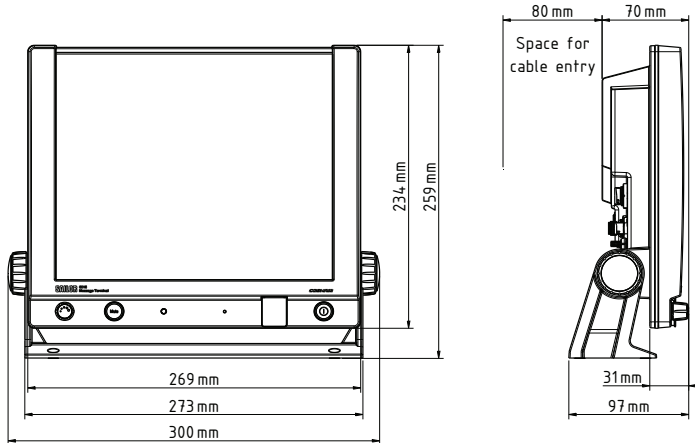
2.2.1 Desktop mounting

The Message Terminal can be mounted on a desktop using the mounting bracket.

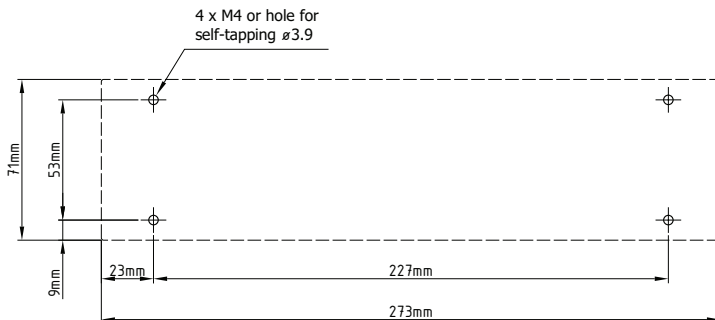


To mount the Message Terminal using the mounting bracket, do as follows:

1. Find a suitable location to mount the Message Terminal. Make sure there is at least 80 mm of free space for cable access behind the Message Terminal.



2. Use the four holes to fasten the mounting bracket to the mounting surface, see the drilling plan below. Screws are included with the mounting bracket.



3. Place the Message Terminal in the mounting bracket.
4. Mount the two knobs on the sides of the bracket, but do not tighten them yet.
5. Connect the cables as described in chapter 3.

6. Adjust the angle of the Message Terminal to the wanted position. The bracket can be adjusted $\pm 20^\circ$.
7. Tighten the two knobs on the sides of the bracket when the Message Terminal is in the desired position.

2.2.2 Flush mount

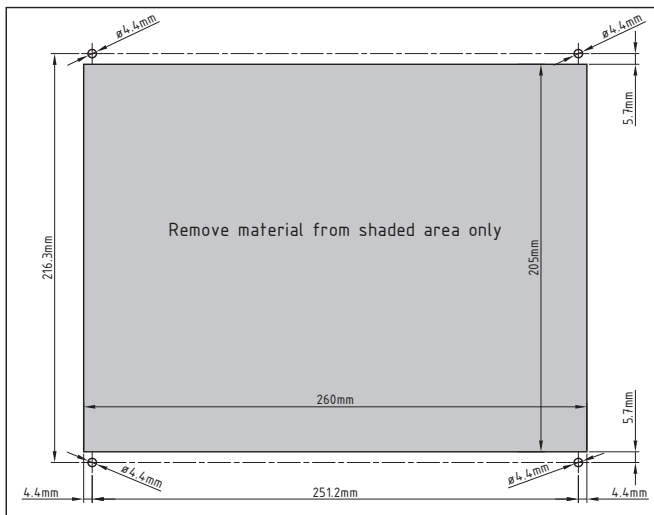
The Message Terminal can be mounted in a flat surface, e.g. in a console.

To mount the Message Terminal in a console, do as follows:

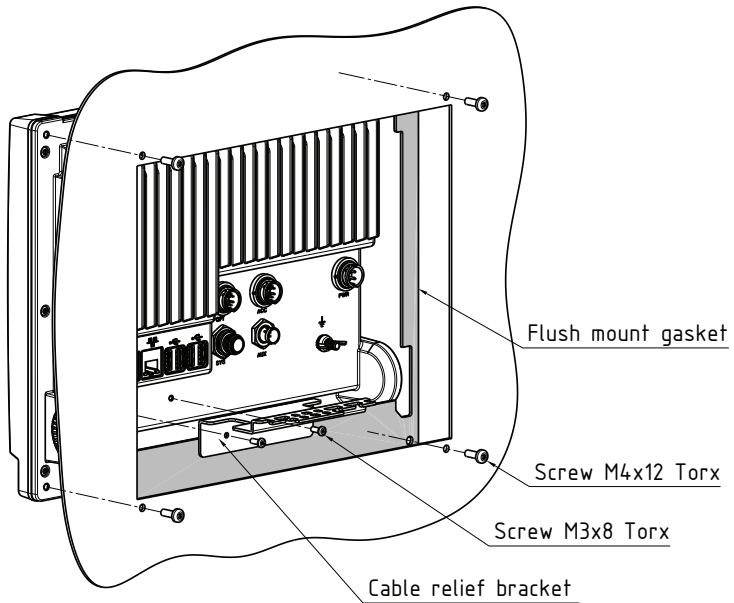
1. Find a suitable location in the console. Check that there is enough space for the Message Terminal and an additional 80 mm space for cable entry.

Make sure that there is room for service access to the unit if it is fitted in a custom designed console.

2. Cut a hole for the Message Terminal, see the dimensions shown below.



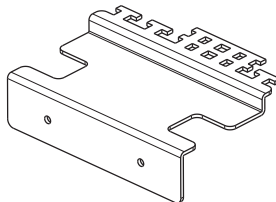
3. Ensure that the flush mount gasket is placed correctly on the Message Terminal.
4. Fit the Message Terminal into the cut-out in the console.
5. Secure the Message Terminal with the four Torx screws .



6. Connect the cables as described in chapter 3.

2.2.3 Mounting the cable relief bracket

To secure the cables you must use the cable relief plate. Fasten it to the rear panel by using the two screws M3x8 Torx - see above.

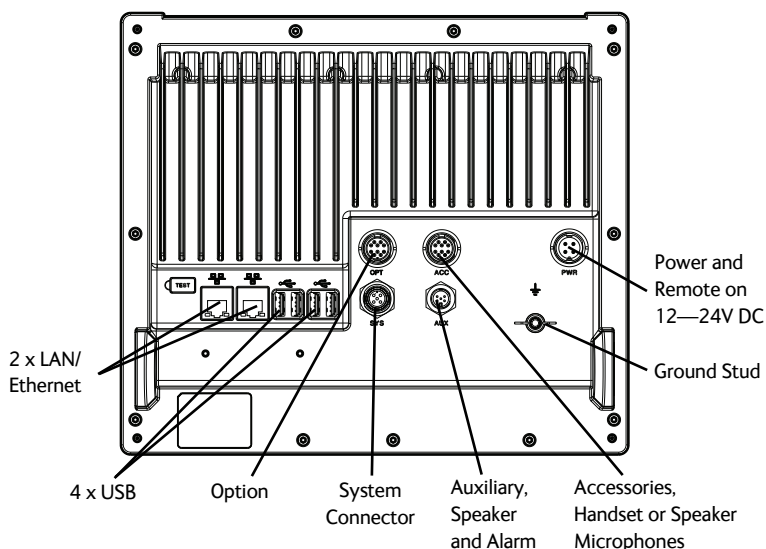


Connectors & controls

This chapter provides a description of all connectors on the Message Terminal controls, guidelines to cabling and a description of controls.

3.1 Connectors

The figure below shows the connectors and the ground stud on the rear panel of the Message Terminal.



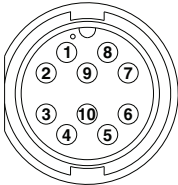
The connectors are described in detail in the following sections.

3.1.1 Option connector (OPT)

The Option connector provide a NMEA 0183 interface for reception and transmission of NMEA sentences. Use of this interface depends on the configuration in which the Message Terminal is used. See A.2 *NMEA* for details on interface and supported sentences.

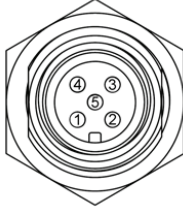
NMEA Tx interface pins provide GPS related information when SAILOR 6018 is used in a mini-C configuration. The rest of the pins are reserved for future use.

Use connection cable with plug, part number 406209-941 or a SAILOR 6209 Connection Box.

Pin	Description	Wire color	Connector outline
1	NMEA RX+	Brown	Front view, Panel lock, 10 pin male 
2	NMEA RX-	Blue	
3	NMEA TX+	White	
4	NMEA TX-	Green	
5	Not connected	None	
6	Not connected	None	
7	Not connected	None	
8	Not connected	None	
9	GND	Black	
10	GND	Orange	

3.1.2 System connector (SYS)

The SYS connector is a bidirectional interface used to connect the SAILOR 6018 to a system e.g. an MF/HF or a mini-C antenna. .

Pin	Description	Wire color	Connector outline
1	Not connected	None	Front view, Panel lock, 5 pin male 
2	CAN_S	Red	
3	CAN_C	Black	
4	CAN_H	White	
5	CAN_L	Blue	

3.1.3 Auxiliary connector (AUX)

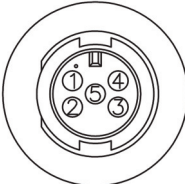
Pin 1 & 2 are for output to an external 8 Ohm loudspeaker, e.g. a SAILOR 6270 Loudspeaker. The internal audio amplifier can deliver up to 6 W.

Pin 4 & 5 are for alarm output. Both outputs are open collector (OC) and can sink up to 100 mA. The AUX interface provides versatile connectivity and is intended for future use.

Use and relevance of this interface depends on the configuration in which the Message Terminal is used.

Note

A matching cable with connector is available from Cobham SATCOM, spare part S-37-131222.

Pin	Description	Wire color	Connector outline
1	Speaker -	Green	Font view, Panel lock, 5 pin male 
2	Speaker +	Brown	
3	GND	Red	
4	Alarm 1 (OC)	White	
5	Alarm 2 (OC)	Yellow	

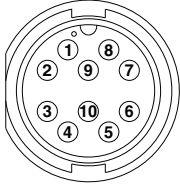
3.1.4 Accessories connector (ACC)

The Accessories Connector is a combined interface providing support for NMEA Rx/Tx and audio in/out device.

Use the connector marked **ACC** to connect a SAILOR 6201 Handset or a SAILOR 6202 Hand Microphone.

The NMEA 0183 provides an interface for reception and transmission of NMEA sentences. Use of this interface depends on the configuration in which the Message Terminal is used. See A.2 *NMEA* for details on approved sentences. The NMEA Tx interface pins provide GPS related information when SAILOR 6018 is used in a mini-C configuration.

Use a connection cable with plug, part number 406209-941 or a SAILOR 6209 Connection Box.

Pin	Description	Wire color	Connector outline
1	NMEA in+	Brown	Front view, Panel lock, 10 pin male 
2	NMEA in-	Blue	
3	NMEA out+	White	
4	NMEA out-	Green	
5	MIC	Yellow	
6	EAR	Grey	
7	Hook_PTT	Pink	
8	12 V	Red	
9	GND	Black	
10	GND	Orange	

3.1.5 USB connector

Four USB connectors can be used to connect ancillary equipment. Examples of supported equipment are USB storage device, mouse and keyboard.

Pin	Description	Wire color	Connector outline
1	5 V	Red	USB Type A socket 
2	D-	White	
3	D+	Green	
4	GND	Black	

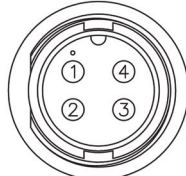
3.1.6 DC Power input 12–24 V DC (PWR)

The DC Power input connects to a DC supply with 12 - 24 V DC nominal. The Power connector is a custom connector; a matching cable with connector is included in the box.

Note

A power cable is available from Cobham SATCOM, spare part S-37-130130.

The figure and table below show the connector outline on the Message Terminal, pin assignments and wire color in the power cable.

Pin	Pin function	Wire color in power cable	Connector outline
1	DC+ (12 - 24 V DC)	Red	Front view, Panel lock, 4 pin male 
2	DC- (0 V DC)	Black	
3	ON_IN	White	
4	ON_OUT	Blue	

3.1.6.1 Connecting DC power

Connect DC+ (red wire) to DC out + from your DC supply.
Connect DC- (black wire) to DC out - from your DC supply.

Do not connect the white wire nor the blue wire in the power cable, unless you want to use the Remote on function or the on/off control function described in the chapter below. See A.1 *Technical specifications*.

3.1.6.2 Connecting Remote on (ON_IN)

With the Remote on function it is possible to switch on the Message Terminal from a remote location, without using the on/off button on the terminal. To connect the Remote on function in the Message Terminal, do as follows:

1. Connect DC+ and DC- as described in the previous section.
2. Connect a switch to the **white wire** in the power cable (pin 3, ON_IN, in the Power connector.)
3. Connect the other side of the switch to the **black wire** in the power cable (DC-), with a resistance less than 10 k Ω .

To switch on the Message Terminal, close the switch. When the switch is closed, Pin 3 in the Power connector is connected to DC-.

Note

When the remote switch is closed (the Message Terminal is switched on), you can only use the Power button on the Message Terminal to reboot the unit as the unit will automatically turn on again.

3.1.6.3 Connecting On/off control (ON_OUT)

Pin 4 in the Power connector (blue wire) can be used to switch other units on and off when the Message Terminal is switched on and off. How to connect this pin depends on the units you connect.

The function of pin 4 is as follows:

- Message Terminal off: Pin 4 is high (DC+ i.e. between 12 V DC and 24 V DC).

- Message Terminal on: Pin 4 is low (DC- from the power supply, with 10 k Ω serial resistance).

3.1.7 LAN connector

There are two LAN (10/100 Mbit/s Ethernet) connectors on the rear panel of the Message Terminal, used for communication with connected equipment that is designed to be operated by the Message Terminal.

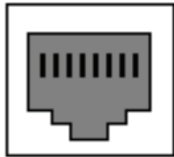
Note

A LAN cable with connector is available from Cobham SATCOM, spare part S-37-206122-150.

Important

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

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

Pin	Pin function	Wire colour	Connector outline
1	Tx+	White/Orange	RJ-45 female 1 2 3 4 5 6 7 8 
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	

3.2 Cabling

Before using the Message Terminal for the first time, check that all cables are correctly wired and fastened.

All cables attached to the Message Terminal must be shielded.

- The shield of the Ethernet cable must be connected to ship ground directly or via a grounded Ethernet switch.
- In the DC power cable the shield of the cable must be connected to ship ground at the power supply.

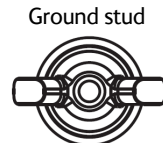
3.2.1 Cable requirements

Cable	Description
Power cable	Included in the box. Length: 2.5 m with AWG 16 wires and a custom connector at one end. If another cable or cable extender is used, make sure the cables are dimensioned correctly.
Ethernet cable	Shielded Cat. 5E or higher (STP or FTP). The maximum length is 100 m.

3.2.2 Grounding

The ground stud is located at the rear side of the Message Terminal. To connect the Message Terminal to ship ground, do as follows:

1. Connect a ground cable of shortest possible length and minimum 4 mm² cross section to the Ground stud and fasten it with the wing nut.
2. Connect the other end of the cable to ship ground.



3.2.3 Connecting cables

To connect the Message Terminal, do as follows:

1. Connect an Ethernet cable to the LAN connector on the Message Terminal. For one cable, use the lower LAN connector (Primary LAN). Both connectors work in DHCP and zeroconf environments.
2. Connect the power cable to the PWR connector according to the description in *DC Power input 12–24 V DC (PWR)* on page 15.
3. Connect the other end of the Ethernet cable to one of the LAN connectors on the unit you want to control via the Message Terminal.
4. Connect the Message Terminal to the system using connection box TT-6208A or a direct cable connection as shown in chapter 1.1.2 *System configuration examples*.

When connected and powered, all the units are automatically set up to communicate with each other in the Ethernet network.

3.3 Controls

3.3.1 Power button

To switch on: Push the button.

To switch off: Push and hold until the screen turns black.

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

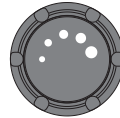


Note

When the remote switch is used and the Message Terminal is switched on, you can only use the Power button on the Message Terminal to reboot the unit.

3.3.2 Dim and night mode

Turn the dim knob to increase or decrease the display brightness. The display can be dimmed to extinction by turning the dim knob on the front panel counterclockwise. Switching between day and night mode is controlled by the light sensor located on the front panel. The day/night mode threshold level can be configured in System/Settings menu.



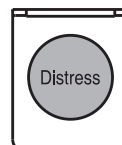
3.3.3 Mute and test button.

The mute button is used to mute the Message Terminal and, in some applications, connected equipment. Refer to the manual for your system for details. Pressing the mute button for more than 5 seconds will test light in buttons and sound.



3.3.4 Distress button.

The Distress button on the SAILOR 6018 Message Terminal is used in safety systems to send a distress message through a connected transceiver. Refer to the manual for your system for information on the function.



Setup and verification

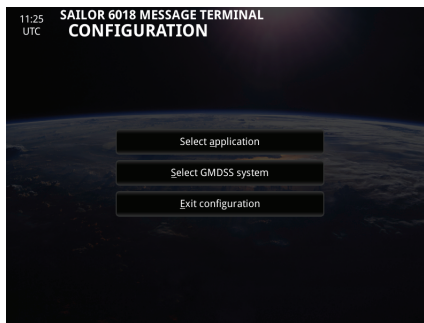
4.1 Setup

The first time the SAILOR 6018 Message Terminal is switched on, select the application the Message Terminal is to be used for. The Message Terminal can be used for Radiotelex or for Inmarsat C.

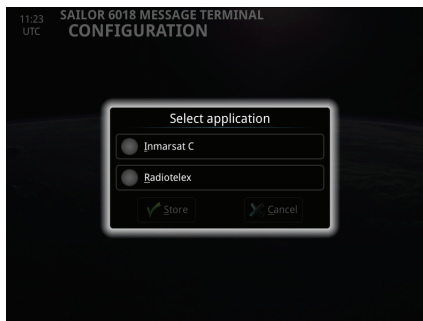
Note

The configuration menu can always be entered. During startup of the Message Terminal and before the main screen appears, press the **Mute button** or **Esc** on the connected keyboard.

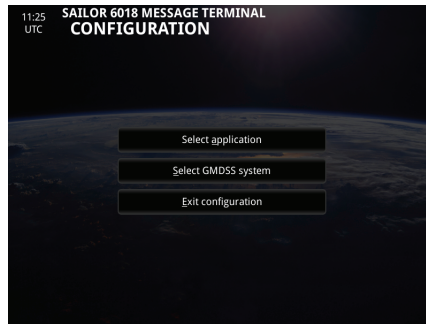
1. Select **Select Application**



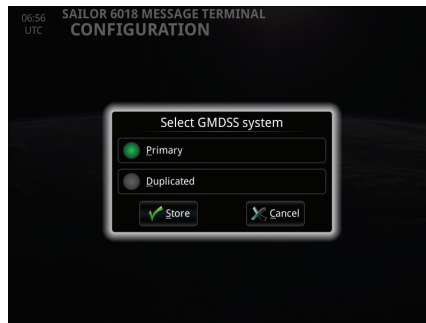
2. Type in the password if prompted. The password is 1234.
3. Select **Inmarsat C** as an example and select **Store**.



4. Select **Select GMDSS System**



5. Type in the password if prompted. the password is 1234.
6. Select whether the current system connected to this Message Terminal should be the primary or duplicated system and then select **Store**.



7. Select **Exit configuration** from the configuration menu. The Message Terminal will now start the configured application.
8. Confirm your selection.

Important

Remember to set the Message Terminal in the other part of the duplicated system to the opposite of this one. In the Message Terminal, under **System > About**, you can see whether the system is a Primary or Duplicated system

9. If you have an Alarm Panel in the system, the primary and duplicated systems will appear in the Alarm Panel as Inm-C 1 and Inm-C 2 respectively or MF/HF 1 and MF/HF 2 respectively.



Service & repair

This chapter describes what to do with defective units, including how to pack them for shipment if they are to be returned.

5.1 General service information

The Message Terminal is designed to operate without preventive routine maintenance.

Although the Message Terminal is designed and built very service friendly, we strongly recommend that any acting service technician is trained specifically on the product. Repair or repair attempts performed by unqualified personnel may limit the warranty. The warranty on the system is defined and outlined by the distributor that supplied the system.

Replace the defective unit and have it repaired at a qualified workshop.

For further information on warranty and service, you may also use the Cobham SATCOM home page at <http://www.cobham.com/satcom>.

When contacting your authorized dealer or Cobham customer service, have the following information present:

- Serial number of the Message Terminal (label on the rear of the Message Terminal)
- Platform release (software version), tap:
System > About > Version.

5.2 Maintenance & troubleshooting

No maintenance is required for the Message Terminal.

5.2.1 Cleaning the display

Do not use benzene, thinner, ammonia or any other volatile substances to clean your monitor or the screen. These chemicals may damage the cabinet finish as well as the screen.

Be careful when cleaning the display to avoid scratches on the touch screen.

5.3 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 Message Terminal 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.

Specifications

A.1 Technical specifications

This appendix holds the specifications for the SAILOR 6018 Message Terminal.

Item	Specifications
Mounting method	Flush mount or bracket
Voltage	12 to 24 V DC (absolute min/max rating: 10.8 to 31.2 V DC)
Power consumption	Typical: 20 W active Peak: 60 W 6.3 A internal fuse (non-serviceable)
Audio output	Up to 6 W in 8 Ohm
Interfaces	2 x Ethernet (10/100 Mbit/s) Accessories connector Auxiliary connector
Compliance	• IEC 60945, IEC 61162-1 • IEC 62368-1:2014 • IEC 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013
IP rating	IP54 ^a , Protected equipment
Ambient temperature	-15°C to 55°C
Storage temperature	-30°C to 80°C
Heat dissipation	Typical 20 W
Compass safe distance	0.6 meter

Item	Specifications
Dimensions W x H x D	269 mm x 234 mm x 70 mm (without mounting bracket)
Weight	2.5 kg (without mounting bracket)
Display	Color TFT screen with touch Resolution: 800 x 480 pixels Pixel size: 0.1905mm

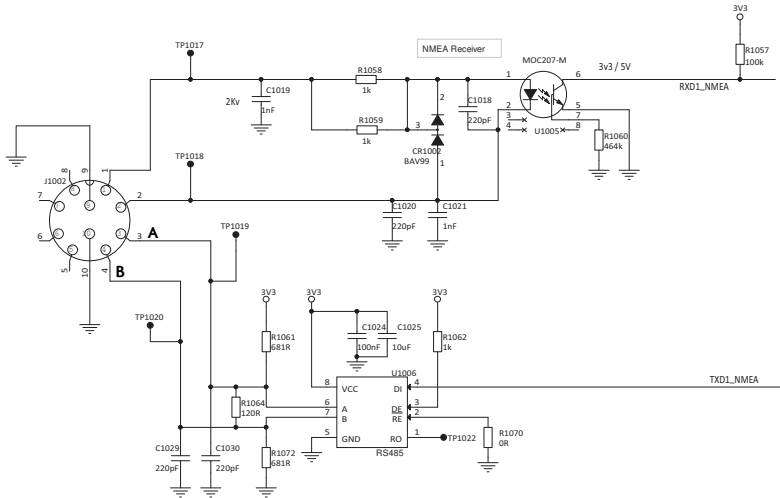
a. Estimated.

A.2 NMEA

The SAILOR 6018 Message Terminal has two NMEA inputs/outputs. These are used to communicate with other systems or equipment. These inputs/outputs are connected to the Option and ACC connectors at the rear side of the terminal. See description in chapter 3.1.1 *Option connector (OPT)* and 3.1.4 *Accessories connector (ACC)*.

Item	Specification
Rx sentences	None
Tx sentences	GLL, GNS, RMC, ZDA
Talker ID	GP
Supported standards	IEC 61162-1, 2010 Edition 4
Baud rate	4800
Electrical Isolation	1000 VDC
Load of each input	Max. 2 mA
Input impedance	600 Ohms
Max number of listeners	20 listeners/each 2 mA / >60 Ohms
Tx interval	1 second

The schematic of the input/output is shown in the figure below.



A.2.1 NMEA sentences used

The sentences used for positional information are defined according to NMEA 0183 version 4.10 and IEC 61162-1 2010 Edition 4.

- *GLL - Geographic position - Latitude/longitude (output)*
- *GNS - GNSS fix data (output)*
- *RMC - Recommended minimum specific GNSS data (output)*
- *ZDA - Time and Date (output)*

A.2.1.1 GLL - Geographic position - Latitude/longitude (output)

\$GPGLL, IIII.II, a, yyyyyy.yy, a, hhmmss.ss, A, a *hh<CR><LF>

Field	Data format	Description	Comment
1	GLL	Sentence ID	Used
2	IIII.II	Latitude, N/S	Used
3	a	Latitude, N/S	Used
4	yyyyyy.yy	Longitude, E/W	Used
5	a	Longitude, E/W	Used
6	hhmmss.ss	UTC of position	Used
7	A	Status. A=data valid V=data invalid	Used
8	a	Mode Indicator	Used

A.2.1.2 GNS - GNSS fix data (output)

\$GPGNS,hhmmss.ss,IIII.II,a,yyyyy.yy,a,c-c,xx,x.x,x.x,x.x,x.x,x.x,a*hh<CR><LF>

Field	Data format	Description	Comment
1	GNS	Sentence Id	Used
2	hhmmss.ss	UTC of position	Used
3	IIII.II	Latitude	Used
4	a	Latitude N/S	Used
5	yyyyy.yy	Longitude	Used
6	a	Longitude E/W	Used
7	c-c	Mode indicator	Used
8	xx	Total number of satellites in use, 00-99	Not used
9	x.x	HDOP	Not used
10	x.x	Antenna altitude, m	Not used
11	x.x	Geoidal separation	Not used
12	x.x	Age of differential data	Not used
13	x.x	Differential reference station	Not used
14	a	Navigational status indicator	Not used

A.2.1.3 RMC - Recommended minimum specific GNSS data (output)

\$GPRMC, hhmmss.ss,a,IIII.II,A,yyyyy.yy,a ,x.x,x.x, xxxxxx,
x.x,a,a,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	IIII.II	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	Used
9	x.x	Course over ground, degrees true	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

A.2.1.4 ZDA - Time and Date (output)

\$GPZDA, 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

A

AWG American Wire Gauge. A means of specifying wire diameters.

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.

F

FTP Foil screened Twisted Pair

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.

GND Ground

I

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

IP Ingress Protection. An international classification system for the sealing effectiveness of enclosures of electrical equipment against the intrusion into the equipment of foreign bodies (i.e. tools, dust, fingers) and moisture.

L

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

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.

O

OC Open Collector

R

Rx Receive

S

STP Shielded Twisted Pair

T

Tx Transmit

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.
UTC	Universal Time, Coordinated. The International Atomic Time (TAI) with leap seconds added at irregular intervals to compensate for the Earth's slowing rotation.

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