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**VESSEL IDENTIFICATION INFORMATION**

Name		
Call Sign		
MMSI		
SMARTFIND GMDSS		
NAVTEX S/N		
Antenna Type		
RX frequencies supported by antenna	518 kHz	
	490 kHz	
	4209.5 kHz	

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**SMARTFIND GMDSS NAVTEX  
GMDSS TRI-CHANNEL  
NAVTEX RECEIVER  
USER & INSTALLATION MANUAL**

**Disclaimer**

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## SAFETY NOTICES

**⚠ WARNING:** Do not connect the SMARTFIND GMDSS NAVTEX main unit directly to an AC electrical supply, as an electric shock or fire hazard could result.

**⚠ WARNING:** Do not connect the SMARTFIND GMDSS NAVTEX system to a DC supply exceeding 31 V or reverse the supply polarity.

**⚠ CAUTION:** Do not bypass the built in fuse

**⚠ CAUTION:** The SMARTFIND GMDSS NAVTEX system is designed for operation in the temperature range -15 °C to +55 °C. Do not use the system in environments which exceed this range.

**⚠ CAUTION:** The SMARTFIND GMDSS NAVTEX unit is not water-proof. Consequently it must be located in a dry place and must be protected from direct contact with water.

**⚠ CAUTION:** Do not locate the SMARTFIND GMDSS NAVTEX unit in a position where;

- a) the controls of the vessel may be obstructed.
- b) it may obstruct normal movement around the vessel.
- c) it may cause bodily injury.

**⚠ CAUTION:** Unauthorised opening of the SMARTFIND GMDSS NAVTEX unit or antenna units will invalidate the warranty.

**⚠ CAUTION:** NAVTEX is for use as an aid to navigation and should not lead to a reduction in the level of good seamanship required at all times.

**⚠ CAUTION:** Reception of NAVTEX messages cannot always be guaranteed and is dependent on the quality of radio propagation at the time. No liability can be accepted for the non transmission or non reception of NAVTEX messages.

**⚠ CAUTION:** Compass Safe Distances  
SMARTFIND GMDSS NAVTEX main unit compass safe distance 0.87m  
Compass deviation; 0.3° at 0.65m  
1° at 0.41m.

### Recommendation

**Connection of a source of UTC data to either COM 1 or 2 is strongly recommended for best operation of the SMARTFIND GMDSS NAVTEX.**

## QUICK START

SMARTFIND GMDSS NAVTEX is extremely easy to operate:

- Apply equipment connections (page 25)
- Apply power at the vessels power switch panel
- The SMARTFIND GMDSS NAVTEX will start up after a few seconds delay
- Set UTC time and date (automatic when connected to GNSS / GPS)
- Select antenna configuration as passive or active (page 18)
- The SMARTFIND GMDSS NAVTEX will now start to receive and display NAVTEX messages dependent on the transmission schedule of the NAVTEX stations within the vessels current region.

Note: It may be several hours before the first message is received; this is dependent on NAVTEX transmission coverage provided locally.

Take the time to read this manual carefully as it contains essential information regarding the operation and maintenance of the SMARTFIND GMDSS NAVTEX and a useful background to the NAVTEX system.

Should you have any questions, or require advice regarding Orolia products our website 'frequently asked questions' is a good place to start. From the web site you can also leave a message for our customer service team, visit; [www.mcmurdomarine.com](http://www.mcmurdomarine.com)

## ABOUT SMARTFIND GMDSS NAVTEX

The SMARTFIND GMDSS NAVTEX has been designed to meet the requirements of IMO (International Maritime Organisation) MSC.148 (77) and IEC technical standard 61097-6 (Ed 2.1).

The SMARTFIND GMDSS NAVTEX has three separate receiver channels, one each tuned to 490 kHz, 518 kHz and 4209.5 kHz. The SMARTFIND GMDSS NAVTEX will receive on all three frequencies simultaneously in those parts of the world where transmissions are available (refer to page 43).

The SMARTFIND GMDSS NAVTEX can be set up to filter out stations and/or message categories that are not required by the User.

The SMARTFIND GMDSS NAVTEX is capable of being connected to an Integrated Bridge System (IBS), transferring NAVTEX messages to other navigational aids if required. Note that the IBS must be compliant with the serial port requirements of IEC 61097-6 (Ed 2.1).

The SMARTFIND GMDSS NAVTEX will accept UTC time & date information via either COM port if available. UTC time & date will be used to timestamp received NAVTEX messages.

Permanent installation of the SMARTFIND GMDSS NAVTEX can be made with either the bulkhead-mounting bracket or the flush panel mounting kit provided.

The NAVTEX antenna should be mounted where it is elevated clear of metal objects in a location where it cannot easily be damaged.

## INTRODUCTION

NAVTEX is a method of transmitting navigational warnings and weather forecasts from designated coast radio stations. All English language transmissions are made on the 518 kHz NAVTEX channel. Each NAVTEX station is allocated several time slots during the day when it is permitted to transmit, normally at four hourly intervals. The exceptions to this are gale warnings and search and rescue messages which may be transmitted at any time.

Reception of 518 kHz NAVTEX transmissions is normally limited to an area of 200 - 300 miles radius around each transmitting station, although considerably greater ranges are possible at night. Subject to IMO approval, additional local language transmissions are sent on 490 kHz and on 4209.5 kHz, SMARTFIND GMDSS NAVTEX supports simultaneous reception of all three NAVTEX channels.

Designed to the latest International specifications, SMARTFIND GMDSS NAVTEX meets IMO requirements under GMDSS and is designed for simplicity of operation. It will provide up to date MSI (Marine Safety Information) and weather forecasts and is suitable for use by all classes of commercial vessels and large pleasure craft. It will display and store NAVTEX messages without manual intervention within designated areas of NAVTEX service coverage.

If the vessel is located within the coverage area of several NAVTEX stations (particularly at night), the SMARTFIND GMDSS NAVTEX may overwhelm you with information. It can therefore be set up to display only those stations and message categories you want to receive and which are applicable to the area in which the vessel is currently sailing.

Normally, routine NAVTEX messages are repeated at four hourly intervals. Provided that the SMARTFIND GMDSS NAVTEX is left running, repeated messages are not displayed more than once. Each message is retained for three days (72 hours) after its last reception before being automatically deleted, unless the message has been marked as locked.

Full detail of the GMDSS NAVTEX service can be found in the Admiralty List of Radio Signals Volume 5, Global Maritime Distress and Safety System (GMDSS) published by the United Kingdom Hydrographic Office.

The IMO and various national coastguards also have informative websites; see the links page at [www.mcmurdomarine.com](http://www.mcmurdomarine.com)

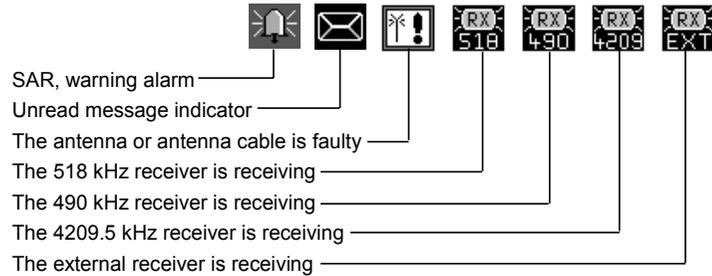
## SMARTFIND GMDSS NAVTEX CONTROLS

The SMARTFIND GMDSS NAVTEX has been designed to be easy to use with an intuitive user interface and softkeys.



### Display Icons

The SMARTFIND GMDSS NAVTEX displays various icons in the status bar at the top of the display.



### OPERATION

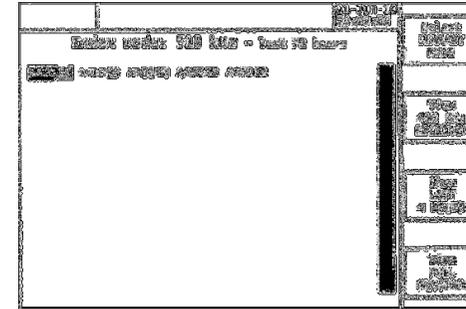
Switch on the SMARTFIND GMDSS NAVTEX by applying power via a circuit breaker or switched fuse.

There will be a few seconds delay whilst the software loads the contents of the NAVTEX message store during which time the front panel red LED will blink.



The SMARTFIND GMDSS NAVTEX start-up screen will now be shown.

This screen disappears after 30 seconds; it may be removed sooner by pressing any key.



The SMARTFIND GMDSS NAVTEX is now ready to receive NAVTEX messages.

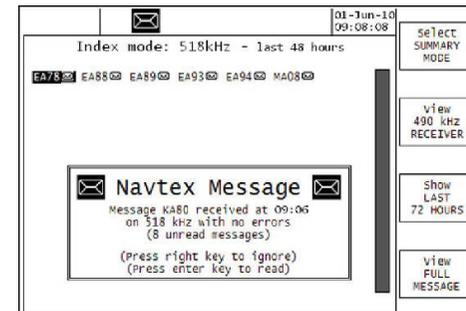
### Receiving NAVTEX messages

When the SMARTFIND GMDSS NAVTEX begins to receive a signal, one or more of the receiver icons at the top of the screen will appear to indicate which of the receivers is active.

When a complete message has been received, a pop-up appears on the display indicating that a new message is available and the "unread message" icon flashes. The message can be read by pressing the Enter key, or the popup can be removed without reading the message by pressing the Right key. As each new message is received, the SMARTFIND GMDSS NAVTEX may also generate a single short beep to attract attention to the new message. This audible alert can be disabled on the Setup mode: System options page if it is not required.

Any messages that are not read immediately will be marked with the "unread message" symbol in both the Index and Summary modes. The "unread message" icon at the top of the display continues to flash until all messages have been read.

Note that while the popup Navtex message box is on display only the Enter or Right buttons have any effect; all other keys are disabled until the popup box is removed.

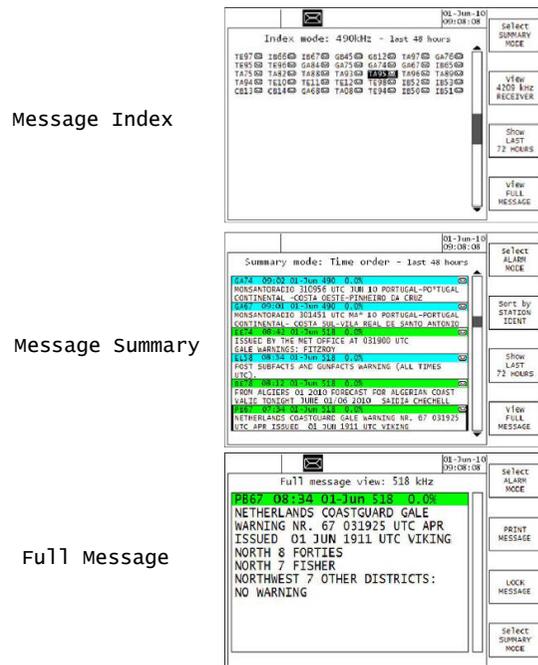


## Alarms

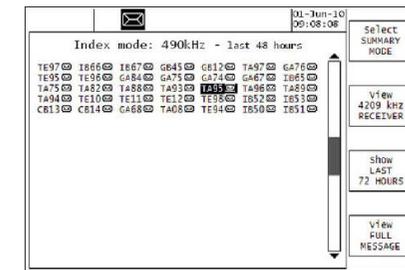
The message category is used to classify the nature of each NAVTEX message. Of particular note are message types 'D' (search and rescue), 'A' and 'L' (navigational warnings) and 'E', 'B' and 'C' (meteorological warnings). When a message with any of these message categories is received the SMARTFIND GMDSS NAVTEX operates its alarm relay contacts and transmits an NMEA "ALR" sentence to the currently selected alarm port. The alarm relay continues to operate until the alarm is acknowledged either by removing the popup or by reception of an appropriate NMEA "ACK" sentence from another connected device. Search and rescue messages (category 'D') cannot be read later; the popup box can only be cleared by pressing the Enter key and reading the message.

## Finding and viewing NAVTEX messages

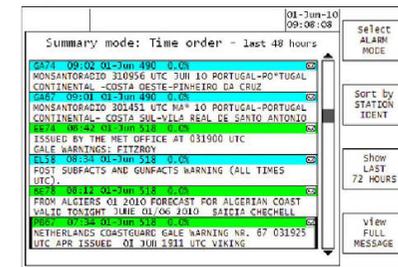
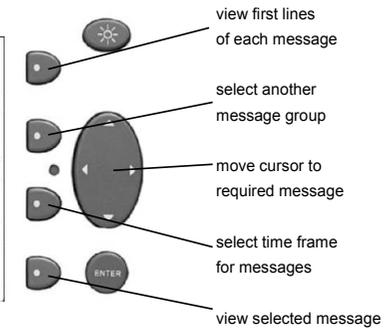
The SMARTFIND GMDSS NAVTEX displays NAVTEX messages in several ways designed to make finding and viewing particular message categories or an individual message easy and convenient.



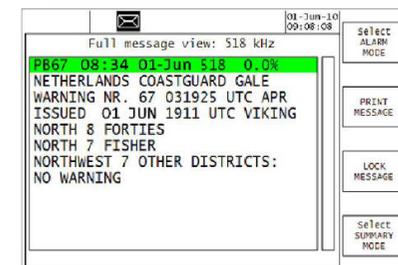
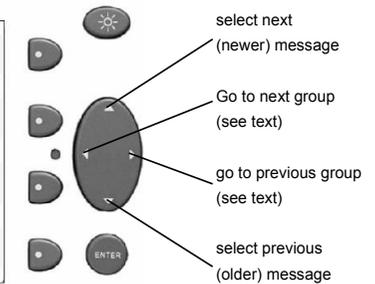
## Message displays



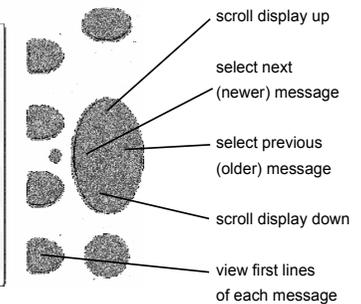
Message index display



Message summary display



Full message display



### Message index display

The Message index display shows the identifiers of messages from a specific receiver. Unread messages have an "envelope" (✉) mark; locked messages (see Full message display) have a "key" (⌘) mark.

Message identifiers can be expanded to show either the first two lines or the full message by selecting the desired message and pushing the appropriate softkey.

Messages from another receiver can be displayed using the View softkey, which cycles through the available sources.

Messages are grouped by time interval. The Show softkey cycles through the set intervals.

### Message summary display

The Message summary display shows the first two lines of each message, selected by various criteria.

Selection criteria are time, station identity and message type. The Sort by softkey cycles through these criteria.

Depending on the selection, the "group" is a 4-hour period, a station or a message type.

The Show softkey controls the total number of messages displayed by suppressing messages which are older than the selected time frame.

A message can be shown in full by selecting it and pushing the View softkey.

### Full message display

Because messages are automatically erased 72 hours after they are received, it is necessary to take action to retain an important message beyond this time. Displaying the message and pressing the Lock softkey causes the message to be retained indefinitely. A locked message is identified by a "key" (⌘) mark in the Index display.

A locked message is unlocked by displaying it (in this view) and pressing the Unlock softkey.

Up to 250 messages can be saved for long term retention; once the limit has been reached, operating the Lock softkey will not lock any more messages until some are unlocked again.

### Minimising the number of messages displayed

After the SMARTFIND GMDSS NAVTEX has been switched on for a while there will be a large number of NAVTEX messages stored in memory. These can be quite overwhelming if the user is looking for particular message categories or an individual message.

Several design features have been incorporated into the SMARTFIND GMDSS NAVTEX to make day to day operation easier:

- Separate frequency channel pages

- Station filtering
- Message category filtering
- Time-limited display of messages

### Separate frequency channel pages

A separate NAVTEX message display is provided for each of the 3 receiver channels. All 518 kHz messages appear together, all 490 kHz messages appear together and all 4209.5 kHz messages appear together. Switch between these displays by using the View softkey.

### Station filtering

NAVTEX transmitting stations that are not required can be de-selected by making the appropriate selections in the Setup screens.

### Message category filtering

NAVTEX message categories that are not required can be de-selected by making the appropriate selections in the Setup screens.

### Time-limited display of messages

In order to access recent messages quickly the Show softkey can be used to show only NAVTEX messages that have been received in the selected time period (last 4 hours, last 12 hours etc)

## SETUP MODE

To enter Setup mode, press and hold the ENTER key for 3 seconds.

All of the user-editable setup parameters are stored in non-volatile memory and will be unchanged after a power cycle, unless otherwise stated in the descriptions of each individual page.

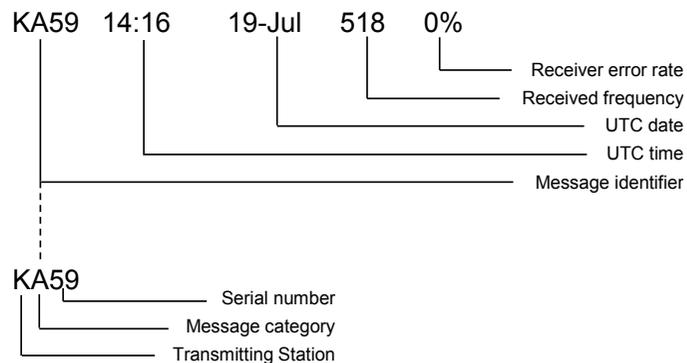
To exit from Setup mode and return to normal operating mode, press and hold the ENTER key for 3 seconds until the display returns to normal operating mode, or press the top softkey to select the next main page.

Note that message pop-ups do not appear while in Setup mode to ensure they do not interrupt the editing of a configuration field. Always exit from Setup mode when you have finished configuring the SMARTFIND GMDSS NAVTEX and return to normal mode before leaving the SMARTFIND GMDSS NAVTEX unattended.

### NAVTEX message headers

At the beginning of each NAVTEX message there is a message header which identifies the source and nature of message, time and date of reception, received frequency and error rate.

For example:



In the Message Index display only the message identifier is visible.

It is recommended that the user takes time to set up the SMARTFIND GMDSS NAVTEX to filter out those stations and message categories that are not required. In this way the display is kept uncluttered; only those messages that are required will be visible.

Messages are selected for display by the SMARTFIND GMDSS NAVTEX's software comparing the Station and Message Category information encoded into the message identifier (e.g. KA in the diagram above) with the filter settings entered by the user during setup.

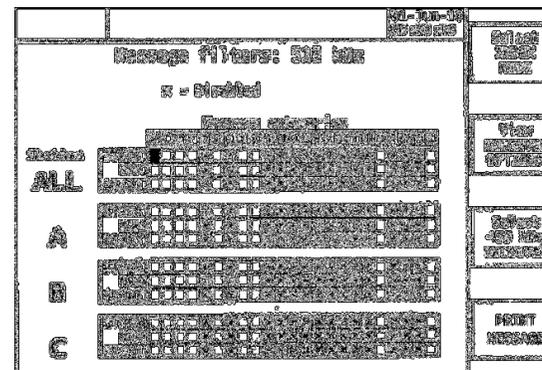
### Colour coding of NAVTEX message headers

The NAVTEX message information bars are colour coded for each type of message as defined in the table below.

ID	Message category	Colour
A	Navigational warnings	CYAN
B	Meteorological warnings	GREEN
C	Ice reports	GREEN
D	Search and rescue information and pirate warnings	RED
E	Meteorological forecasts	GREEN
F	Pilot service messages	MAGENTA
G	AIS, DECCA messages	BROWN
H	LORAN messages	BROWN
I	Not currently used	BROWN
J	SATNAV messages (GPS, GLONASS)	BROWN
K	Other electronic navaid system messages	BROWN
L	Navigational warnings (additional)	CYAN
M to U	Not currently used	BROWN
V	Notice to fishermen (US only)	BROWN
W	Environmental (US only)	BROWN
X, Y	Not currently used	BROWN
Z	No message on hand	BROWN

### Message filters

To enter setup mode, press and hold the ENTER key. After a few seconds the *Message filters* page will be displayed.



This page can be used to indicate that messages from specified Transmitting Stations or of specified Message Categories should NOT be displayed, stored or output as required.

Each receiver has its own separate set of message filters; pressing the **Select XXXX KHz RECEIVER** softkey cycles round the available receivers. The message filter settings are all non-volatile and will be unchanged after a power cycle.

By default only message categories 'A' to 'F', 'H', 'J' to 'L', 'V' and 'Z' are enabled for all Transmitting Stations. This is indicated by the check boxes for categories 'G', 'I', 'M' to 'U' and 'W' to 'Y' all being marked to indicate that they are being filtered out.

In order to deselect a Transmitting Station or Message Category, navigate to the relevant checkbox using the pad (◀, ▶, ▲ and ▼ keys) and press ENTER. The checkbox will then be marked to indicate that the Transmitting Station (or Message Category, as appropriate) is now deselected and will not appear on the display.

Note that deselecting a Message Category (say 'I') in the top row (labelled 'All') will remove Message Category 'I' from all Transmitting Stations. To disable message categories from a specific station identity (e.g. 'K'), scroll down until the selection panel for 'K' is displayed, then select the appropriate check box. Deselecting the first message category (labelled '\*') will toggle the state of all Message Categories from the selected Station.

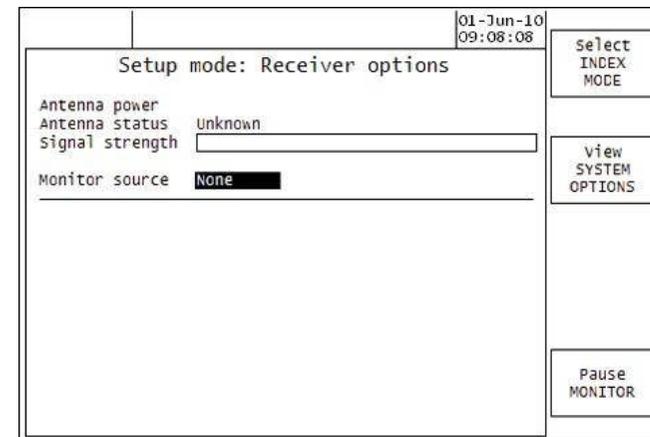
Message categories 'A', 'B', 'D' and 'L' cannot be individually controlled. A Transmitting Station cannot be completely deselected but message types can be deselected with the exception of types 'A', 'B', 'D' and 'L'.

There are three sets of message filter options for every Transmitting Station and Message Category. The 'STORE' filter indicates that the selected message shall be neither displayed nor stored in the non-volatile memory. The 'NRX' filter indicates that the message shall not be sent to either COM 1 or 2 on reception (if output of NRX sentences to either COM 1 or 2 is enabled). The 'PRINT' filter indicates that the selected message should not be sent to the printer on reception (if printer output is enabled).

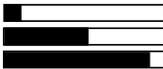
Note that the ENTER key toggles the value of any check box from checked to unchecked and back again. Similarly, toggling any check box in the 'All' row, or in the column headed '\*' will toggle the other entries in the row or column as appropriate.

### Setup mode: Receiver options

The **Setup mode: Receiver options** page contains diagnostics to assist with installing and fault finding the SMARTFIND GMDSS NAVTEX.



The lower part of the display is a monitor area which shows all received NAVTEX characters in real time from the receiver selected as the monitor source, including the phasing character (Φ) and receive character error symbol (\*), regardless of transmitting station and message category filter settings.

Setup parameter	Comment
Antenna power	Enabled for <i>active</i> antenna or Disabled for <i>passive</i> antenna
Antenna status	Unknown: see Troubleshooting guide Active: an <i>active</i> antenna is connected Passive: a <i>passive</i> antenna is connected Overload: excessive current; see Troubleshooting guide Error: see Troubleshooting guide
Signal strength	 The size of the bar indicates the highest signal strength being currently received by any of the three receivers
Monitor source	Selects which receiver to monitor. This parameter is always reset to 'None' after a power cycle.

**Checking the antenna:**

You may wish to check that the NAVTEX antenna position is suitable by inspecting the signal strength during a known NAVTEX transmission from a local station.

**Interpreting the diagnostics aids:**

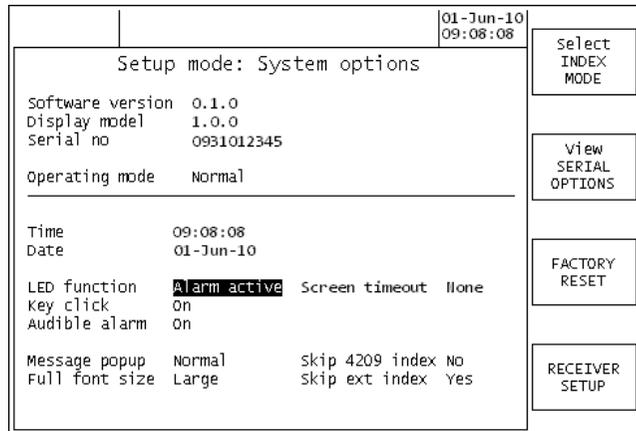
When a NAVTEX signal is being received, the appropriate receiver frequency icon appears at the top of the display. If the *Monitor source* is set to this frequency then the received data will appear in the *Monitor window*.

Use the *Receive icon*, *Signal strength* bar and *Monitor window* to help diagnose installation problems and/or as a check that your SMARTFIND GMDSS NAVTEX is working correctly.

Receive icon	Signal strength bar	Monitor window	Comments
OFF		No new chars being received	No current NAVTEX transmission
OFF		No new chars being received	Local in-band interference present, or NAVTEX station transmitting un-modulated RF
		Set monitor source to 518 kHz	Correct operation, NAVTEX data will be shown in monitor window

**Setup mode: System options**

The **Setup mode: System options** page contains general information about the SMARTFIND GMDSS NAVTEX and allows control over several aspects of the user interface.

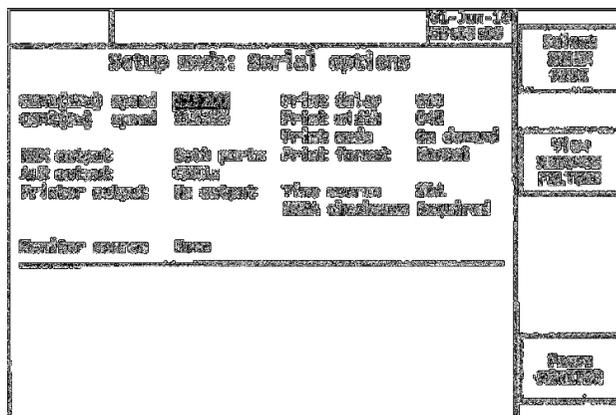


Setup parameter	Description
Software version Display model Serial no	These parameters show the software version, hardware model and the individual serial number of the SMARTFIND GMDSS NAVTEX. These values cannot be edited
Operating Mode	Normal – normal use aboard vessel Shore Station – displays all messages including repeats, ignoring filters and 72-hour limit Demonstration – for use at exhibitions, etc
Time Date	These parameters allow the time and date to be set manually in installations where there is no source of ZDA sentences
LED function	Selects whether the LED on the front of the SMARTFIND GMDSS NAVTEX is used to indicate a new message or an active alarm
Key click	Allows key click sound to be disabled
Audible alarm	Allows the internal audible alarm to be disabled in installations where the SMARTFIND GMDSS NAVTEX is not located at the main navigation position of the vessel. Note that this setting does not affect the operation of the integral alarm relay or the generation of alarm sentences.
Message pop-up	Allows message popups to be disabled or confined to SAR messages only
Full font size	Offers three choices of message font size in Full Message view
NMEA checksums	Controls if incoming NMEA sentences require checksums (for compatibility with older equipment)
Screen timeout	This setting allows the display to be automatically blanked after a certain period of time. While the display is blanked, pressing any key, or the receipt of a new message will turn it on again. Note that this setting only affects the display screen; all the receivers in the SMARTFIND GMDSS NAVTEX continue to work normally even while the display is blanked.
Skip 4209 index Skip ext index	These fields allow the 4209.5 kHz or external receiver index pages to be skipped in installations where the 4209.5 kHz receiver or the external receiver are not used

**WARNING:** Because messages are automatically deleted after 72 hours, changing the time or date may cause stored messages to be lost.

### Setup mode: Serial options

The **Setup mode: Serial options** page contains setup and configuration parameters for the two serial ports on the SMARTFIND GMDSS NAVTEX unit. The lower section of the display provides a monitoring facility for incoming messages on the selected port.



Setup parameter	Description
COM 1 port speed COM 2 port speed	Selects the baud rate for each serial port
Print delay	Specifies a number of seconds to pause between printing each message. This may be used to restrict the output of the SMARTFIND GMDSS NAVTEX when using a slow printer
Printer width	Specifies the number of characters to output on each line when printing messages. This must be at least 40 characters
Printer mode	Selects between 'On receipt' printing where the SMARTFIND GMDSS NAVTEX prints all messages as they are received and 'On demand' printing where the SMARTFIND GMDSS NAVTEX only prints selected messages when requested by the user
Monitor source	Selects serial interface for monitoring. This parameter is always reset to 'none' after a power cycle
Printer output	Selects which serial port is used for printing
NRX output	Selects which serial port is used for the output of NRX sentences when a message is received
ALR output	Selects which serial port is used for the output of ALR sentences

### SYSTEM ALARMS

An alarm event state will always generate a message for sending to an IBS or remote alarm panel as well as actuating the SMARTFIND GMDSS NAVTEX's remote alarm relay contacts.

The front panel LED and the buzzer are programmable – see Setup mode: System options. Consequently, these indicators may or may not activate to indicate an alarm. For bridge operation an IMO compliant external alarm should be fitted – see page 32

The SMARTFIND GMDSS NAVTEX may generate alarms with the following alarm numbers:

Alarm number	Alarm text
001	NAVTEX: Navigational warning
002	NAVTEX: Meteorological warning
003	NAVTEX: Search and rescue information
004	NAVTEX: Receiver (x) malfunction
005	NAVTEX: Self test error
006	NAVTEX: General failure
051	NAVTEX: Memory full
052	NAVTEX: Antenna error
053	NAVTEX: Antenna overload

### RECEIVER MONITORING

The SMARTFIND GMDSS NAVTEX continuously monitors the signals being received, and generates a "Receiver (x) malfunction" alarm (ID code 004) should any receiver appear to be operating incorrectly. The "x" in the alarm message is 1 for the 490 KHz receiver; 2 for the 518 kHz receiver and 3 for the 4209.5 kHz receiver.

### Serial interfaces

The SMARTFIND GMDSS NAVTEX has an IEC 61162-2 compatible serial interface which can be used to connect the SMARTFIND GMDSS NAVTEX to other equipment such as an integrated bridge system or a PC running charting software. The IEC 61162-2 serial interface also allows for the connection of a serial printer. The integrated bridge system should be connected to the COM port of the SMARTFIND GMDSS NAVTEX (using the 15-way D-type socket at the rear).

### Printer Operation (option)

When the 'Printer mode' setting on the Setup mode : Serial options page is set to 'On Receipt', the SMARTFIND GMDSS NAVTEX outputs every message to the printer as it is received, subject to the control of the message filters. In this mode, the

SMARTFIND GMDSS NAVTEX operates in a similar manner to a traditional 'paper-based' NAVTEX receiver.

However, in order to conserve paper, when the 'Printer mode' setting on the Setup mode : Serial options page is set to 'On Demand', the SMARTFIND GMDSS NAVTEX will only print messages when instructed to do so.

**To print all messages as they are received:**

Set the 'Printer mode' setting to 'On receipt'

Ensure all the 'PRINT' checkboxes for all stations and message categories on the message filters page for each receiver are not checked

**To print all stored messages from a specified receiver:**

Ensure all the 'PRINT' checkboxes for all stations and message categories on the message filters page for each receiver are not checked

Press the 'Print Messages' softkey on each of the Message filters pages to print out all the messages for the corresponding receiver

**To print messages from selected stations and message categories as they are received:**

Set the 'Printer mode' setting to 'On receipt'

Use the message filters to filter out the unwanted stations and message categories

**To print individual messages only on demand:**

Set the 'Printer mode' setting to 'On demand'

While viewing the full text of a message, press the 'Print Message' soft key

Note that this will always print the current message, irrespective of the settings of the message filters

**To print all messages from specified locations or specified message categories only on demand:**

Set the 'Printer mode' setting to 'On demand'

Set the 'PRINT' checkboxes on the Message filters page to filter out the unwanted stations and message categories

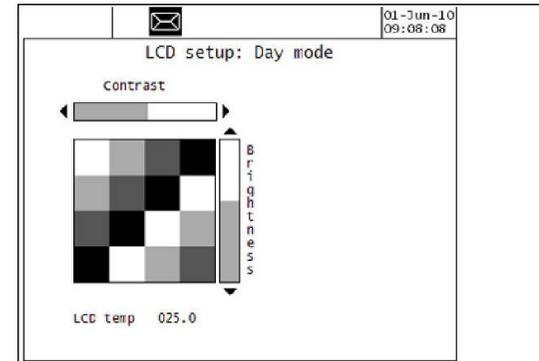
Press the 'Print Messages' softkey to print out all the messages which are not to be filtered out.

Note that this will only print out the messages for the current receiver. To print all the messages for each receiver it is necessary to operate the 'Print Messages' softkey on each of the Message filters pages in turn.

## ADJUSTING THE DISPLAY

### LCD setup day & night modes

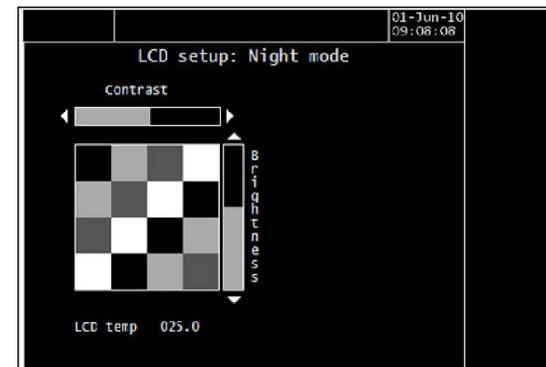
To enter LCD setup mode, press and hold the illumination key for 3 seconds the **LCD setup: Day mode** page will be displayed.



Use the left and right (◀ and ▶) keys to adjust the LCD contrast.

Use the up and down (▲ and ▼) keys to adjust the LCD brightness.

To change the night mode settings, briefly press the illumination key. The **LCD setup: night mode** page will be displayed.



Note: These settings are non-volatile and will be unchanged after a power cycle.

## INSTALLATION

### SMARTFIND GMDSS NAVTEX system overview

For simplicity, power is shown diagrammatically throughout; fuses, circuit breakers, alternative supplies, etc are omitted.



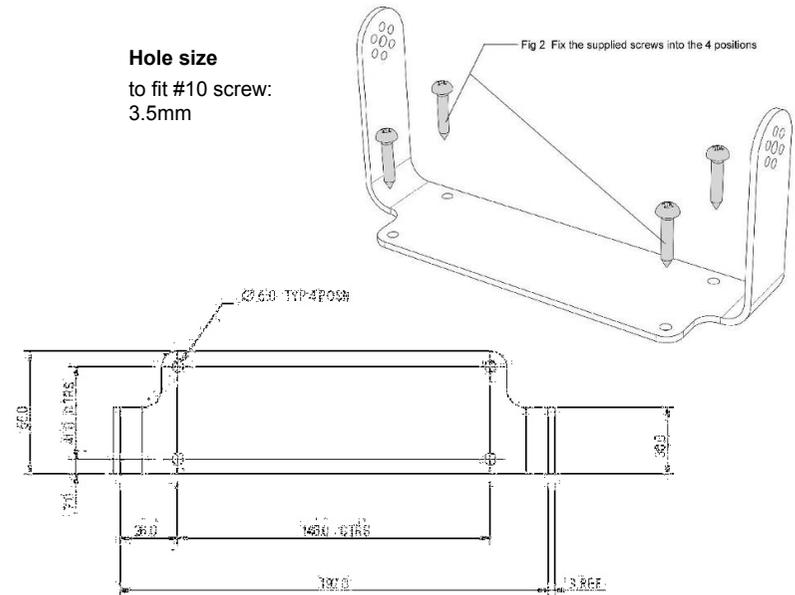
SMARTFIND GMDSS NAVTEX Minimum System



SMARTFIND GMDSS NAVTEX Expanded System

### Trunnion mounting the display

The standard bulkhead mounting U-Bracket can be used to mount the SMARTFIND GMDSS NAVTEX above or below a horizontal (or near horizontal) surface.



### Drilling drawing (mm)

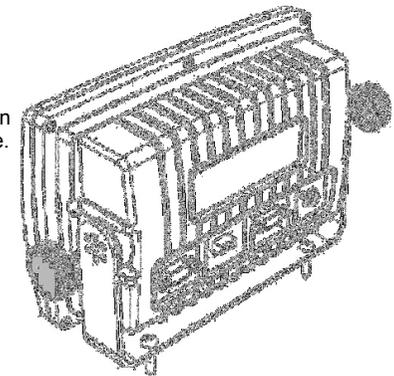
Select hole size to suit method of fixing mountings – clear or tapped holes.

### Rear view of trunnion bracket assembly

Ensure that rubber washers are fitted between the trunnion bracket and the plastic enclosure. Tilt the display to the correct viewing angle. Tighten the two thumbwheels.

### Mounted dimensions:

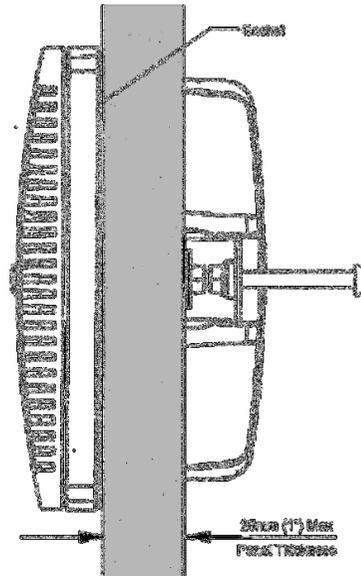
Height: 150 mm  
Width: 270 mm  
Depth: 120 mm (over connectors)



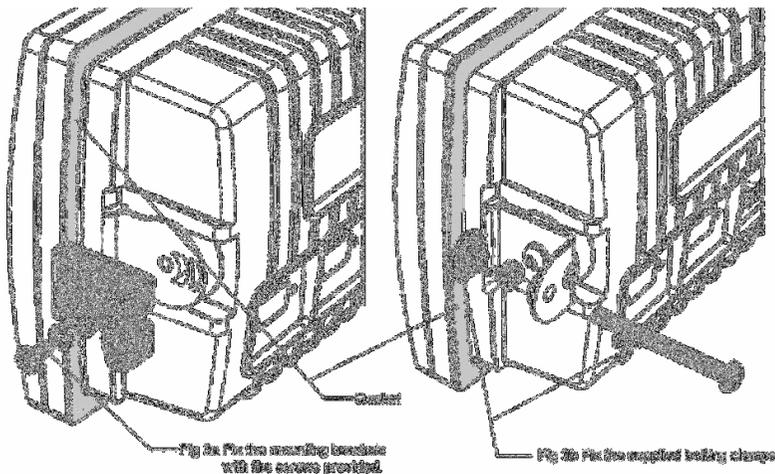
### Flush mounting the display

If the SMARTFIND GMDSS NAVTEX is to be mounted through a flat panel, use the flush mounting kit provided.

A cutting template is supplied with the flush mounting kit. This template carries full fitting instructions.



**Warning:** Do not mount the SMARTFIND GMDSS NAVTEX in a position where sea spray can reach it, or where it may be exposed to direct sunlight



### Electrical connections

This manual is concerned only with the installation of the SMARTFIND GMDSS NAVTEX and does not cover the installation of peripheral equipment connected to the SMARTFIND GMDSS NAVTEX such as printers, navigational systems or source of NMEA data in detail. For proper installation and connection of peripheral equipment refer to the installation manuals for these products.

The table below shows the connections that must be made to the SMARTFIND GMDSS NAVTEX for it to function correctly.

Connection	Must connect	Optional
Ship's earth connection	✓	
12V or 24 V DC power supply	✓	
NAVTEX antenna	✓	
Alarm Relay	✓	
NMEA or IBS UTC (time) reference	See Note 1	See Note 1
Integrated Bridge/Navigation System		✓
External printer		✓

**Note 1:** Connecting a UTC (time) reference (e.g. a GPS receiver) is highly recommended.

### Ship's earth connection

The earth terminal on the rear of the SMARTFIND GMDSS NAVTEX display must be connected to ship's ground by the earth cable supplied. The earth connection should be kept as short as possible.

### Safety Warning

To ensure the best possible protection of the NAVTEX from static electricity or nearby lighting strikes, the pre-fitted green grounding wire (connected to the safety earth spade) must be connected to a nearby (hull) electrical grounding point.

### 12V or 24 V DC power connection

A connection must be made to a 12 or 24 V DC supply via a circuit breaker capable of supplying at least 2 amps. Connection should be to the ship's radio battery and be in accordance with GMDSS requirements.

- Connections should be made using the 2 m power cable provided
- Use cable ties to restrain the wiring, and so prevent it becoming weakened by vibration. The connecting cables should be restrained by securing them to

the rear of the SMARTFIND GMDSS NAVTEX bracket, or to adjacent metalwork

- The screen of the cable should be connected to ship's earth if possible. The screen of the cable **should not** be connected to ship's battery –ve

### Safety Warning

**The SMARTFIND GMDSS NAVTEX has been designed and manufactured to be completely safe when used in accordance with the instructions given in this manual. To ensure that the complete installation is safe, it is essential that a fuse or circuit breaker is installed in the power supply cable as described in the Installation section of this manual.**

Isolation between the power supply connections and any other connection to the SMARTFIND GMDSS NAVTEX is 1 kV minimum.

The DC power source should comply with IMO guidelines for the class of vessel concerned. National authorities and classification societies may have their own power supply requirements; these should also be considered.

### Signal cable connections

As shown in the table above, the SMARTFIND GMDSS NAVTEX may be connected to different types of peripheral units including IBS & INS serial ports and printers.

The signal connections are all connected via a serial RS422 type interface; data rates are selectable at 4800, 38400 or 115200 baud.

In some cases, particularly in retrofit installations, it may not be possible to connect the SMARTFIND GMDSS NAVTEX directly to the required source/destination for serial data, because some equipment does not provide the IEC 61162-2 (NMEA) sentences required by the SMARTFIND GMDSS NAVTEX unit. In such cases a protocol converter is required between the sensor and the SMARTFIND GMDSS NAVTEX. Converters are available from different manufacturers, either as direct protocol converters or frequently as repeater instruments for the sensor.

### IEC 61162-1 alarm message example

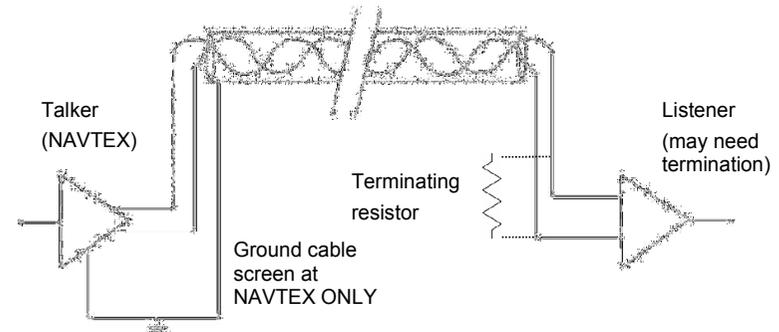
The alarm number and text are output as part of a standard ALR sentence format, for example:

\$SCRALR,<time>,004,A,A,NAVTEX: Meteorological warning\*<checksum>

### Signal line termination

RS422 signal lines may need termination resistors at the far end of the serial cable connected to the SMARTFIND GMDSS NAVTEX, depending on the length of connecting cable and the rate of data transmission. Both COM 1 & 2 in the SMARTFIND GMDSS NAVTEX have inbuilt 100Ω termination resistors for both Tx and Rx.

Whether termination is required depends on many factors, particularly the length of the signal cable and the environment in which the equipment is operating. The principle is shown in the sketch:



There is only one talker per twisted pair; there can be several listeners. The intention is that terminations must be provided by the devices at the ends of the line, regardless of whether they are listeners or the talker, and that no other device should provide a termination.

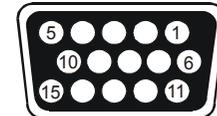
Since the SMARTFIND GMDSS NAVTEX contains internal termination, it MUST be at the end of the line and NOT in the middle.

It is good practice to use screened cables in all ship cable installations. Take care to connect the cable screen to ship's ground at one end only of the cable, as connecting at both ends may cause ground loops and interference to the signals. The cable screen should not be connected to any part of the SMARTFIND GMDSS NAVTEX.

### Connecting to COM port serial interface

The display connection cable is supplied ready for use, and needs only to be plugged into the appropriate connector on the SMARTFIND GMDSS NAVTEX.

Display cable: Six twisted pairs, screened, PVC sheathed. For lengths to 200 meters, use 0.22 mm<sup>2</sup> (7/32); Belden 8106 or equivalent.



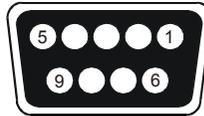
The connections to the 15-pin socket on the SMARTFIND GMDSS NAVTEX are given below. Note that the cable screen should not be connected to any part of the SMARTFIND GMDSS NAVTEX.

Power, Alarm & COM port (2m cable supplied)				
Pin Number	Connection	SMARTFIND GMDSS NAVTEX	Cable Colour	Notes
1	IBS_TXA	O/P	WHITE/BLUE	O/P to COM 1 or 2
2				
3	+V (12/24 V DC nominal)	I/P	RED/BLUE	Ship's supply +ve
4	-V (0V)	I/P	BLUE/RED	Ship's supply -ve
5				
6	IBS_TXB	O/P	BLUE/WHITE	O/P to COM 1 or 2
7				
8	AUX_NC	O/P	ORANGE/WHITE	Alarm Relay NC
9	AUX_NO	O/P	WHITE/BROWN	Alarm Relay NO
10	AUX_COM	O/P	WHITE/GREY	Alarm Relay COM
11				
12	IBS_RXB	I/P	GREEN/WHITE	I/P from COM 1 or 2
13	IBS_RXA	I/P	WHITE/GREEN	I/P from COM 1 or 2
14				
15				

#### Connecting to the NMEA 0183 interface

If a connection to NMEA 0183 compatible equipment is required then a suitable cable has to be purchased or manufactured.

Recommended NMEA 0183 cable: *Two twisted pairs, screened, PVC sheathed. For lengths to 200 meters, use 0.22 mm<sup>2</sup> (7/32); Belden 8102 or equivalent.*



The connections to the D-Sub 9-pin socket on the SMARTFIND GMDSS NAVTEX are given below. Note that the cable screen should not be connected to any part of the SMARTFIND GMDSS NAVTEX.

COM 2		
Pin Number	Connection	Notes
1		
2	SER_TXB	O/P to NMEA 0183 (printer)
3		
4	SER_RXB	I/P from NMEA 0183
5		
6		
7	SER_TXA	O/P to NMEA 0183 (printer)
8	SER_RXA	I/P from NMEA 0183
9		

#### Alarm relay

The SMARTFIND GMDSS NAVTEX provides a relay connection which can be selected as normally closed or normally open contacts.

The alarm relay function is configurable from within the setup pages and can be set (for example) to switch (change state) on receipt of a Search and Rescue message or for a system fault.

The red LED on the front panel of the SMARTFIND GMDSS NAVTEX mirrors the function of the alarm relay.

Red LED function	
LED OFF	Alarm relay NC contact closed
LED ON	Alarm relay NO contact closed

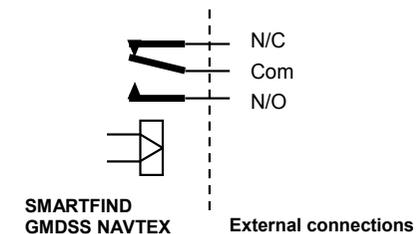
Recommended Remote Klaxon alarm unit (loud bridge repeater alarm) Orolia Ltd part 40-187.

Recommended cable for connection of alarm relay:

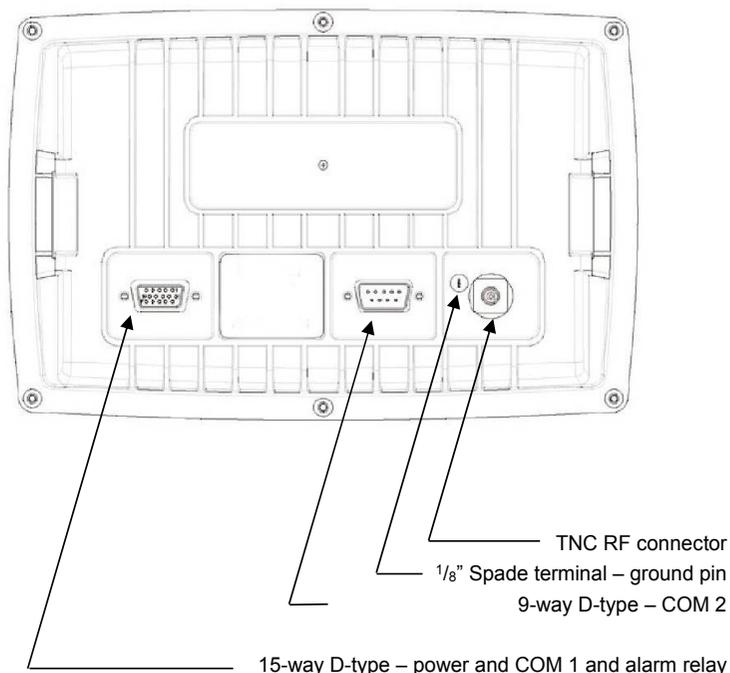
*One twisted pair, shielded, PVC sheathed. The required cable dimension is dependent on the current necessary to activate the alarm indicator.*

Built in alarm relay ratings:

Alarm relay absolute maximum ratings	
Maximum switching current in contacts (inductive load)	1.0 Amp
Maximum switching current in contacts (resistive load)	3.0 Amp
Maximum switching voltage	120 V AC or 24 V DC



## Rear Panel Connections



- The auxiliary alarm contact is capable of switching up to 24 V DC at up to 1A (inductive load). The contacts are not connected to any internal voltages.
- The power supply input is isolated from the case and antenna. It must remain within the range 10.8 – 31.2 V DC (12/24 V DC nominal) at all times.

### Connecting a Printer

The recommended external printer option is the Seiko DPU-414; the default printer parameters are set correctly for this model. The printer should be connected to COM 2 of the SMARTFIND GMDSS NAVTEX (the 9-way D-type socket at the rear):

DPU-414 pin 3 (RxD) to SMARTFIND GMDSS NAVTEX pin 7 (TxA)  
 DPU-414 pin 5 (Gnd) to SMARTFIND GMDSS NAVTEX pin 2 (TxB)

After connecting the printer, set the 'Printer output' parameter to COM 2 on the Setup mode: Serial options page and ensure that the 'NRX output' and 'Alarm output' parameters are set to either 'IBS' or 'None'. Set the 'COM 2 port speed' to 4800.

The printer is powered by the mains adaptor supplied and must be configured for correct operation. The standard default settings for the printer should be used, except for the following:

SW-1	Set for serial interface (not parallel)
SW-2	Set for English (not Japanese)
SW-3	Set for XON/XOFF control (not H/W BUSY)
SW-3	Set for 4800bps (not 75bps)

Refer to the DPU-414 manual for details of how to set these parameters.

The compass safe distance for the printer is 1.0 m.

The printer should be secured to prevent it moving during operation. The use of adhesive foam pads is recommended.

## ANTENNA INSTALLATION

### Selecting a suitable antenna

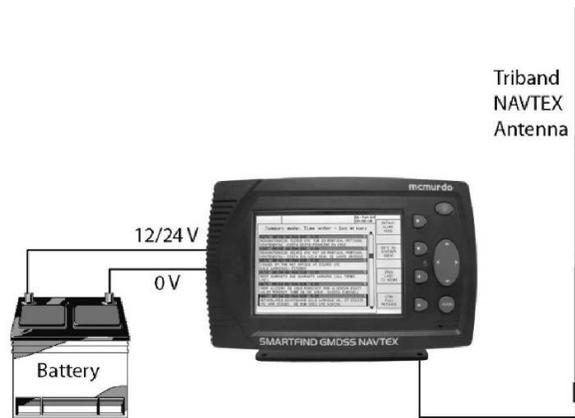
The SMARTFIND GMDSS NAVTEX receives transmissions on three frequencies. 518 kHz transmissions are in International English; 490 kHz and 4209.5 kHz transmissions may be in a local language.

To receive on all frequencies the SMARTFIND GMDSS NAVTEX must be used with a wide frequency (400 kHz to 5 MHz) antenna that covers 518 kHz, 490 kHz and 4209.5 kHz.

If you have purchased the SMARTFIND GMDSS NAVTEX receiver without an antenna then a suitable active NAVTEX antenna should be used. Orolia Ltd recommends the 905-05 as described in the following section.

**If an alternative antenna type is used it must be a low impedance 50 ohm antenna or an antenna with a 50 ohm matching network.** A mismatched or high impedance whip or wire antenna should not be used as the operational range of NAVTEX reception may be greatly reduced; it is also important that the antenna is capable of reception over the frequency range specified above.

Wire or long whip antennas must be fitted with a 50 ohm matching transformer. **Important**, disable the SMARTFIND GMDSS NAVTEX antenna power setting – refer to Setup – Receiver mode for details. If in any doubt a qualified GMDSS installer should be consulted.



SMARTFIND GMDSS NAVTEX Minimum System

### Important

**NAVTEX antennas must be mounted clear of obstructions and at least 0.5 metres away from other antennas.**

**Where practical avoid locating the NAVTEX antenna close to MF / HF transmitting antennas or VHF / AIS antennas.**

**Ensure that antennas cannot be snagged by mooring warps or running rigging or engulfed by green water.**

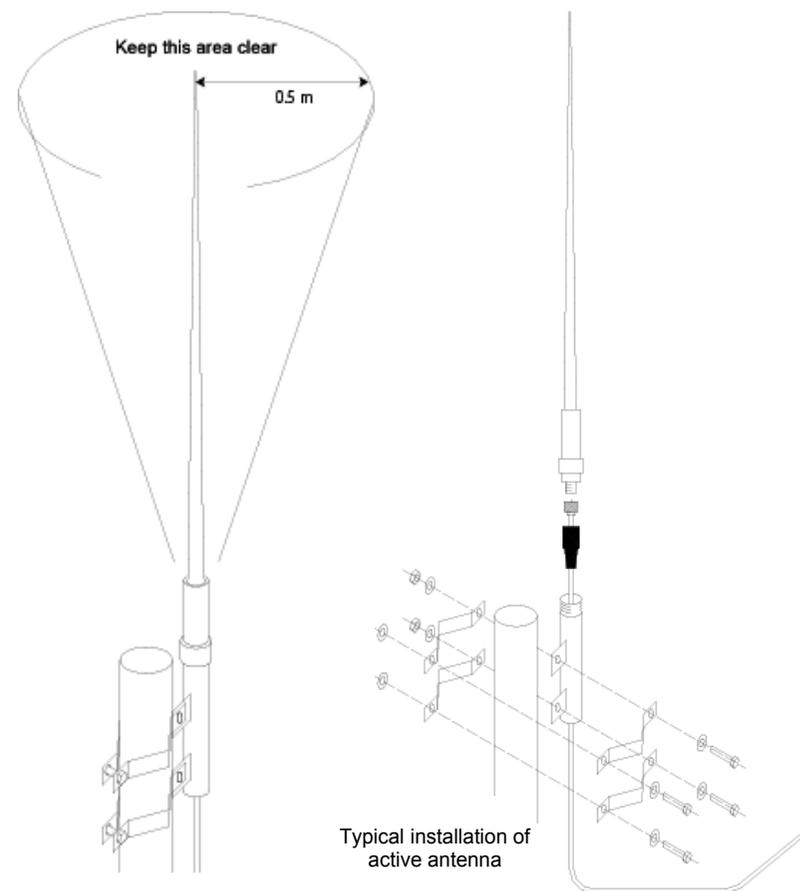
**Antennas should always be mounted vertically in an elevated position.**

#### Installation of the tri-channel NAVTEX antenna

Metal, rigging or other antennas must not be located in the 'NO GO cone' surrounding the upper part.

Use the mounting bracket supplied; an alternative mounting kit may be purchased if the mounting arrangement is unsuitable for your installation.

Attach the clamping brackets to the antenna mounting adapter and use the clamping arrangement to fix to a suitable vertical tube.



Thread the PL259 connector end of the coax cable through the antenna mounting adapter and secure the connector to the antenna 1" threaded adapter.

Slide the rubber boot over the PL259 connector; if desired, it may be filled with silicone grease for a better weatherproof seal.

Screw the antenna down into the antenna mounting adapter.

Ensure that the mounting adapter is connected to ground. If necessary, connect a grounding wire, 2.5 mm<sup>2</sup> minimum, to a suitable ground point.

### Installation of the antenna cable

Start routing the antenna cable at the antenna end.

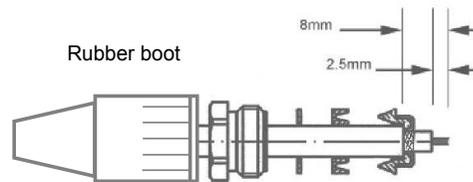
Where the cable passes through bulkheads or decks, waterproof deck glands should be installed. Securely fasten the cable against vibration using plastic cable tie wraps.

Complete routing of the antenna cable at the SMARTFIND GMDSS NAVTEX TNC connector.

### Fitting the TNC connector

A TNC connector is supplied as part of the SMARTFIND GMDSS NAVTEX Receiver Kit.

- Place the rubber boot, gland nut, washer and rubber seal onto cable. Remove the outer insulation for a distance of 8mm.
- Slide the cable braid sleeve over the screen braid, fold the braid back and trim off extra braid.
- Strip 2.5mm of the inner insulation to expose the centre conductor.
- Solder the pin onto the centre conductor.
- Assemble the connector and tighten the gland nut. Push the rubber boot securely over the gland nut.



### Extending the antenna coax cable

If required, the coaxial cable may be extended with 50 ohm coaxial cable and connectors. The maximum cable length should not exceed 100 m. Ensure that any cable joints are well secured and waterproofed using self-amalgamating (rubber) tape.

Cable should be RG-58 / RG-67 / RG-213 / RG-214 grade or better; connectors should be suitable RF types (TNC, BNC, etc).

### Testing the tri-channel active antenna installation

By default the SMARTFIND GMDSS NAVTEX provides a regulated 12 V DC (nom) 100 mA output to provide power for an active antenna such as the one supplied as part of a SMARTFIND GMDSS NAVTEX System.

If you are using an alternative active antenna please check that it is compatible with this power output. If it is not, then an external power supply interface will be required. Your antenna supplier should be able to provide this.

## WARNING

**Take care not to apply power to the antenna TNC connector from an external supply**

Switch on the SMARTFIND GMDSS NAVTEX by applying power (12 V DC or 24 V DC) via a circuit breaker or fuse.

There will be a few seconds delay whilst the software loads the contents of the NAVTEX message store during which time the front panel red LED will blink.

The LCD display backlight will come on and the SMARTFIND GMDSS NAVTEX start-up screen will be shown.

If the antenna fault icon appears along the top of the display, switch off immediately and check for a short circuit at the antenna, the TNC connector or any other RF connections in-between. If the fault persists then please follow the trouble shooting guide in this manual.

### Passive antenna installation

The SMARTFIND GMDSS NAVTEX regulated 12 V DC 100mA output should be disabled for passive antenna installations or for installations using a matching transformer.

**NOTE: This should be done the first time that power is applied to the SMARTFIND GMDSS NAVTEX BEFORE the antenna is connected.**

Switch on the SMARTFIND GMDSS NAVTEX by applying power (12 V DC or 24 V DC) via a circuit breaker or fuse.

There will be a few seconds delay whilst the software loads the contents of the NAVTEX message store during which time the front panel red LED will blink.

The LCD display backlight will come on and the SMARTFIND GMDSS NAVTEX start-up screen will be shown.

If the antenna fault icon appears along the top of the display, switch off immediately and check for a short circuit at the antenna, the TNC connector or any other RF connections in-between. If the fault persists then please follow the trouble shooting guide in this manual.

## OPTIONS

### SMARTFIND GMDSS NAVTEX ancillary items:

Model	Description	Code
ANA2 Active NAVTEX Antenna	Commercial grade 518 – 490 kHz + 4209.5 kHz, SO239 socket, white glass fibre construction with 1 inch nut fitting	93-063A
Stand-off Mounting Bracket A	Pole mount stand-off bracket for NAVTEX Antenna, 1 inch bolt mount fitting (for 93-063A).	93-064A
Stand-off Mounting Bracket B	Pole or Wall mount stand-off bracket for NAVTEX Antenna, 1 inch bolt mount fitting (for 93-063A).	93-065A
Deck Mounting Bracket C	Deck mount for NAVTEX antenna, 1inch bolt mount fitting (for 93-063A).	93-066A
Antenna Cable Kit	20 m antenna cable kit (for 93-063A).	93-067A
ANA1 Active NAVTEX Antenna	Light duty, 1m stainless steel wideband active whip antenna complete with 20 m attached cable and fixing plastic bracket	93-062A
Klaxon alarm unit	Remote Klaxon alarm unit (loud bridge repeater alarm)	40-187
Seiko DPU-414	Remote thermal roll printer (sold directly by Seiko agents)	N/A

## EXTERNAL RECEIVER

The SMARTFIND GMDSS NAVTEX has the capability to receive from an external receiver (not supplied) on an additional NAVTEX frequency should such an additional frequency be mandated by the IMO in the future.

NAVTEX messages from the external receiver appear on the View EXTERNAL RECEIVER page.

The external NAVTEX data must be presented as a stream of NMEA NRX sentences as defined in Annex C of the IEC 61097-6 Ed.2 (2005) specification.

The external receiver may be another SMARTFIND GMDSS NAVTEX; in such a case, a single antenna may serve several displays. For more information, contact your dealer or the Orolia Ltd Customer Service team.

## MAINTENANCE GUIDE

### General Points to Check

- Periodically make sure that the antenna connector is well sealed and that there isn't sign of corrosion around the PL259 connector
- Make sure connections to the back of the SMARTFIND GMDSS NAVTEX display are secure

### Cleaning Instructions

- Periodically clean the LCD front window with a soft lint-free cloth (such as those supplied by opticians to clean spectacles)
- Do not use cleaning solvents on any part of the SMARTFIND GMDSS NAVTEX

**⚠ CAUTION:** Avoid using chemical solvents to clean the system as some solvents can damage the case material.

**NOTE:** The SMARTFIND GMDSS NAVTEX contains no user serviceable parts. Contact your Service Agent for repair advice or contact the Orolia Ltd Customer Service team.

## TROUBLESHOOTING GUIDE

### General Points to Check

- Make sure the antenna is mounted vertically and is clear of obstructions
- Make sure the vessel is operating within the coverage area of a NAVTEX transmitter
- When the NAVTEX station(s) selected are transmitting, icons for 490, 518 and 4209.5 kHz show whenever a NAVTEX signal is received
- Ensure that the required NAVTEX station and message categories have not been deselected in the SMARTFIND GMDSS NAVTEX setup menu

### Antenna fault icon appears at the top of the display: active antenna

- Turn off the SMARTFIND GMDSS NAVTEX
- Disconnect the active antenna and check that there is not a short across the antenna's TNC connector
- Turn on the SMARTFIND GMDSS NAVTEX, apply a 120 ohm 5 W resistor across the TNC connector. If there is 12 V DC across the TNC then either the antenna or coax cable is faulty
- If there is not 12 V DC across the TNC connector then check that **Antenna power : Enabled** is selected in the setup screens
- If these instructions do not work then please contact your service agent

### Antenna fault icon appears at the top of the display: passive antenna

- Turn off the SMARTFIND GMDSS NAVTEX
- Disconnect the passive antenna and check that there is not a short across the antenna TNC connector

- 3 Check that the **Antenna power** setting is set to **Disabled** on the **Receiver options** setup screen
- 4 If these instructions do not work then please contact your service agent

#### No new message reception

- 1 Is the vessel within range of a NAVTEX transmitting station?
- 2 Has there been a scheduled transmission since the SMARTFIND GMDSS NAVTEX was first switched on?
- 3 Check that the antenna is clear of obstructions and has not suffered external damage and that the antenna cable is not damaged
- 4 Check that the antenna fault icon is not being displayed on the status bar at the top of the display
- 5 View the **Setup mode: Receiver options** screen check that the correct antenna power setting is selected according to antenna type fitted, 'active antenna' require that the antenna voltage to be set to; 'Enable'
- 6 View the **Setup mode: Receiver options** screen view the signal strength indicator, a constantly strong reading (no receive icon displayed) can indicate that a strong local interfering signal is blocking NAVTEX reception.

#### Testing a 93-063A tri-channel active antenna

If it is suspected that reception is being compromised by the antenna performance, the antenna should be checked for electrical damage.

Disconnect the antenna from the SMARTFIND GMDSS NAVTEX by unscrewing the TNC connector at the back of the SMARTFIND GMDSS NAVTEX.

Using a DVM set on resistance, measure across the TNC RF connector from the centre pin to the outer ferrule, looking back up towards the antenna.

DO NOT ATTEMPT TO MEASURE THE RESISTANCE  
OF THE TNC SOCKET ON THE SMARTFIND GMDSS NAVTEX.

A good antenna will show a reading in the range 1500 – 2000 ohms.

A failed antenna will show a reading < 1000 ohms.

If a reading of greater than 5000 ohms is measured, then there is a continuity problem with the connector or cable; these should be checked for damage or misconnection.

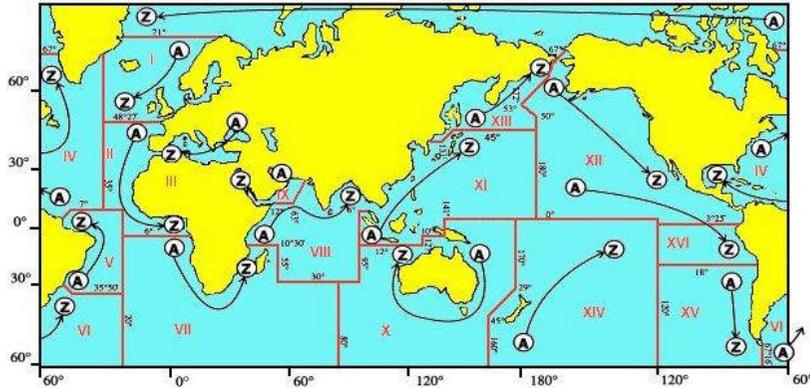
Note that these resistance values only apply to a 93-063A active antenna as supplied by Orolia Ltd. Other active antennas will have different resistance readings; consult the supplier in order to check such antennas.

## SPECIFICATIONS

<b>Technical Specification</b>	
<b>SMARTFIND GMDSS NAVTEX Receiver</b>	
<b>Display:</b>	6 inch, ½ VGA (480 x 320 pixels) Daylight viewable colour STN with adjustable backlight and screensaver
<b>Controls:</b>	Backlight/ contrast key, Enter key, four soft menu keys, Tracker pad
<b>Receivers:</b>	Receiver A, Frequency 518kHz Receiver B, Frequency 490kHz Receiver C, Frequency 4209.5kHz Sensitivity <2 microvolts Frequency stability +/- 10Hz
<b>Connectors:</b>	15 way D-type, Power, Alarm & COM 1 data (2 meter cable supplied with connector pre wired) 9 way D-type, Printer/ COM2 Antenna connector, 50 ohm TNC Ground connector, 1/8" Spade terminal
<b>Data interface:</b>	COM 1, RS422 (NMEA 0183) IEC 61162-2 serial port COM 2, RS422 (NMEA 0183) IEC 61162-1 serial/ printer Baud rate, 4800, 38400, 115200. NMEA sentences supported (in priority order) RMC, GLL, ZDA for UTC and NRX, NRQ, NMRK, ACK, ALR for NAVTEX functions.
<b>Alarms:</b>	Vital/ SAR message receipt (internal buzzer) Alarm state NMEA message data output COM1/COM2 Remote alarm relay contact 1A @ 120VAC/ 24VDC
<b>Antenna voltage output</b>	12 V DC @ 100mA (selectable)
<b>Antenna type (option)</b>	50 ohm, dual band 490 - 4209.5 KHz active or passive
<b>NAVTEX message memory:</b>	300 x 500 character messages per receiver (minimum)
<b>Dimensions:</b>	219W x 151H x 76D mm (excluding connectors) Weight 1100g (including bracket)

<b>Environmental:</b>	Operating Temperature Range -15° to +55°C Storage Temperature Range -20° to + 55°C Humidity 0 to 95%, non-condensing Compass safe distance 0.87 metres
<b>Mounting:</b>	Desk-top or bulkhead (flush panel fixing kit included)
<b>Power:</b>	Voltage range 12/24 V DC nominal (10.8 V to 31.2 V) Consumption, with backlight on 8.6 W @ 24 V DC Internal auto resettable fuse @ 1.8 A DC
<b>Technical Standards:</b>	IMO Resolutions, MSC.148(77) A.2.1 (17), SOLAS Regulation IV/7.1.4, ITU-R M.540-2, ITU-R M.625-3, IEC 60945-4, IEC 61162-1, -2, IEC 61162-2, IEC 61097-6
<b>Additional Sales Options:</b>	ANA1 light duty active NAVTEX antenna with 20m cable and stand off bracket ANA2 heavy duty active NAVTEX antenna with PL socket Type A stand-off mounting bracket for ANA2 Type B long reach stand-off mounting bracket for ANA2 Type C deck mount bracket for ANA2 Antenna Cable kit for ANA2, 20m

## NAVTEX STATIONS LIST



### 518 kHz NAVTEX stations

Id	Area	Country	Name	Latitude	Longitude	Range (NM)
A 01,02	France	Corsen	48°28' N	5°03' W	300	
A 03	Russia	Novorossiysk	44°36' N	37°58' E	300	
A 04	USA	Miami	25°23' N	80°23' W	240	
A 09	Iran	Bushehr	28°59' N	50°49' E	300	
A 11	Indonesia	Jayapura	2°31' S	140°43' E	300	
A 13	Russia	Vladivostok	43°23' N	131°54' E	230	
A 15	Chile	Antofagasta	23°30' S	70°25' W	400	
A 19	Norway	Svalbard	78°02' N	13°40' E	450	
B 03	Algeria	Bordj-El-Kiffan	36°48' N	3°16' E	200	
B 04	Bermuda	Bermuda Radio	32°21' N	64°39' W	280	
B 07	Namibia	Walvis Bay	23°03' S	14°37' E	380	
B 09	Bahrain	Hamala	26°09' N	50°29' E	300	
B 11	Indonesia	Ambon	3°42' S	128°12' E	300	
B 13	Russia	Kholmsk	47°02' N	142°03' E	300	
B 15	Chile	Valparaiso Playa Ancha	33°05' S	71°37' W	300	
B 19	Norway	Bodo	67°16' N	14°25' E	450	
C 02	Senegal	Dakar	14°46' N	17°20' W	200	
C 03	Ukraine	Odesa	46°22' N	30°45' E	250	
C 04	Canada	Riviere-au-Renard	50°12' N	66°07' W	300	
C 07	South Africa	Cape Town	33°41' S	18°43' E	300	
C 08	Mauritius	Mauritius	20°10' S	57°28' E	400	
C 11	Singapore	Singapore Port Operations	1°21' N	103°58' E	400	
C 12	USA	San Francisco	37°56' N	122°44' W	350	
C 13	Russia	Petropavlosk	53°00' N	158°40' E	300	
C 15	Chile	Talcahuano	36°41' S	73°07' W	400	
C 19	Norway	Vardo	70°22' N	31°06' E	450	
C 20	Russia	Murmansk	68°46' N	32°58' E	300	
D 01	Faroe Islands	Torshavn	62°01' N	6°48' W	250	
D 02	Spain	Coruna	43°22' N	8°27' W	300	
D 03	Turkey	Istanbul	41°04' N	28°57' E	400	
D 11	Indonesia	Makassar	5°05' S	119°30' E	300	
D 11	North Korea	Pyongyang	39°00' N	125°43' E	150	
D 12	Canada	Prince Rupert	54°18' N	130°24' W	300	
D 13	Russia	Magadan	59°41' N	150°09' E	120	
D 15	Chile	Puerto Montt	41°29' S	72°58' W	400	
E 01	United Kingdom	Niton	50°35' N	1°18' W	270	
E 03	Turkey	Samsun	41°23' N	36°11' E	400	

Id	Area	Country	Name	Latitude	Longitude	Range (NM)
E 04	USA	Charleston	32°51' N	79°57' W	200	
E 11	Indonesia	Jakarta	6°07' S	106°52' E	300	
E 11	North Korea	Hamhung	39°50' N	127°41' E	150	
E 15	Chile	Punta Arenas	53°10' S	70°54' W	400	
F 02	Azores	Sao Miguel	37°49' N	25°33' W	300	
F 03	Turkey	Antalya	36°09' N	32°26' E	400	
F 04	USA	Boston	41°43' N	70°30' W	200	
F 06	Uruguay	La Paloma	34°40' S	54°09' W	280	
F 09	Iran	Bandar-e Shahid Raja i	27°06' N	56°03' E	300	
F 11	Thailand	Nonthaburi	13°01' N	100°01' E	400	
F 15	Chile	Easter Island	27°09' S	109°26' W	400	
G 01	United Kingdom	Cullercoats	55°04' N	1°28' W	270	
G 02,03	Spain	Tarifa	36°02' N	5°33' W	300	
G 03	Iran	Fereydu Kendar	36°42' N	52°33' E	250	
G 03	Ukraine	Kerch	45°23' N	36°38' E	250	
G 04	USA	New Orleans	29°53' N	89°57' W	200	
G 08	India	Mumbai	19°05' N	72°50' E	250	
G 11	Japan	Naha	26°05' N	127°40' E	400	
G 13	Russia	Okhotsk	59°22' N	143°12' E	300	
G 15	Chile	Easter Island	27°09' S	109°26' W	400	
H 01	Sweden	Bjuroklubb	64°28' N	21°36' E	300	
H 03	Greece	Iraklion Kritis	35°19' N	25°45' E	400	
H 04	Canada	Wiarion	44°56' N	81°14' W	300	
H 04	Curacao	Curacao	12°10' N	68°52' W	400	
H 11	Japan	Moji	34°01' N	130°56' E	400	
H 12	Canada	Tofino	48°55' N	125°32' W	300	
H 15	Chile	Antofagasta	23°30' S	70°25' W	400	
I 01	Sweden	Grimeton	57°06' N	12°23' E	300	
I 02	Canary Isles (Spain)	Las Palmas	28°26' N	16°20' W	450	
I 07	South Africa	Port Elizabeth	34°02' S	25°33' E	300	
I 11	Japan	Yokohama	35°14' N	139°55' E	400	
I 15	Chile	Valparaiso Playa Ancha	33°05' S	71°37' W	300	
I 18	Greenland	Upernavik	72°47' N	56°09' W	300	
J 01	Sweden	Gislovshammer	55°29' N	14°19' E	300	
J 03	Bulgaria	Varna	43°04' N	27°47' E	350	
J 11	Japan	Otaru	43°19' N	140°27' E	400	
J 11	Philippines	Manila	14°30' N	121°04' E	320	
J 12	Alaska (USA)	Kodiak	57°47' N	152°32' W	200	
J 15	Chile	Talcahuano	36°41' S	73°07' W	400	
K 01	United Kingdom	Niton	50°35' N	1°18' W	270	
K 03	Greece	Kerkyra	39°36' N	19°53' E	400	
K 11	Japan	Kushiuro	42°57' N	144°36' E	400	
K 11	Vietnam	Da Nang	16°03' N	108°09' E	400	
K 15	Chile	Puerto Montt	41°29' S	72°58' W	400	
L 01	Norway	Rogaland	58°39' N	5°37' E	450	
L 03	Greece	Limnos	39°54' N	25°11' E	400	
L 11	China	Hong Kong Radio	22°13' N	114°15' E	400	
L 12	Ecuador	Ayora	0°43' S	90°20' W	400	
L 15	Chile	Magallanes	53°10' S	70°54' W	400	
L 20	Russia	Arkhangel'sk	64°51' N	40°17' E	300	
M 01	Norway	Jeloya	59°26' N	10°35' E	150	
M 03	Cyprus	Cyprus	35°03' N	33°17' E	200	
M 04	Greenland	Simiutaq	60°41' N	46°35' W	300	
M 06	Argentina	Ushuaia	54°48' S	68°18' W	280	
M 09	Oman	Muscat	23°37' N	58°31' E	270	
M 11	China	Sanya	18°17' N	109°22' E	250	
N 01	Norway	Orlandet	63°40' N	9°33' E	450	
N 03	Egypt	Alexandria	31°12' N	29°52' E	350	
N 04	USA	Portsmouth	36°44' N	76°01' W	280	
N 06	Argentina	Rio Gallegos	51°37' S	69°13' W	280	
N 11	China	Guangzhou	23°08' N	113°32' E	250	
O 01	United Kingdom	Portpatrick	54°51' N	5°07' W	270	
O 03	Malta	Malta	35°51' N	14°29' E	400	
O 04	Canada	St John's	47°37' N	52°40' W	300	
O 06	Argentina	Comodoro Rivadavia	45°50' S	67°28' W	280	
O 07	South Africa	Durban	29°48' S	30°49' E	300	
O 11	China	Fuzhou	26°01' N	119°18' E	250	

Id	Area	Country	Name	Latitude	Longitude	Range (NM)
O 12	Hawaii (USA)	Honolulu		21°26' N	158°09' W	350
P 01	Netherlands	Den Helder		52°06' N	4°15' E	110
P 02	Madeira (Portugal)	Porto Santo		33°06' N	16°20' W	300
P 03	Israel	Haifa		32°55' N	35°07' E	200
P 04	Canada	Thunder Bay		48°34' N	88°39' W	300
P 06	Argentina	Bahia Blanca		38°52' S	62°06' W	280
P 08	India	Chennai		13°05' N	80°17' E	250
P 09	Pakistan	Karachi		24°52' N	67°09' E	400
P 11	Taiwan	Keelung		25°08' N	121°45' E	540
P 11	Taiwan	Linyuan		22°29' N	120°25' E	540
Q 01	Ireland	Malin Head		55°22' N	7°21' W	400
Q 03	Croatia	Split		43°11' N	16°26' E	200
Q 04	Canada	Sydney		46°11' N	59°54' W	300
Q 06	Argentina	Mar del Plata		38°03' S	57°32' W	280
Q 11	China	Shanghai		31°08' N	121°33' E	250
Q 12	USA	Long Beach		35°31' N	121°04' W	350
Q 21	Russia	Tiksi		71°38' N	128°50' E	300
R 01	Iceland	Saudanes		66°11' N	18°57' W	450
R 02	Portugal	Penalva		38°36' N	9°02' W	300
R 03	Azerbaijan	Baku		40°20' N	50°37' E	200
R 03	Italy	Roma		41°13' N	9°24' E	320
R 04	Puerto Rico (USA)	Isabella		18°28' N	67°04' W	200
R 06	Argentina	Buenos Aires		35°93' S	57°10' W	280
R 11	China	Dalian		38°51' N	121°31' E	250
S 01	Germany	Pinneberg		53°40' N	9°48' E	250
S 11	Malaysia	Sandakan		5°54' N	118°00' E	350
S 16	Peru	Paita		5°06' S	81°07' W	250
T 01	Belgium	Oostende		51°11' N	2°48' E	55
T 03	Tunisia	Kelibia		36°48' N	11°02' E	270
T 04	Canada	Iqaluit		63°44' N	68°33' W	300
T 11	Malaysia	Miri		4°26' N	114°02' E	350
U 01	Estonia	Tallinn		59°30' N	24°30' E	250
U 02	Cape Verde	Sao Vicente Radio		16°51' N	25°00' W	250
U 03	Italy	Mondolfo		43°45' N	13°09' E	320
U 04	Canada	Yarmouth		43°45' N	66°07' W	300
U 11	Malaysia	Penang		5°25' N	100°24' E	350
U 16	Peru	Callao		12°04' S	77°09' W	250
V 01	Belgium	Oostende		51°11' N	2°48' E	150
V 03	Italy	Sellia Marina		38°52' N	16°43' E	320
V 09	Egypt	Al Qusayr		26°06' N	34°17' E	400
V 11	Mariana Islands	Guam		13°29' N	144°50' E	230
V 11	South Korea	Chukpyon		37°03' N	129°26' E	200
W 01	Ireland	Valentia		51°27' N	9°49' W	400
W 03	France	La Garde		43°06' N	5°59' E	250
W 03	Russia	Astrakhan		45°47' N	47°33' E	250
W 04	Greenland	Kook Islands		64°04' N	52°01' W	400
W 12	USA	Astoria		46°12' N	123°57' W	216
W 16	Peru	Matarani		17°00' S	72°02' W	250
X 01	Iceland	Grindavik		63°50' N	22°27' W	450
X 03	Spain	Valencia		38°43' N	0°11' W	220
X 04	Canada	Labrador		53°43' N	57°01' W	300
X 09	Egypt	Ismalia		30°28' N	32°22' E	400
X 11	Vietnam	Ho Chi Minh		10°24' N	107°09' E	400
X 12	Alaska (USA)	Kodiak		57°47' N	152°32' W	200

#### 490 kHz NAVTEX stations

Id	Area	Country	Name	Latitude	Longitude	Range (NM)	Language
A 01	Ireland	Malin Head		55°22' N	7°21' W	400	EN
A 02	Canary Isles (Spain)	Las Palmas		28°26' N	16°20' W	450	ES
A 03	Turkey	Samsun		41°23' N	36°11' E	400	TR
A 06	Argentina	Ushuaia		54°48' S	68°18' W	280	ES
A 06	Uruguay	La Paloma		34°40' S	54°09' W	280	ES
A 11	North Korea	Pyeongyang		39°00' N	125°43' E	150	KO
A 12	Equador	Ayora		00°43' S	90°20' W	400	ES
B 01	Belgium	Oostende		51°11' N	2°48' E	55	NL, EN
B 03	Turkey	Istanbul		41°04' N	28°57' E	400	TR
B 06	Argentina	Rio Gallegos		51°37' S	69°13' W	280	ES

Id	Area	Country	Name	Latitude	Longitude	Range (NM)	Language
B 11	North Korea	Hanhung		39°50' N	127°41' E	150	KO
C 01	United Kingdom	Portpatrick		54°51' N	5°07' W	270	EN
C 06	Argentina	Comodoro Rivadavia		45°50' S	67°28' W	280	ES
D 03	Turkey	Antalya		36°09' N	32°26' E	400	TR
D 04	Canada	Rivière-au-Renard		50°12' N	66°07' W	300	FR
D 06	Argentina	Bahia Blanca		38°52' S	62°06' W	280	ES
D 09	Iran	Bushehr		28°59' N	50°49' E	300	FA
E 01,02	France	Corsen		48°28' N	5°03' W	300	FR
E 01	Iceland	Saudanes		66°11' N	18°57' W	450	IS
E 03	Italy	Mondolfo		43°45' N	13°09' E	320	IT
E 06	Argentina	Mar del Plata		38°03' S	57°32' W	280	ES
F 06	Argentina	Buenos Aires		35°93' S	57°10' W	280	ES
F 11	Vietnam	Da Nang		16°03' N	108°09' E	400	VI
G 02	Portugal	Penalva		38°36' N	9°02' W	300	PT
I 01	United Kingdom	Niton		50°35' N	1°18' W	270	EN
I 03	Italy	Roma		41°13' N	9°24' E	320	IT
I 09	Iran	Bandar-e Shahid Raja i		27°06' N	56°03' E	300	FA
J 02	Azores (Portugal)	Sao Miguel		37°49' N	25°33' W	300	PT
J 03	Iran	Fereydun Kenar		36°42' N	52°33' E	250	FA
J 04	Canada	Sydney		46°11' N	59°54' W	300	FR
J 11	South Korea	Chukpyon		37°03' N	129°26' E	200	EN
K 01	Iceland	Grindavik		63°50' N	22°27' W	450	IS
L 01	Germany	Pinneberg		53°40' N	9°48' E	250	DE
L 03	Romania	Constanta		44°06' N	28°38' E	400	RO
M 02	Madeira (Portugal)	Porto Santo		33°06' N	16°20' W	300	PT
M 02	Senegal	Dakar		14°46' N	17°20' W	200	FR
M 03	Azerbaijan	Baku		40°20' N	50°37' E	200	AZ
M 03	Spain	Valencia		38°43' N	0°11' W	220	ES
M 11	Vietnam	Hai Phong		20°51' N	106°44' E	250	VI
P 02	Cape Verde	Sao Vicente Radio		16°51' N	25°00' W	250	PT
P 03	Greece	Kerkyra		39°36' N	19°53' E	400	EL
Q 03	Greece	Irakleion Kritis		35°19' N	25°45' E	400	EL
R 03	Greece	Limnos		39°54' N	25°11' E	400	EL
S 03	France	La Garde		43°06' N	5°59' E	250	FR
S 04	Canada	Iqaluit		63°44' N	68°33' W	300	FR
T 01	United Kingdom	Niton		50°35' N	1°18' W	270	FR
T 02,03	Spain	Tarifa		36°02' N	5°33' W	300	ES
U 01	United Kingdom	Cullercoats		55°04' N	1°28' W	270	EN
U 03	Ukraine	Kerch		45°23' N	36°38' E	250	EN
V 03	Algeria	Bordj-El-Kiffan		36°48' N	3°16' E	200	FR
V 04	Canada	Yarmouth		43°45' N	66°07' W	300	FR
V 11	Vietnam	Vung Tau		10°24' N	107°09' E	250	VI
W 02	Spain	Coruna		43°22' N	8°27' W	300	ES
W 03	Italy	Sellia Marina		38°52' N	16°43' E	320	IT
X 03	Ukraine	Odesa		46°22' N	30°45' E	250	EN

#### 4209.5 kHz NAVTEX stations

Id	Area	Country	Name	Latitude	Longitude	Range (NM)	Language
C 11	Vietnam	Nha Trang		12°13' N	109°11' E	400	VI
M 03	Turkey	Istanbul		41°04' N	28°57' E	400	TR
M 11	Vietnam	Hai Phong		20°51' N	106°44' E	250	VI
Q 11	China	Shanghai		31°08' N	121°33' E	250	EN
X 09	Egypt	Ismailia		30°28' N	32°22' E	400	EN

No liability can be accepted for any inaccuracies or omissions in this NAVTEX stations table, although every care has been taken to make it as complete and accurate as possible.

For updated NAVTEX station listings information refer to the current UK "Admiralty List of Radio Signals, Volume 5" or equivalent national publications.

**NAVTEX Transmission times**

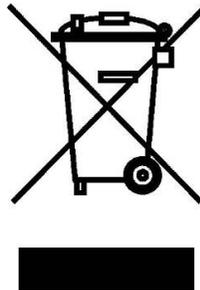
STATION	TRANSMISSION TIMES (UTC)					
A	00:00	04:00	08:00	12:00	16:00	20:00
B	00:10	04:10	08:10	12:10	16:10	20:10
C	00:20	04:20	08:20	12:20	16:20	20:20
D	00:30	04:30	08:30	12:30	16:30	20:30
E	00:40	04:40	08:40	12:40	16:40	20:40
F	00:50	04:50	08:50	12:50	16:50	20:50
G	01:00	05:00	09:00	13:00	17:00	21:00
H	01:10	05:10	09:10	13:10	17:10	21:10
I	01:20	05:20	09:20	13:20	17:20	21:20
J	01:30	05:30	09:30	13:30	17:30	21:30
K	01:40	05:40	09:40	13:40	17:40	21:40
L	01:50	05:50	09:50	13:50	17:50	21:50
M	02:00	06:00	10:00	14:00	18:00	22:00
N	02:10	06:10	10:10	14:10	18:10	22:10
O	02:20	06:20	10:20	14:20	18:20	22:20
P	02:30	06:30	10:30	14:30	18:30	22:30
Q	02:40	06:40	10:40	14:40	18:40	22:40
R	02:50	06:50	10:50	14:50	18:50	22:50
S	03:00	07:00	11:00	15:00	19:00	23:00
T	03:10	07:10	11:10	15:10	19:10	23:10
U	03:20	07:20	11:20	15:20	19:20	23:20
V	03:30	07:30	11:30	15:30	19:30	23:30
W	03:40	07:40	11:40	15:40	19:40	23:40
X	03:50	07:50	11:50	15:50	19:50	23:50

**END OF LIFE STATEMENT**

The Waste Electrical and Electronic Equipment (WEEE) Directive aims to minimise any adverse impact of electronic equipment on the environment, both during the product lifetime and when it becomes waste. Within the European Union this legislation is mandated by Directive 2002/96/EC, and there is similar legislation in most other continents. The directive applies to all electronic products such as IT, household appliances, portable electronics etc., and imposes requirements to collect, treat, recover and recycle each product at its end of life. Electronic end-user products must also carry a WEEE label (as below) and recovery and recycling information has to be provided to the recycler.

This product may contain lead and brominated flame retardants (BFRs), both in the housing material and circuit boards.

In keeping with the directive, Orolia Ltd strongly recommends that this product be disposed of in a sensible and considerate manner. For example, do not simply discard the product in the domestic waste. Instead take it to a civil recycling facility, or contact Orolia Ltd for advice.



**PRODUCT WARRANTY**

Orolia Ltd warrants that this product will be free of defects in materials and workmanship for a period of 24 months from the date of purchase.

Orolia Ltd will not be liable to the buyer under the above warranty:-

- for any defect arising from fair wear and tear, wilful damage, negligence, abnormal working conditions, failure to follow Orolia Ltd's instructions (whether oral or in writing) including a failure to install properly and/or to use batteries recommended and/or supplied by Orolia Ltd, misuse or alterations or repair of the product by persons other than Orolia Ltd or an Approved Service Agent;
- for parts, materials or equipment not manufactured by Orolia Ltd in respect of which the buyer shall only be entitled to the benefit of any warranty or guarantee given by the manufacturer to Orolia Ltd;
- for the battery storage life which is specifically excluded from this warranty;
- if the total price for the product has not been paid.

THE LIMITED WARRANTY STATED ABOVE IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Orolia Ltd will not be liable for indirect, special, incidental or consequential damages of any kind sustained from any cause. In no event shall Orolia Ltd be liable for any breach of warranty or other claim in an amount exceeding the purchase price of the product. This warranty does not affect any statutory rights of the consumer.

In order to be valid, claims must be made under the above warranty in writing as soon as practicable after discovery of the defect or failure and within the warranty period referred to above. Proof of purchase will be required. The claim should be sent together with the product in question to the address set out below or to an Approved Service Agent.

Following a valid warranty claim Orolia Ltd shall be entitled to repair or replace the product (or part) in question free of charge, or at Orolia Ltd sole discretion to refund to the buyer the price of the product (or a proportional part of the price). Orolia Ltd shall not be liable to a buyer who is not a consumer for any other loss or damage (whether indirect, special or consequential loss of profit or otherwise) costs, expenses or other claims for compensation which arise out of or in connection with this product. In the case of a consumer Orolia Ltd shall only be liable where other loss or damage is foreseeable.

Nothing shall limit Orolia Ltd's liability for death or personal injury caused by its negligence.

This warranty is to be interpreted under English law.

All enquiries relating to this warranty or Approved Service Agents should be sent to:

**Orolia Ltd, Silver Point, Airport Service Road, Portsmouth, Hampshire, PO3 5PB UK**

**Telephone: Int + 44 (0) 23 9262 3900 Fax: Int + 44 (0) 23 9262 3998**

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