NAV6 V2 User Guide

NAV6 V2

NAV6*plus* **V2**

NAV6*repeater* **V2**

NAV6 *e*NAVTEX Receiver

Important Information

This equipment is not approved for use by SOLAS convention vessels within the Global Maritime Distress and Safety System (GMDSS)
It is intended for use by leisure craft and other non-SOLAS vessels wishing to participate within GMDSS

Safety Warnings

This instrument is for use as an aid to sailors and should not lead to a reduction in the level of good seamanship required at all times
Reception of messages cannot always be guaranteed as this depends on local radio propagation
The correct magnetic variation must be input at the navigation instruments (e.g. GPS, electronic compass) for the accurate display of COG, set, waypoint bearing and heading.

Contents

NAV6*plus* Premium System Showing **NAV6***plus* Display Unit, *e***NAVTEX** Receiver Module, Passive Antenna and the NAV6 *e***NAVTEX** PC App.

Congratulations on purchasing this high quality ICS Electronics Ltd product. It is not only an excellent NAVTEX receiver, but a first class instrument repeater (plus and repeater models only). It may be the only display you will ever need at your navigation position. We hope that it gives you many years of reliable and trustworthy service. Please take the time to read this manual carefully as it contains some essential information regarding the operation and maintenance of the product and a useful background to the NAVTEX system.

We recommend that you regularly visit the ICS website www.icselectronics.co.uk for information on updates, the availability of software enhancements, further options and support. The support pages contain frequently asked questions about the NAV6 that you may find useful. There is also a NAVTEX database providing a list of operational NAVTEX stations and their details.

The IMO and various national coastguards also operate informative websites that you may wish to visit; see www.icselectronics.co.uk/links.

Please note that the NAV6 standard model does not include the instrument repeater functions as described in this manual. It may be upgraded at any time in the future (charges apply).

Quick Start

You will find this product extremely easy to operate. Please don't be intimidated by the comprehensive nature of this manual. In reality, receiving your first NAVTEX messages could not be simpler.

Follow the installation guidelines

Re-check the cable connections

Apply power

If you have not connected a GPS navigation receiver, make sure that you set the date and time on the screen which will appear at start up.

Wait for your first NAVTEX message. If you are within range of a NAVTEX transmitter, you should not need to wait for more than four hours.

If you then want to get the best from the system, read the rest of the manual.

Introduction

What Is NAVTEX?

NAVTEX is a worldwide system for the broadcast and automatic reception of maritime safety information (MSI) in English by means of a narrow-band direct-printing telegraphy. NAVTEX provides shipping with navigational and meteorological warnings and urgent information.

NAVTEX is a component of the IMO/IHO worldwide Navigational Warning Service (WWNWS) as defined by IMO Assembly resolution A.706(17). It is included within the Global Maritime Distress and Safety System (GMDSS). Since 1 August 1993, NAVTEX receiving capability has become mandatory equipment for certain vessels under the provisions of the International Convention for the Safety of Life at Sea (SOLAS).

NAVTEX broadcast information is available to all seafarers, free of charge.

How Does NAVTEX Work?

NAVTEX transmissions are sent from stations situated worldwide. The power of each transmission is regulated so as to avoid the possibility of interference between transmitters. Each station is allocated a 10-minute time slot every 4 hours so that many stations can share the same frequency. Stations typically have a transmission range of 250 – 300 Nm.

NAV6 Features

The **NAV6** adds a new dimension in NAVTEX functionality. The **NAV6** offers simultaneous reception on both the 518kHz international channel and the 490kHz local information channel. Unlike other NAVTEX receivers that discard unselected messages, the large flash memory in the **NAV6** means it has the capacity to store **all** of the messages from transmitting stations within its range. This allows you to recall, display and review any message at any time even if it was not selected at the time of the transmission. A unique message processing (*iNEC*) feature benefits you by decreasing errors in received messages in noisy or weak signal areas.

The **NAV6***plus* includes all the features of the **NAV6** standard including dual frequency and when connected to an NMEA data source, it offers a range of standard and custom instrument repeater functions. The **NAV6***plus* includes a database of all NAVTEX stations around the world and when connected to a GPS can be set to automatically display messages from all stations within range or just the closest station helping to provide a much clearer picture of the conditions in your area. Outputs are also included for connection to a serial printer or computer.

The **NAV6 *eNAVTEX*** Receiver module comes as standard with the **NAV6***plus*. The ***eNAVTEX*** receiver includes a USB interface for connection to a PC running the **NAV6 *eNAVTEX*** App. It has a large 4MB message store for saving messages when the unit is not connected to a display device. The USB interface can also be used for updates to the receiver and to a connected display unit.

The **NAV6***plus* and **NAV6***repeater* include additional instrument repeater functions. All the information you really need at your navigation position on one large, easy to use display. With navigation space becoming more and more restricted in modern boats, the **NAV6***plus* concentrates all the data you need, where you need it. It takes critical NMEA data from your GPS or instrument systems and displays it in a highly innovative manner. An electronic log book is updated at regular intervals and can be sent to a serial printer. These powerful instrument and GPS repeater functions are included as standard in the **NAV6***plus*.

The **NAV6***repeater* can also be purchased separately without a NAVTEX receiver for use as a stand-alone NMEA repeater. When added to an existing system, NMEA data and NAVTEX data can also be repeated at another position such as the helm or fly bridge.

NAV6 Display Unit

The Display Unit uses a high resolution backlit LCD to display NAVTEX messages in a choice of text sizes.

The display unit contains a large non-volatile memory to store NAVTEX messages, NAVTEX station database, all of the user settings, filter options, LCD contrast and backlight levels. All messages and settings are retained during power down.

Several messages can be displayed at once (depending upon the length of the message) and messages can be scrolled with a single key-press.

Messages can be filtered using a number of user selectable settings.

The **NAV6***plus* and **NAV6***repeater* can be connected to a printer or computer to print NAVTEX messages and Navigation logs.

Audible and visible alarms can be set up to indicate reception of SAR and/or New Messages.

A sleep mode allows long standby periods with minimum power consumption, such as when the vessel is left in a marina with main batteries being trickle charged from the shore.

eNAVTEX Receiver Unit

The Receiver Unit contains dual receivers that can receive on both 490kHz and 518kHz simultaneously. Up to two displays and a PC may be connected to an **eNAVTEX** receiver for simultaneous operation.

The Keypad and Display

Softkey 1   Softkey 2   Softkey 3   Softkey 4
                    Navigation Pad   View Indicator
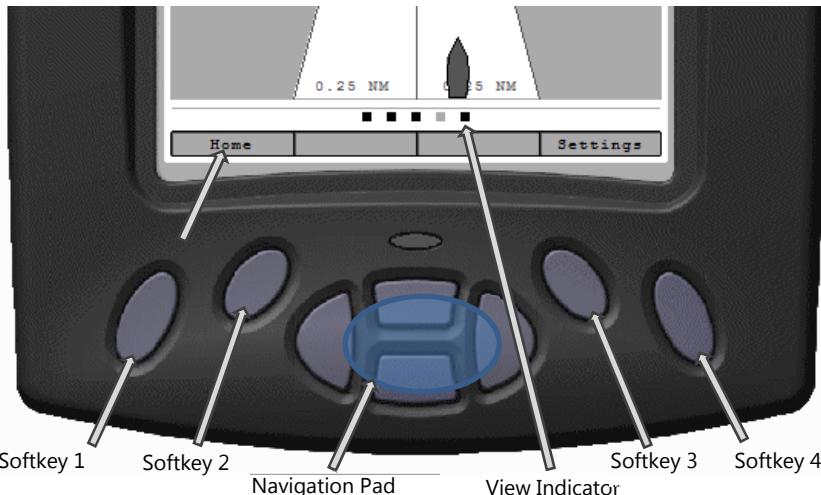
The central keys are a 'navigation pad' (UP DOWN LEFT RIGHT).

In Settings screens the RIGHT key will act as an enter key or Change setting or toggle function depending on the context, and the LEFT key will go back to a previous level.

Softkeys 1 to 4 are situated on either side of the navigation pad. The current function is shown on the *Softkey* menu area at the bottom of the LCD.

On the **NAV6*plus*** the View Indicator shows the number of top level View Screens enabled and highlights the one currently selected. On the top level views the LEFT and RIGHT navigation pad keys will move between Views Screens. The View Screens are enabled or disabled on the **General Settings Page**.

The *Softkey 1* is normally the **Home** key and will take you back to the top level view screens from wherever you are in the menus. Pressing the **Home** key twice or holding it down for more than 2 seconds will go back to the first View Screen, which is normally the NAVTEX view unless the display is just being used as an instrument repeater.

In the top level View Screens the **Settings** (*Sofkey 4*) will select the **Settings Menu** where you can configure the **NAV6**.

On settings that require a change, *Softkeys 2* and *3*, ◄ and ► will change the value, ► *Softkey 3* will generally increase a value, and ◄ *Softkeys 2* will decrease it.

At the top of the display is a status bar:

`IA39        )≙( GPS | 490 SIG | 518 RX |        NEW 14:50`

The status information is displayed as a series of icons. The meaning of the icons is as follows:

`IA39`	Message ID for the currently selected message
`)≙(`	An alarm is active
`GPS`	NMEA / GPS position data available
`490`	490 kHz reception available
`518`	518 kHz reception available
`RX`	Receiving message now
`SIG`	Signal Carrier, but no message
`ERR`	Receiver Communication fault
`SAR`	SAR message received
`NEW`	NEW message received
`14:50`	UTC Time

Viewing and Scrolling through NAVTEX messages

To view NAVTEX messages you must first select the NAVTEX View Screen. Press and hold the Home key until the NAVTEX View Screen is displayed.

Note: This assumes the NAVTEX View has not been reordered and is still the first View as from the factory.

You can now use the UP, DOWN, keys to scroll through the displayed messages. If you press and hold the keys the scroll speed will increase so you can scan through the messages more quickly.

The messages currently displayed may be a sub-set of all the messages stored in memory. Whether you can see a particular message or not depends upon the current station selection, message filter and age limit settings (see following sections for details).

Message Storage

All received NAVTEX messages are stored in memory regardless of whether you have them selected for viewing or not. The **NAV6** has lots of memory so you will easily have enough storage for all messages received.

The messages displayed are selected from the **NAV6** memory by applying filters to show messages from transmitting stations and types of messages required. This enables you to change your mind later about your message display options. This means you will still be able to view messages that were received previously, but were not selected for display at the time, by changing the current station and message filters.

Once the message store has filled up new message will start to overwrite the oldest messages in the store. Even in areas with lots of stations and high levels of NAVTEX transmissions message will remain in the store for more than two weeks before they are overwritten.

After using the **NAV6** for a while you may notice that if you receive a particular message more than once there will only ever be one copy in view. If a message has been received more than once the **NAV6** will store only the best version. It even attempts to repair corrupted messages by comparing repeated transmissions of the same message!

Filter Profiles

The messages currently available for viewing on screen are selected from the messages stored in memory by applying 'filter profiles'.

To see the current selected filter profile select **Settings**, the profile selected is displayed at the top next to NAVTEX in the **Settings Menu**.

There are three profiles on the standard **NAV6** and 5 on the **NAV6plus**. Each profile has 4 set up pages for 518kHz Stations, 518kHz Message Types, 490kHz Stations and 490kHz Message Types. On the **NAV6plus** profile 5 is also used to control which messages are automatically printed or sent to the serial interface (see the settings Menus section for more information).

In the **Settings Menu** or any one of the filter pages press **Next Prof** to change to the next profile number. You will notice that the settings on the screen change with filter profile number. The last profile selected in the **Settings Menu** is the one that will be used when you return to the NAVTEX message view.

You can customise the Filter Profiles so that you can switch quickly between set ups for different viewing requirements, perhaps for sailing in specific areas or viewing particular types of messages.

By default the **NAV6** is preconfigured with some useful Filter Profiles. You can reset any of the Filter pages back to the defaults at any time by pressing the Reset button on the Settings page.

Tip: Use profile 1 for normal operation and use the other profiles if you want to switch between different sets of messages on the display.

Station Selection

If you leave your **NAV6** receiving for a long time you will have received many messages (subject to your current location) and unless you filter out those stations that are not required for display, you will be swamped with data.

You can show or hide messages from required station by turning them on and off manually in the **Station Filter** pages. On **NAV6plus** the stations displayed can also be done automatically using position information from a GPS receiver.

Station Filter selection is made in the Station


```
         GPS  490 RX  518 RX

Setup Menu

NAVTEX [Profile 5]
  518 Station Filter
  518 Message Filter
  490 Station Filter
  490 Message Filter
  Settings
  Monitor NAVTEX
```
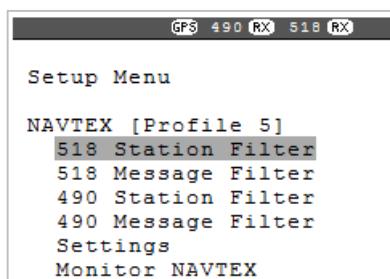
Filter Pages selected from the Settings Menu. You will notice that each station can be set to one of three filter settings:

Setting	Operation
On	Messages from station always in view *(see note 1)*
Off	Messages from station never in view
Auto	Messages from station only viewed when nearest or in range depending upon setting (see note 1)

Note 1: messages are only displayed if they also fall within the ageing limit, error limit and message category filter settings.

An asterisk to the right of the station name indicates that the station is enabled for viewing with the current filter setting and location.

```
Profile 5
518 kHz Station Filter Page

Auto Station Filter     Nearest

A) Corsen               Auto
B)                      Auto
C)                      Auto
D) Grimeton             Auto
E)                      Auto
F)                      Auto
G) Cullercoats          Auto
H) Bjuroklubb           Auto
I)                      Auto
J) Gislovshammer        Auto
K) Niton (N.France)     Auto
L) Rogaland             Auto
M) Oostende (Thames)    Auto    *
N) Orlandet             Auto
O) Portpatrick          Auto
P) Ijmuiden             Auto
Q) Malin Head           Auto
R) Roma                 Auto
S) Niton                Auto
T) Oostende             Auto    *
U) Trieste              Auto
V) Augusta              Auto
W) La Garde             Auto
X) Valencia             Auto
```

Automatic Station Selection Using GPS (NAV6*plus* only)

Many users will just want to display NAVTEX from their closest NAVTEX station to their cruising location. This can easily achieved by connecting a GPS and setting the Auto Station Filer.

```
Auto Station Filter     Nearest
```

The setting can be set to Nearest or In Range.

Nearest

With Nearest selected only messages from the station closest to your position will be displayed.

In Range

NAVTEX stations have a declared transmission range which stored in your **NAV6's** station database. With In Range selected all the stations that are in Range of your current position will be displayed.

Tip: Set stations that you want to 'automatically select' to Auto, and stations that you definitely do not want should be set to Off. You may wish to set your 'home' station to On so that you display messages from it even if it is currently not the nearest station to your cruising position.

Important (**NAV6*plus*** Only): You may wish to leave your **NAV6*plus*** running whilst your GPS or instrument system is disconnected or switched off. If you do this then please be aware that the Navigate data items derived from NMEA (including position) will time out after a short while. If you have also opted to display only the 'Nearest' NAVTEX station or stations 'In Range' then the **NAV6*plus*** will no longer have the required position data. It will revert to displaying all stations that are set to 'Auto'. As soon as the NMEA data becomes available again only the 'Nearest' or 'In Range' stations will be displayed dependent upon your current settings.

Manual Station Selection

You can manually select a station (or stations) by setting them to On or Off by using the UP, DOWN keys to select then the ◀ and ▶ *Softkeys 2* and *3* or RIGHT key to toggle the setting. If you are using a GPS but still want to select stations manually then do not leave any stations set to Auto.

Message Type Filtering

You can further reduce the amount of unwanted messages that are displayed by applying a filter to the message types. Select the Message Type Filter Page from the Settings Menu.

Each message type can be turned On or Off or can be set to New using the UP, DOWN, and ◀ and ▶ *Softkeys 2* and *3* or RIGHT key to toggle the setting.

The figure shows the 518kHz Message Types Filter Page; the 490kHz Types filter page is similar.

Each of the message types can be selected as either On, Off or New

Set each message type filter to one of the following:
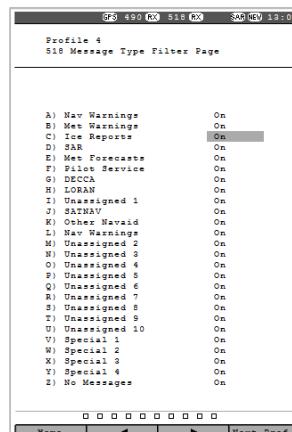
Setting	Notes
On	Message type always displayed
Off	Message type never displayed
New	Message type only displayed when new. Messages marked as read will not appear.

Reading 'NEW' Messages

Sometimes it is useful to know which messages have been received since you last looked at the **NAV6** display. You may have noticed that each message header carries a 'NEW' icon and that there is an additional 'NEW' icon in the status bar at the top of the display. Select the NAVTEX View and you will see that *Softkey 3* is now indicated as **Next New**. If the message at the top of the display has the 'NEW' icon showing then *Softkey 2* will now be indicated as **Mark Read**. Once you have read the message and want to de-emphasise it then press **Mark Read**. The 'NEW' icon will disappear from the message header. Press **Next New** to jump to the next new message. Proceed through all of the messages in this way. Once all of the messages have been marked as read then the 'NEW' icon at the top of the display will also disappear. When you return to the **NAV6** later on it is now very easy to tell if there are any new messages to read (the 'NEW' icon in the status bar at the top of the display will be illuminated).

Note that messages that have been 'marked as read' will still be displayed, but with the 'NEW' icon removed from the header in each one. It is possible to hide messages once they have been read; go to the Message Type Filter Page and set the message types that you want to hide after they have been marked as read to 'New' instead of 'On'. You may wish to leave SAR messages as 'On' so that they are not hidden once read.

Displaying the Newest Message

All messages are date and time stamped by the **NAV6** even if there is no GPS connected and therefore no correct source of time data.

If there is no GPS connected then you can manually enter the time and date or just ignore it. The **NAV6** will still order the messages in the correct chronological order (remember that the indicated time of reception will be incorrect).

Messages are displayed in the NAVTEX View in time descending order i.e. the newest messages will appear at top of the display.

Message Ageing

NAVTEX messages become less relevant over time and eventually just clutter the display. In order to reduce the number of obsolete NAVTEX messages that are being displayed, the **NAV6** uses a message 'Age Limit'.

The **NAV6** will hide messages that are older than a certain pre-settable age limit. These messages are still stored in the **NAV6plus** memory for a considerable time after they have been removed from the display and can still be displayed if necessary by increasing the message age limit setting.

```
Setup Menu

NAVTEX [Profile 5]
   518 Station Filter
   518 Message Filter
   490 Station Filter
   490 Message Filter
   Settings
   Monitor NAVTEX
```

```
NAVTEX Options Page


Display Settings
Font                   Medium
Error Threshold        33 %
Age Limit              3 Days
Alphabet               Latin
Navtex Frequency       Both
```
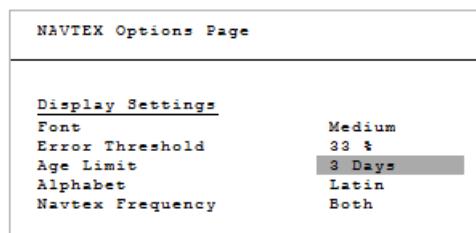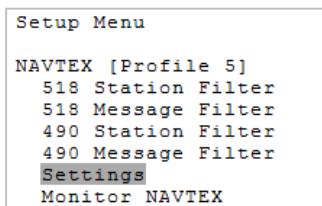
To change the age limit select NAVTEX Settings from the Settings Menu. Select Age Limit using the UP and DOWN keys and the **Change** (or RIGHT) key to select a value. The default setting is three days which is the official time that NAVTEX messages remain valid.

Set a longer age limit or none if you wish to display NAVTEX messages going back over the previous weeks.

NAVTEX View

The NAVTEX View is only available if a receiver is (or has been) connected to the display and the NAVTEX frequency setting on the NAVTEX options page is set to 518kHz, 490kHz or Both.

Viewing NAVTEX Messages

In the NAVTEX View, the display consists of a large area dedicated to displaying NAVTEX messages, with a status bar at the top, and descriptions of the *Softkey* functions at the bottom.

It is possible to scroll up and down the messages line by line, using the UP and DOWN keys. Holding down these keys will increase the scrolls speed incrementally to aid moving through the message store more quickly.

This view can be used for keeping track of new messages as they are received and displayed. Each new message can be accessed by pressing **Next New** (*Softkey 3*) and then marked as read, if required by pressing **Mark Read** (*Softkey 2*).

The **Next New** *Softkey* should be used to move the next new message to the top of the NAVTEX display, where it can be marked as read by pressing **Mark Read**. Note that the message that will be 'marked as read' is indicated in the top left of the status bar. This is particularly useful when the message's header has scrolled off the top of the display area.
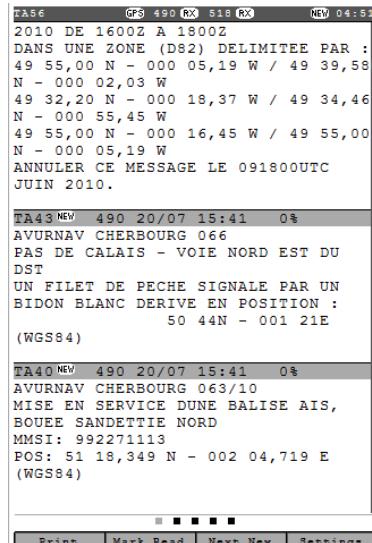
Printing Individual Messages

If enabled the NAVTEX View allows individual messages to be printed (**NAV6*plus*** only). The **Print** *Softkey* is only displayed if the manual print setting is enabled on the NAVTEX Settings Page. Printing is only possible if an external printer or PC is installed as part of the system.

The **Next New** *Softkey* can be used to move the next new message to the top of the NAVTEX display where pressing **Print** will send it to the printer.

Navigation Views

(**NAV6***plus* or **NAV6***repeater* only)

Navigate Views are only available if there is a GPS or other source of NMEA 0183 data connected to the **NAV6***plus* or **NAV6***repeater* NMEA input.

The GPS icon in the status bar at the top of the display will be illuminated only if there is position data available on the NMEA input.

There are five fixed-format Navigate Views and four Custom Views. These can be selected on the **General Settings Page**.

The five fixed views are:

> **Position View**
>
> **Combined View**
>
> **Waypoint View**
>
> **Conning View**
>
> **Log View**

The user configurable views are Custom 1,2,3 and 4.

Note: Data fields that are not available on the NMEA input are indicated by a series of dashes (e.g. ---.--).

Important

The correct magnetic variation must be input at the navigation instruments (e.g. GPS, electronic compass) for the accurate display of COG, set, waypoint bearing and heading.

For the purposes of testing your installation, you may wish to use your GPS's simulator mode to generate data for the **NAV6***plus*. Please check your GPS User Manual to find out whether it transmits valid NMEA data whilst it is in its simulator mode – many GPS's do not set the 'data valid' flag in the NMEA sentences during simulation. As a safety feature, the **NAV6***plus* will ignore any NMEA sentences where the 'data valid' flag is not set.

The **NAV6***plus* also has a built in NMEA simulator mode – please ensure that it is switched OFF in normal operation.

Position View

The Position View shows GPS information (Position, COG and SOG), Depth reading and Distance log using a large font.
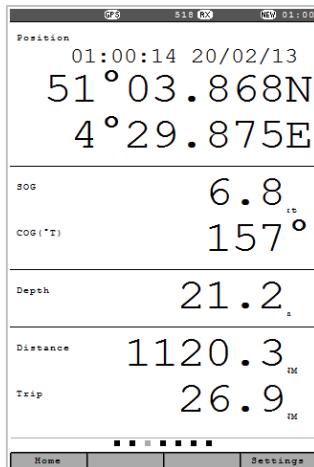
Combined View

The Combined View shows all NMEA input data on one screen using a small font.
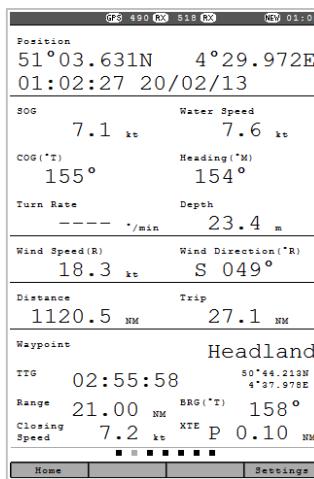
Waypoint View

The Waypoint View shows waypoint navigation information and a graphical "rolling road" display of the boat position and course relative to the course line. The rolling road display can be used to steer the boat along the course line whilst keeping the cross track error within chosen limits (the XTE limit may be changed on the Navigate Settings Page. The Waypoint View shows the waypoint name, waypoint position, time to go (TTG in hours, minutes and seconds), range and bearing to waypoint, closing speed to way point, cross track error and COG and SOG.

The UP and DOWN keys have no function in this View.
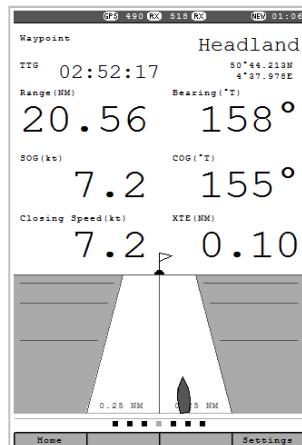
Conning View

The Conning Display is a unique analogue display which shows overlapping vectors for Heading (course through the water), Course Over the Ground (COG), Set (a combination of leeway and tide) and wind. All of these vectors are displayed relative to the current heading, which is displayed in digital form at the top of the screen.

Heading is shown as a single headed arrow; Course Over the Ground (COG) is shown as a double headed arrow, and Set is shown as a triple headed arrow - in the familiar manner. The wind vector displays variable tail patterns according to the strength of the wind. It follows the usual meteorological wind symbol rules: 5 kts per half feather, 10 kts per full feather, 50 kts per triangle. Computed Set and Drift and other related parameters are shown in digital form at the bottom of the screen.
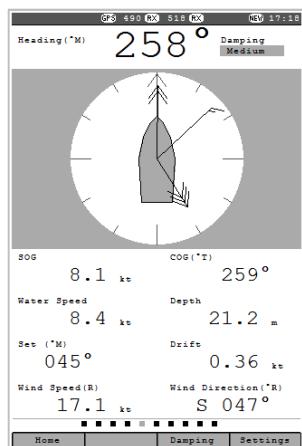
To take into account various sea states, variable damping levels may be selected by pressing **Damping** *Softkey 2*. The currently selected level is shown in the top right hand corner of the display. The damping level can be None, Low, Medium or High. The damping level affects COG, SOG, Heading and Water Speed and Set and Drift readings.

The UP and DOWN keys have no function in this View.

Log View

The UP and DOWN keys allow the log to be scrolled forwards and backwards in time. Use the ◄ and ▶ *Softkeys 2* and *3* to horizontal scroll other LOG data into view.

Tip: consider the Log View to be a large piece of paper. The LCD allowing a smaller view which can be moved up, down, left and right displaying a portion of the paper at any one time

The Log View columns are Position, COG, SOG, Heading, Water Speed, Wind Direction, Wind Speed, Depth and Distance.

Time	Position	COG °T	SOG kt
20/02			
01:00	51°03.884N 004°29.868E	158.6	7.0
19/02			
05:45	51°00.799N 004°31.142E	155.1	7.4
05:30	51°02.390N 004°30.483E	159.3	7.4
05:15	51°03.989N 004°29.826E	157.1	7.4
04:45	51°03.529N 004°30.014E	159.8	7.4
18/02			
05:45	50°49.783N 004°35.686E	155.8	6.9
05:30	50°51.365N 004°35.033E	158.8	6.8
05:15	50°52.958N 004°34.375E	155.0	7.0
05:00	50°54.555N 004°33.716E	157.0	6.8
04:45	50°56.153N 004°33.058E	157.6	7.1
04:30	50°57.751N 004°32.400E	155.8	6.8
04:15	50°59.348N 004°31.740E	159.1	7.3
04:00	51°00.939N 004°31.083E	160.3	7.0
03:45	51°02.533N 004°30.424E	157.5	7.3
15/02			
06:00	50°43.909N 004°35.463E	259.7	8.1
05:45	50°44.209N 004°37.325E	259.1	7.5
05:30	50°45.388N 004°37.494E	156.1	7.4
05:15	50°46.981N 004°36.840E	156.3	7.0
05:00	50°48.576N 004°36.182E	155.0	6.9
04:45	50°50.173N 004°35.525E	158.8	6.8
04:30	50°51.772N 004°34.865E	160.0	7.0
04:15	50°53.347N 004°34.215E	157.6	7.5
04:00	50°54.948N 004°33.555E	157.8	7.3
03:45	50°56.544N 004°32.896E	159.6	7.4
03:30	50°58.143N 004°32.238E	157.8	6.8
03:15	50°59.735N 004°31.580E	158.3	7.4
03:00	51°01.330N 004°30.923E	156.6	6.9
02:45	51°02.926N 004°30.264E	155.1	6.9
14/02			

GPS 490 RX 518 RX NEW 01:12

Home ◄ ▶ Settings
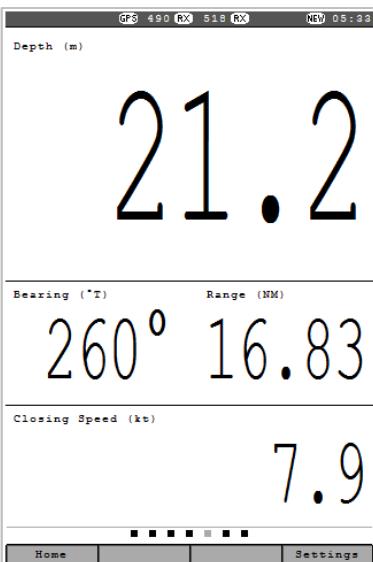
Custom Views

The four Custom Views can be configured to show either 2, 3 or 4 panels (the figure shows a 3 panel view). Each panel can be configured to show different navigation information from a range of options.

See the Customs Views Page under Navigate in the Settings Menu for more details of the available options.

GPS 490 RX 518 RX NEW 05:33

Depth (m)

21.2

Bearing (°T)   Range (NM)

260° 16.83

Closing Speed (kt)

7.9

Home   Settings

Settings Menu

The Settings Menu provides access to all the configurable settings of the **NAV6** so that it may be set up to operate in a way that suits you best.

NAVTEX message display presentation, Navigate data presentation, LCD operation, General settings and the NAVTEX station database are all configured from the Settings Menu.

The Settings Menu is divided into five sections NAVTEX, Navigate, LCD, General and Database.

```
                    GPS 490 RX 518 RX    SAR NEW 13:11

Setup Menu

NAVTEX [Profile 4]
   518 Station Filter
   518 Message Filter
   490 Station Filter
   490 Message Filter
   Settings
   Monitor NAVTEX
Navigate
   Settings
   Custom View
   Monitor NMEA
LCD
   Settings
General
   Settings
Database
   518 Station Names
   490 Station Names
   518 Database Administration
   490 Database Administration




             □ □ □ □ □ □ □ □ □
   Home              Enter    Next Prof.
```
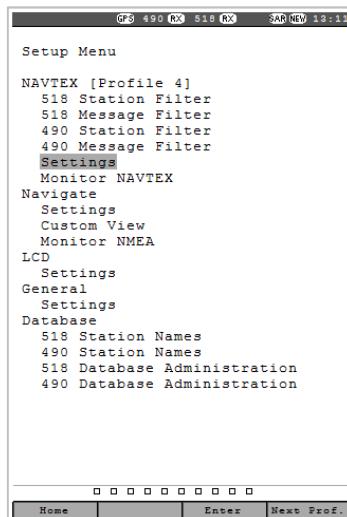
NAVTEX

The NAVTEX section of the Settings Menu contains the options for the storage and display of NAVTEX messages.

NAVTEX Filters

Station and Message Filtering are described in the Filter Profiles section earlier in the user guide see page 11.

NAVTEX Settings

Select NAVTEX Settings to access the NAVTEX Settings Page

This page is used for configuring settings such as Font, Display Mode, Sounds and Printing. Use the UP and DOWN keys to select the setting that you want to change. Use the RIGHT key or ◀ and ▶ *Softkeys 2* and *3* to change the setting.

The following table details each of the settings available on this page.

```
                    GPS 490 RX 518 RX    SAR NEW 13:14
      NAVTEX Settings Page



   Display Settings
   Font                       Medium
   Error Threshold            33 %
   Age Limit                  None
   Alphabet                   Latin
   Navtex Frequency           Both


   Alarm Settings
   New Message Alert          On
   Antenna Alarm              Timed
   SAR Alarm                  Timed


   Advanced Settings
   Display Mode *             Master


   Print Settings
   Auto Print                 On
   Manual Print               Off
   Output Format              Printer


 * Consult manual before changing


   Antenna Type               Dual
   Firmware Version           1.0
   Hardware Revision          1



   Home      ◀        ▶
```

NAVTEX Settings Page

Option	Setting	Notes
Font	**Small**	Display NAVTEX messages using small font
	Medium	Display NAVTEX messages using medium font
	Large	Display NAVTEX messages using large font
Error Threshold	XX %	Percentage character error rate above which messages are not displayed. Note that this setting does not stop messages with an error rate above the threshold from being stored in memory
Alphabet	**Latin**	Latin alphabet used for NAVTEX messages.
	Cyrillic	Latin alphabet with third shift Cyrillic used for NAVTEX messages
Age Limit	None, 1, 2, **3**, 5 Days, 1, 2, 3, 4, 8, 12 Weeks	Maximum age of NAVTEX messages to be displayed. NAVTEX messages older than the age limit are not displayed. When set to None all NAVTEX message are displayed.
NAVTEX Frequency	**None**	No receiver selected. *Tip: useful when using the display only as a NMEA instrument repeater*
	490 kHz	490 kHz only operation
	518 kHz	518 kHz only operation
	Both	490 and 518 kHz operation.
New Message Alert	Off	New message alert off
	On	Audible alarm for new messages
Antenna Alarm	Off	Antenna alarm off
	Timed	Antenna alarms repeated 5 times, unless cancelled
	Repeat	Antenna alarms repeated until cancelled (Press any key to silence the alarm).
SAR Alarm	Off	SAR alarm off
	Timed	SAR alarms repeated 5 times, unless cancelled
	Repeat	SAR alarms repeated until cancelled (Press any key to silence the alarm).
Display Mode	**Master**	Set to master if this is the main display. This display will control the receiver over the receiver data link. Only one display may be set to master.
	Slave	Set to slave if this is a repeater unit. Slave units do not control the receiver and can only monitor the receiver data link.
Auto Print (NAV6*plus* only)	**Off**	Auto printing off
	On	Auto printing on.
		New messages will be printed when received. The Station and Messages Types sent to the printer is controlled by the settings in Profile 5. Note: Profile 5 does not need to be displayed for this process.
Manual Print (NAV6*plus* only)	**Off**	Manual printing off. The NAVTEX View Print *Softkey* is hidden
	On	Manual printing on. The NAVTEX View, Print *Softkey* is enabled
Output Format (NAV6*plus* only)	Data	Formatted for PC. Messages printed in raw format as received.
	Printer	Formatted for printing. Messages printed with print header.
Antenna Type	Dual	Reported by receiver, cannot be changed
Firmware Version	X.X	Reported by receiver, cannot be changed
Hardware Revision	X	Reported by receiver, cannot be changed

Factory settings are shown in **bold**.

Monitor NAVTEX Page

The monitor page shows a split screen view of live 490 and 518 kHz transmissions as they are received.

None of the filtering selected in the various setup pages is applied.

The monitor page displays ALL incoming data regardless of error rate.

The monitor page also shows the low level phasing characters contained within transmissions (shown as ø characters) and transmission errors (shown as * characters).
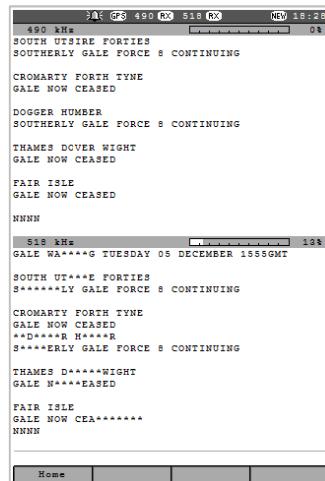
Navigate

The Navigate section of the Settings Menu contains the options for controlling the display of the Navigation Views.

Navigate Settings

(**NAV6plus** and **NAV6repeater** only)

The Settings Menu Navigate section is used for configuring the top level Views that display Instrument Repeater functions. The Navigation Views are described earlier in the guide, this section explain the Navigate Setting Page, the Custom View Settings and NMEA monitoring tool.
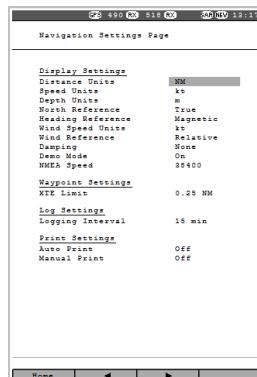
Navigate Settings Page

The Navigate Setting Page controls details of how the Instrument Repeater functions will appear with setting such as units of measurement and reference types.

The table below describes each of the Navigation Settings Page options.

Option	Setting	Notes
Distance Units	**NM**	Nautical Miles
	km	kilometres
	mi	Miles
Speed Units	**Kt**	Knots
	Km/h	Kilometres per hour
	m/s	Metres per second
	mph	Miles per hour
Depth Units	**ft**	Feet
	m	metres
North Reference	**True**	COG and waypoint bearings displayed relative to true North
	Magnetic	COG and waypoint bearings displayed relative to magnetic North
Heading Reference	True	Heading and set displayed relative to true North
	Magnetic	Heading and set displayed relative to magnetic North
Wind Speed Units	**Kt**	Knots
	Km/h	Kilometres per hour
	m/s	Metres per second
	mph	Miles per hour
Wind Reference	**True**	True wind speed and direction displayed
	Relative	Relative wind speed and direction displayed
Damping	**None**, Low, Medium, High	Sets the damping level applied to COG, SOG, Heading, Water Speed, Set and Drift readings.
Demo Mode	**Off**	Real navigation data from the NMEA input is displayed.
	On	Simulated navigation data is displayed. Note: the GPS icon does not appear on the status bar.
NMEA Speed	**4800**	Original NMEA speed
	38400	High Speed NMEA
XTE Limit	0.02 to 1 NM	Set the cross track error limit used on the Waypoint View. Increments in 0.01 NM units.
Log Interval	OFF **15**, 20, 30 mins 1, 2, 3, 4, 6, 12 hours	Logging interval as selected.
Auto Print	**Off**	Auto printing off
	On	Auto printing on. Log data will be printed at the log interval.
Manual Print	**Off**	Manual printing off. The Print softkey on the Navigate Mode, Log View is hidden
	On	Manual printing on. The Print softkey on the Navigate Mode, Log View is enabled

Factory settings are shown in **bold**.

Custom Views Settings

Access the Custom View Settings from the Settings Menu to show settings for the Custom Navigation Views Screens.

Set the format for each user view page to either Off, 2, 3 or 4 panels.

Set the contents of each panel. Panel 1 is displayed at the top and panel 4 is at the bottom of the page.

Use the UP and DOWN keys to select the setting that you wish to edit. Use the ◄ and ► *Softkeys 2* and *3* or RIGHT key to change the setting.

Note: The overall control of which Views are available at the top level and the order they appear is set up on the General Settings Page.


Option	Setting	Notes
Format	Off	Disable the user view page
	2 Panels	Display the user view page with two large panels.
	3 Panels	Display the user view page with one large panel at the top and two small panels at the bottom.
	4 Panels	Display the user view page with four small panels.
Panel n	See right	Choose the data to be displayed in large panels from the following:
		Time, Date, Position, COG, SOG, Heading, Water Speed, Wind Direction, Wind Speed, Set, Drift, Distance, Trip, Depth, Turn Rate, Waypoint, Wpt Position, Range, Bearing, TTG, Closing Spd, XTE.
		Choose the data to be displayed in small panels from the following:
		Time/Date, Latitude, Longitude, Ground, Water, Wind, Current, Odometer, Depth, Turn Rate, Waypoint, Wpt Latitude, Wpt Longitude, Range/Bearing, TTG, Closing Spd, XTE.

Monitor NMEA

The Monitor NMEA page shows a view of live NMEA0183 data received at the NMEA input.

```
                   GPS  490 RX  518 RX       SAR NEW 19:05
$XXDPT,21.4,1.3
$XXMWV,53.8,R,8.8,M,A
$XXMWV,53.8,T,8.8,M,A
$XXRMC,190534,A,5050.655,N,00435.326,E,7.2,16
0.6,040313,2.2,E
$XXRMB,A,0.1,L,Breakwater,Headland,5044.213,N
,00437.978,E,6.97,157.6,7.16,F
$XXVHW,161.6,T,,M,7.37,N,,K
$XXVLW,1134.4,N,41.1,N
$XXDPT,21.4,1.3
$XXMWV,42.5,R,8.7,M,A
$XXMWV,42.5,T,8.7,M,A
$XXRMC,190534,A,5050.653,N,00435.326,E,7.4,15
6.5,040313,2.2,E
$XXRMB,A,0.1,L,Breakwater,Headland,5044.213,N
,00437.978,E,6.96,157.6,7.16,F
$XXVHW,158.3,T,,M,7.60,N,,K
$XXVLW,1134.4,N,41.1,N
$XXDPT,22.5,1.3
$XXMWV,44.4,R,9.0,M,A
$XXMWV,44.4,T,9.0,M,A
$XXRMC,190534,A,5050.651,N,00435.327,E,7.2,15
7.2,040313,2.2,E
$XXRMB,A,0.1,L,Breakwater,Headland,5044.213,N
,00437.978,E,6.96,157.6,7.16,F
$XXVHW,158.2,T,,M,7.52,N,,K
$XXVLW,1134.4,N,41.1,N
$XXDPT,23.4,1.3
$XXMWV,55.2,R,9.0,M,A
$XXMWV,55.2,T,9.0,M,A
$XXRMC,190535,A,5050.650,N,00435.328,E,7.1,15
4.7,040313,2.2,E
$XXRMB,A,0.1,L,Breakwater,Headland,5044.213,N
,00437.978,E,6.96,157.6,7.16,F
$XXVHW,155.4,T,,M,7.44,N,,K

          □ □ □ □ □ □ □ □ □
      Home          Pause
```

The monitor page displays ALL incoming sentences and can be paused by pressing the **Pause** *Softkey*.

LCD

The LCD section of the Settings Menu has one option to access the LCD Settings page.

LCD Settings Page

The LCD Settings Page shows a checker board pattern that can be used to set up the LCD.

LCD contrast is adjusted with the LEFT and RIGHT keys or ◀ and ▶ *Softkeys 2* and *3*.

LCD brightness is adjusted with the UP and DOWN keys.

There is a readout of the LCD backlight temperature towards the bottom of the display. This is internal case temperature, and gives only an approximation to ambient temperature.
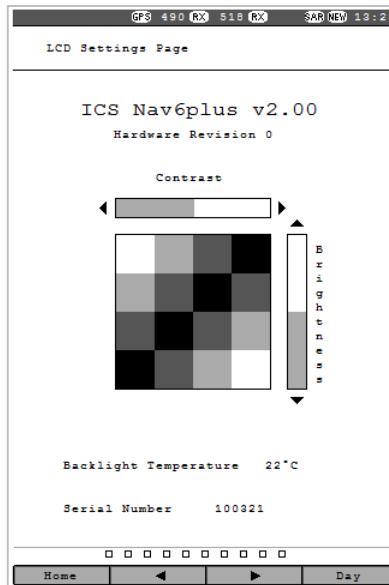
The LCD setting has three modes that are selected using *Softkey 4* Day, Night and Sleep. Different Contrast and Brightness levels may be set for each mode.

In Sleep mode the display will turn off completely after a period of 30 seconds of activity and blink the RED LED every 15 seconds. Pressing any key will temporarily wake the display from sleep mode.

Note: You will need to use the **Home** *Softkey 1 to exit the LCD settings Page.*

Tip: If the LCD is unreadable due to incorrect contrast setting, hold down the Settings (Softkey 4) for more than 2 seconds, in any operating mode, to display the LCD page, set the Day mode and reset the LCD contrast and backlight to 50%. The LCD should now be readable. Adjust the contrast as required.

General

The General section of the settings Menu has one option to access the General Settings Page.

General Settings Page

This view shows general settings for the **NAV6** display such as Date, Time, Sound, Miscellaneous settings and the top level View controls. Use the UP and DOWN keys to select the setting that you wish to edit. Use the ◄ and ► *Softkeys 2* and *3* or RIGHT key to change the setting.

For a **NAV6plus** in the View Settings section, *Softkeys 2* and *3* will change to ▲ and ▼ and may be used to change the order of the top level views. The **Change** *Softkey 4* or RIGHT key should be used to enable of disable the view.

Note: Date and time will be taken from NMEA input data if available. There is no battery backup so date and time will be incorrect when power is switched on unless NMEA data is available or the date and time are manually set. The date and time is used to mark all incoming NAVTEX messages so that they can be sorted by date and time.
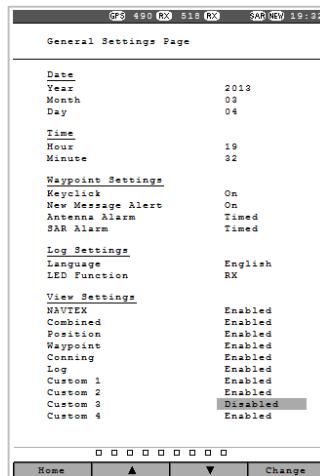
Option	Setting	Notes
Year	YYYY	Year, e.g. 2001
Month	MM	Month, e.g. 03
Day	DD	Day, e.g. 15
Hour	HH	24 hour clock
Minute	mm	Minutes
Keyclick	OFF	No beep on key press
	ON	Beep on key press
New Message	OFF	New message alert off
Alert	**ON**	Audible alarm for new messages
Antenna Alarm	OFF	Antenna alarm off
	Timed	Antenna alarms repeated 5 times, unless cancelled
	Repeated	Antenna alarms repeated until cancelled
SAR Alarm	OFF	SAR alarm off
	Timed	SAR alarms repeated 5 times, unless cancelled
	Repeat	SAR alarms repeated until cancelled
Language	**English**	English language menus
	Francais	French language menus
	Portugues	Portuguese language menus
	Deutsch	German language menus

Option	Setting	Notes
LED Function	OFF	LED always off
	ON	LED as power indicator
	RX	LED as receive indicator
	SAR	LED as SAR indicator
	NEW	LED as New Message indicator
View Settings NAV6*plus* and NAV6*repeater* only	**Enabled** Disabled	This section is used to turn on or off which View Screens are visible and the order in which they appear.

Defaults shown in **bold.**

Alarm Operation

The NAV6 display contains a buzzer that can generate audible alarms for the following conditions:

Option	Notes
New Message Alert	Short beep beep. Not repeated. Indicates reception of a new NAVTEX message.
SAR Alarm	Morse code: Dot dot dot, dash dash dash, dot dot dot.. Repeated every ten seconds. Indicates reception of a message type D, Search And Rescue NAVTEX message.
Antenna Alarm	Short dah dee, dah dee. Repeated every eight seconds. Indicates that there is a fault in the NAVTEX antenna or the cabling; see the Fault Finding section for more details.

The alarms can be enabled or disabled via the General Settings Page. When enabled, the SAR Alarm and Antenna Alarm can be set to repeat 5 times or to repeat continuously.

Tip: When an alarm is active, pressing any of the Softkeys will cancel the alarm. The normal Softkey action will not occur.

Tip: When an alarm is active, an alarm bell icon will flash on the status bar.

LED Function

The red LED found above the *Softkeys*, can be set on the **General Settings Page** to flash when there are unread new messages or SAR messages. This can be useful in a noisy environment where audible alarms cannot be easily heard.

View Settings

(**NAV6*plus*** and **NAV6*repeater*** only)
This section is used to turn on or off which View Screens are visible and the order in which they appear. Use the UP and DOWN keys to select the View and the **Change** *Softkey* or RIGHT key to change the setting. Use the ▲ and ▼ *Softeys* to change order in which the View Screens are displayed.

Printer or Serial Data Output*

If Printer or PC is connected to the Serial Output the **NAV6*plus*** can be set to send individual or new messages as they arrive (see Auto and Manual Print on the NAVTEX Settings Page) to the Serial Output. It can also be configured to output the Navigation Log to the printer. *Note: the Stations and Messages Types sent to the Serial Output in Auto Print Mode are controlled by the Filters in profile 5. Profile 5 does not need to be the one currently selected for Viewing.*

When configured for printing the **NAV6*plus*** functions like a GMDSS paper NAVTEX printer when connected to a suitable serial printer. A suitable serial printer can be purchased from ICS (ICS part number ICS.918.01).

The NAVTEX auto print facility acts like a GMDSS paper NAVTEX printer:

Poor quality messages (error rates over 33%) are not printed.

All new messages are printed when first received.

Only messages not excluded by the print filtering (Profile 5) are printed.

Message repeats are printed each time they are received until they have been received with good quality (error rate of less than 4%).

Once a good quality message has been received, repeats are not printed during the next 72 hours. After 72 hours the message is treated as a new message and printed again.

The Navigation Log auto-print facility prints navigation log entries as they are added to the Navigate Mode, Log View. Each log printout contains time, date, position, COG, SOG, heading, water speed, wind direction and speed, depth and distance. Only fields containing valid data are printed.

Setting up a printer

Follow these steps to setup NAVTEX printing.

Connect the serial printer as described in the Installation section of this guide.

Test the printer installation by enabling manual print in the NAVTEX Settings Page then select a message in the NAVTEX View and press the **Print** *Softkey*.

Enable Auto Print in the NAVTEX Settings Page so that new message are sent to the printer as soon as they are received. Messages sent to the printer are controlled by the selections under Profile 5 in the NAVTEX Settings.

Enable Navigate Auto Print and set the logging interval on the Navigate Options Page to automatically print periodic log data.

Enable Navigate manual print if you want to be able to print the current page of log entries from the navigation log using the **Print** *Softkey* on the Navigate Log View.

Output to A PC or Plotter

The **NAV6***plus* can be setup to output NAVTEX messages to a PC or compatible chart plotter. Setup the **NAV6***plus* as per "Setting up a printer" but with the following exceptions:

Instead of connecting a serial printer, connect the PC or chart plotter.

To test the PC connection, run a terminal application with the serial port set to 4800 baud, 8 data bits, 1 stop bit, no parity and print a NAVTEX message at the **NAV6**.

Set the NAVTEX output format to "Data" in the NAVTEX Settings Page. This formats the NAVTEX messages for processing by chart plotter applications.

Database

The **NAV6** and **NAV6***plus* contain a database of the details of NAVTEX transmitting station from around the world. Each entry contains the Station identifier (a letter from A to X), Its NAVAREA, Station Name, Latitude, Longitude, Range and Operational State.

Station Names Pages

The Station Names Pages determine the names of stations displayed on Station Filter Pages and in NAVTEX message headers.

The figure shows the Station Names Page 518kHz; the 490kHz page is similar.

Use the UP and DOWN keys to select the setting that you wish to edit. Use the ◀ and ▶ *Softkeys 2* and *3* or RIGHT key to change the setting.

On the **NAV6***plus* the Station Name Selection setting allows the user to select between 'GPS' and 'Manual' station selection. If 'GPS' is selected and there is valid position data on the NMEA input, the **NAV6***plus* will automatically select the NAVTEX transmitting station names nearest to the boat's current location for each station letter.

If 'Manual' is selected, then the user can manually select the transmitting station names to be displayed for each station letter.

Note: You may be sailing in NAVAREA II and may manually select station names from NAVAREA II. However it is important to realise that the corresponding station letter in the adjacent NAVAREA's may be closer.
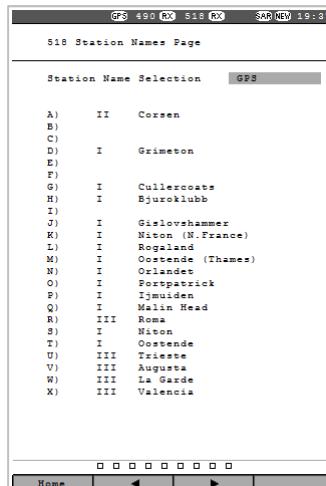
Database Administration Pages

The Database Administration Pages are used to edit the contents of the Station Database.

Use the **Back** *Softkey* to exit the station database setup.

The station database page is divided into two halves. The top half shows a scrolling list of all stations in the database. The bottom half shows details of the current station selected in the station list.

To edit an existing station entry:

Use the UP and DOWN keys to select the station you wish to edit. Use the LEFT and RIGHT keys to jump to the next or previous station letter in the database.
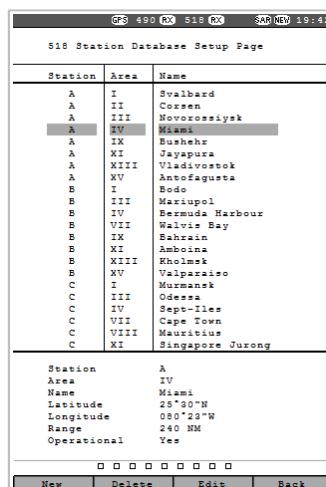
Press the **Edit** *Softkey* to edit the station details at the bottom of the display.

The database entry for a typical station (i.e. 'Niton') is shown right.

Data items are selected using UP and DOWN keys. Data items are changed using LEFT and RIGHT keys.

```
Station        S
Area           I
Name           Niton
Latitude       50°35"N
Longitude      001°18"W
Range          270 NM
Operational    Yes
```

When editing the *Station Name*, use the LEFT and RIGHT keys to change the letters. Use the **Next** *Softkey* to accept the current letter and move the cursor to the right. Use the **Backspace** *Softkey* to delete the current letter and move the cursor to the left.

When editing the *latitude* and *longitude* fields, use the **Next** *Softkey* to select the Degrees, Minutes or Cardinal part of the position. Use the LEFT and RIGHT keys to change the selected item.

When you have finished entering the data, press the **Save** *Softkey* to save and update the database or the **Cancel** *Softkey* to abandon the changes.

```
Station        A
Area           IV
Name           Miami
Latitude       25°30"N
Longitude      080°23"W
Range          240 NM
Operational    Yes

  □ □ □ □ □ □ □ □
Backspace    Next    Save    Cancel
```

Field	Notes
Station	The station letter: A to X
Area	The Nav-Area: I to XVI
Name	The station name as displayed on NAVTEX messages. Up to 17 characters.
Latitude Longitude	The transmitter position. Used to determine the nearest and in-range stations
Range	The stated coverage range of the station in NM. Used to determine in range stations.
Operational	Set to YES when the station becomes operational. Set to NO when the station is declared but not yet operational. When set to NO, the station will be excluded when determining the nearest and in range stations.

To enter a new station:

Press the **New** *Softkey* to create a new database entry. The rules for entering a new station are identical to those described above for editing an existing station. When you have finished entering the data, press the **Save** or **Cancel** *Softkey* as required.

To delete a station:

Use the UP, DOWN, LEFT and RIGHT keys to select the station in the station list that you wish to delete. Press the **Delete** *Softkey*.

Confirm or cancel the deletion by pressing the **Confirm** or **Cancel** *Softkey*.

Installation

Configuration Options

The **NAV6** series NAVTEX System can be configured in a number of ways depending on the Antenna, Receiver and Display options that have been selected. The figures below show examples of various options.

NAV6 Standard

Passive Antenna, **NAV6** Receiver V2 or **NAV6 *e*NAVTEX** Receiver and **NAV6** Standard Display

NAV6*plus*

Passive Antenna, **NAV6 *e*NAVTEX** Receiver and **NAV6*plus*** Display

NAV6*plus* with NAV6*repeater*

Passive Antenna, **NAV6 *e*NAVTEX** Receiver, **NAV6*plus*** and **NAV6*repeater*** Displays

NAV6*plus* with *e*NAVTEX App on Tablet PC.

NAV6 with Active Antenna with PSU/Splitter

NAV6*plus* Serial Printer or Data Connection

Mounting the Display Unit

Choose a location that is **FLAT**, free from excessive heat and vibration, and which is convenient for routing the Display Cable. The display is best viewed when the screen is mounted square on.

The Display Unit has been designed for above or below decks mounting. It can be panel mounted onto a bulkhead, or mounted via a U-bracket (ICS Part Number ICS.6020.00)

Avoid direct sunlight. If this cannot be avoided then protect the unit when not in use.

The Display Unit should be located at least 0.5metres away from any transmitting equipment including mobile phones, GPS antennas, VHF radios, Radar etc.

Surface Mounting the Display Unit

You will need a 104mm (4") hole saw, a 3mm drill for fixing screws and a Phillips head screwdriver.

Follow the instructions:

Choose a flat surface on which to mount the Display Unit.

Use the drilling template supplied to mark out the centres for the 104mm hole and the two 3mm holes.

Drill the holes.

Remove the two screw covers from the Display Unit.

Apply a releasing agent (grease or petroleum jelly) to the rubber seal around the back of the **NAV6**. This will prevent the seal from sticking to the bulkhead surface over time.

Position the **NAV6** over the holes and insert the screws.

Do not over-tighten the screws.

Clip the screw covers in place.

Route the display cable to the location where the Receiver Unit will be installed.

U-bracket Mounting

Please follow the fitting instructions contained within the optional U-bracket mounting kit.

Installing the Receiver Unit

The Receiver Unit is not waterproof and care should be taken to install it where there is no possibility of water ingress.

The Receiver Unit should be located at least 0.5metres away from any other electronic equipment including GPS antennas, Radar etc.

Ideally the receiver unit should be mounted at least 0.5metres from the display unit.

Place the receiver in the desired location at least 0.5metre away from any other electronic equipment. The receiver should be mounted on a vertical surface with the connector at the base of the unit.

Mark out the two mounting holes.

Move the receiver and drill the two mounting holes to suit the No.8 screws provided (the holes size will depend upon what material you are drilling into).

Connecting the Display Unit to the Receiver Unit

The display cable consists of six twisted pairs. These should be connected to the corresponding terminals on the **NAV6** receiver module as shown below:

Twisted Pair	Core Colour		Signal description
RED twisted with BLACK	RED	16	V+ (12V)
	BLACK	15	V- (GND)
BLUE twisted with BLACK	BLUE	10	NMEA A (input)
	BLACK	11	NMEA B (input)
BROWN twisted with BLACK	BROWN	12	PRN Tx
	BLACK		NOT USED
WHITE twisted with BLACK	WHITE	3	DISP B
	BLACK	4	DISP A
YELLOW twisted with BLACK	YELLOW		NOT USED (Aux V+ **Ensure this cannot short**)
	BLACK		NOT USED
GREEN twisted with BLACK	GREEN		NOT USED
	BLACK		NOT USED
Screen	Silver	15	Nominally 0V

The diagram shows the wiring for a typical NAV6 system:

Note: The NMEA GND, NMEA A, NMEA B, PRN Tx and PRN GND are termination positions only and are not used internally by the receiver.

Note: The termination link between terminals 4 and 5 must be fitted for all single display system configurations remove the link if two displays are to be connected.
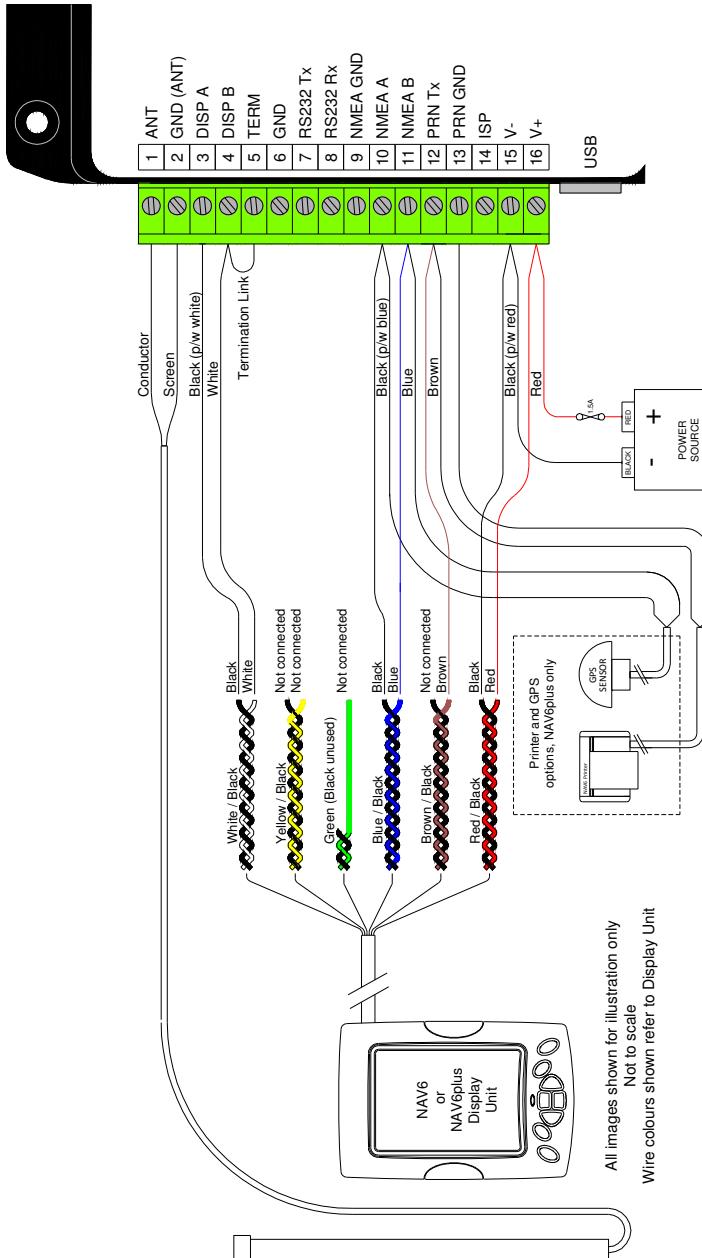
Connecting an antenna to the Receiver Unit

The **NAV6** Series complete systems (except the **NAV6***repeater*) are supplied with a NAVTEX receiver unit and 50ohm Passive NAVTEX Antenna as standard. The ICS Passive NAVTEX Antenna is optimised for maximum sensitivity at the 490 and 518kHz NAVTEX frequency and provides very good rejection of interfering signal outside of these frequencies.

Alternatively ICS can offer the following active antenna options:

Active 50 ohm (Whip)   1metre tall   ICS order code ICS.905.04

Active 50 ohm (White Tube)   1metre tall   ICS order code ICS.905.05

Note: Active antennas will require the use of an external PSU.

Tip: Active antennas offer a wider bandwidth, and when used with a suitable splitter they may be shared with other receivers onboard such as an SSB or weatherfax.

Alternatively you may wish to use a backstay as an antenna or you may wish to run a wire around your headlining in the cabin.

All of these options may be used with the **NAV6**, the suitability of each option will greatly depend upon your own circumstances. For instance, running a wire around the cabin in a steel boat may not be very successful.

Passive 50ohm Antenna (supplied)

ICS supply a passive 50ohm antenna that has been specified for NAVTEX use. An equivalent antenna specified for operation at 490kHz and 518kHz would also be acceptable.
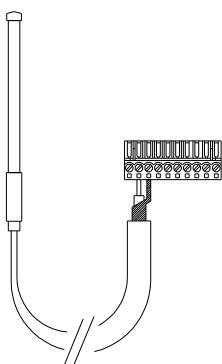
The antenna should be connected to ANT (antenna coax centre) and ANT GND (antenna coax screen) on the receiver unit connector.

CONNECTOR PIN	CONNECTION
1	Antenna coax centre connection
2	Antenna coax screen

Optional - Active 50 ohm Antenna with External PSU Interface Box

ICS recommend using an active 50 ohm antenna that has been specified for NAVTEX use.

A suitable antenna is the ICS.905.04 or ICS.905.05 although an equivalent antenna specified for operation at 490kHz and 518kHz would be acceptable.

Note: The active antenna must be installed with an external PSU interface to power the antenna.
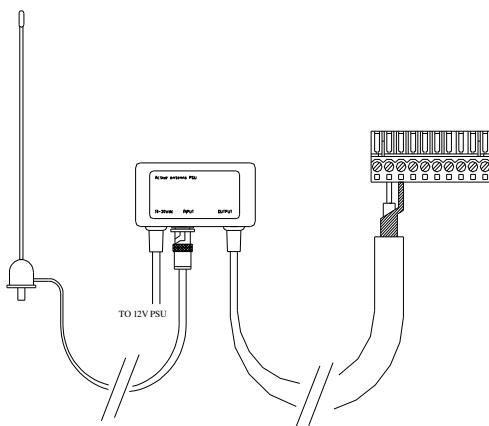
The antenna should be connected to ANT+ (antenna coax centre) and ANT GND (antenna coax screen) on the receiver unit connector.

CONNECTOR PIN	CONNECTION
1	Antenna coax centre connection
2	Antenna coax screen

Alternative - Using a Back Stay as an Antenna

A back stay may be used as an antenna if a suitable 50 ohm matching balun is fitted. ICS Technical Support may be able to offer advice on this point.

The balun 50 ohm output should be connected to ANT+ (balun coax centre) and ANTGND (balun coax screen).

CONNECTOR PIN	CONNECTION
1	Antenna coax centre connection
2	Antenna coax screen

Alternative - Using a Wire in the Cabin as an Antenna

A long wire routed safely out of harm's way (for instance under the headlining in your cabin) may be used as an antenna in some circumstances. ICS Technical Support may be able to offer advice on this point. (Note that this method of connection is not highly recommended, an antenna mounted above decks is the preferred approach).

A suitable 50 ohm matching balun is required.

CONNECTOR PIN	CONNECTION
1	Antenna coax centre connection
2	Antenna coax screen

Grounding

For some installations where local interference is thought to be limiting receiver performance, it may be necessary to ground the screen of the antenna coaxial cable.

This technique is only applicable where a 50 ohm antenna is employed (connected to ANT+ and ANT GND).

Connect the outer screen of the antenna coaxial cable (ANT GND on the receiver unit connector) to a good electrical ground. This can either be a specially installed ground plate, or the keel bolts on a non-encapsulated keel. If electrical isolation is to be maintained then this should be done via a 0.1uF 400V (min) capacitor.

If in doubt consult your dealer

Connecting Power

The **NAV6** should be powered from a nominal 12Vdc switched supply, capable of providing a continuous 350mA.

To allow the unit to be isolated for service, a 1.5A circuit breaker or a 1.5A fuse and switch should switch the power supply.

Use the RED and BLACK twisted pair for connection to the boat's power supply.

Connect the RED wire to boat's positive (12V) supply.

Connect the BLACK wire to negative (0V) supply.

Note that vessels that require isolation may need to install a DC to DC converter (ICS part number 500.09) – if in doubt ask your dealer.

24V vessels should install a 24V / 12V DC to DC converter (ICS part number 500.10). – if in doubt ask your dealer.

Connecting an NMEA Source

Use the BLUE and BLACK twisted pair for connection to the NMEA data source.

Connect the BLUE wire to the NMEA A signal.

Connect the BLACK wire to the NMEA B signal.

(Trouble shooting: Note that NMEA signal terminology can vary between manufacturers – try swapping the BLUE and BLACK wires if the NMEA input does not work initially – no damage will be done)

The **NAV6** is compatible with most sources of NMEA0183 data such as a GPS receiver or adapter boxes supplied for use with networked instrument systems. Please note that you may need to program the source of NMEA data to send the correct sentences in the correct format. You may also need to purchase an NMEA adapter box for your instrument system. Should you be uncertain of your abilities in this area, you are strongly advised to seek the services of a qualified marine electronics installer.

Note: We do not guarantee compatibility with all GPS receivers or all instrument systems. However, this can normally be achieved for most systems by a skilled installer. For notes on achieving compatibility with various systems, see the **NAV6** FAQ section on our web site: www.icselectronics.co.uk

The **NAV6***plus* uses NMEA data for the following:

To synchronise its internal clock with UTC time.

To display a wide variety of NMEA data in a selection of formats (see Appendix III for the NMEA sentences supported).

To automatically filter the message display to show either messages from only the nearest NAVTEX transmitting station, or all stations that are currently within range.

Connecting the Programming Signal

The programming signal (GREEN and BLACK twisted pair) is not required for normal operation and should be left unconnected.

Connecting a PC, Printer or Plotter

The following equipment with RS232 serial data connection may be connected to the **NAV6**:

A PC (via ICS Cable option ICS.6020.09).

Or a printer or chart plotter (via ICS Cable option ICS.6020.10).

The PC and printer serial port should be set to 4800 baud, 8 data bits, no parity, 1 stop bit, and no flow control. A terminal emulator program, such as HyperTerminal, can be used to monitor the data output.

If you wish to make up your own PC interface cable please follow the diagram below
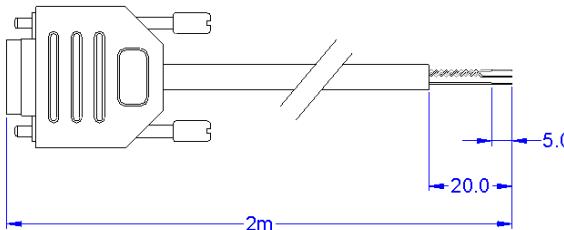
ALL DIMENSIONS IN mm UNLESS INDICATED OTHERWISE

9 way "D" type female pin number	Signal	PC/Printer Interface Cable Core Colour*	NAV6 Display Cable Colour (connection via terminal block)
1	No connection	-	-
2	PRN Tx	Brown	Brown
3	No connection		
4	No connection	-	-
5	GND	Black	Black (Paired with red)
6	No connection	-	-
7	No connection	-	-
8	No connection	-	-
9	No connection	-	-

*Note that the PC Interface Cable core colours shown above may differ if you make your own cable.

Connecting Multiple Display Units

The **NAV6** system may be configured to allow connection of two Display Units.

Note: The termination link between terminals 4 and 5 must be fitted for all single display system configurations remove the link if two displays are to be connected.

In the NAVTEX Setting Page set one of the displays **Display Mode** setting to **Master** and set the other display to **Slave**.

Connecting a Notebook or Tablet PC

Both the **NAV6 Receiver V2** and the **NAV6 *e*NAVTEX Receiver** include a type B USB connector for connecting to a Notebook or Tablet PC.

The USB interface on the NAV6 Receiver V2 is only used for software updates of the receiver. For systems with a V2 display can also update the display software and NAVTEX database.

The USB interface on the **NAV6 *e*NAVTEX Receiver** is also used for updates and can also be used with the **NAV6 *e*NAVTEX App** for displaying NAVTEX on a Notebook, PC or Tablet computer.
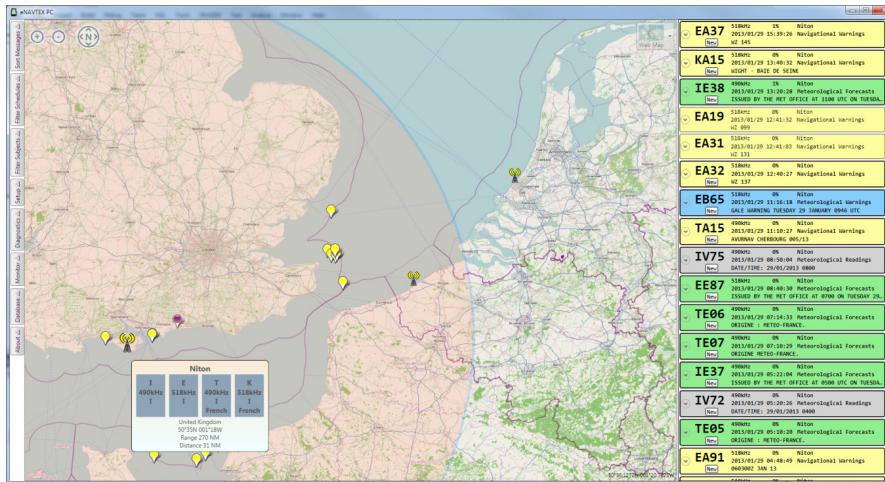
See the ICS website www.icselectronics.co.uk/navtex for more information.

Testing The NAV6 After Installation

Carefully check all connections before applying power.

Switch on the power supply by closing the 1.5A circuit breaker or power panel switch.

Check that the red LED illuminates for approximately 8 seconds and then goes out and the start-up page appears on the **NAV6** display. The start-up progress bar at the bottom of the page will disappear when the system is ready to use.

Press any key to show the next screen.

Check that the receiver is working. Check that both the '490' and the '518' icon appear on the status line at the top of the NAVTEX display.

If the correct icons do not appear, then switch off the power supply and check the receiver data and power connections; check that you have not swapped the receiver DATA A and DATA B wires.

Check that the NMEA input is working. When the display is receiving GPS data the 'GPS' icon will appear on the status line at the top of the NAVTEX display. If the icon does not appear, ensure that the NMEA source is operating and check the NMEA data connections; you may have to swap the NMEA DATA A and DATA B wires.

```
              LEISURE


    Model               Nav6plus

    Serial Number       100321
    Firmware Version    2.00
    Hardware Revision   1


    ICS Electronics Limited
    Unit V, Rudford Industrial Est.
    Ford, Arundel
    West Sussex
    BN18 0BF
    United Kingdom
```
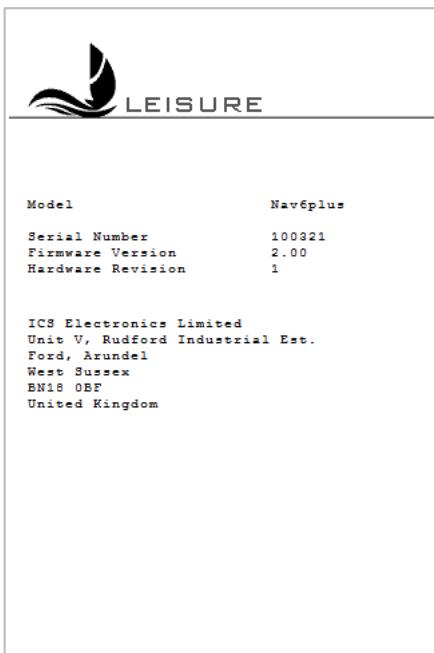
NAV6 Series Start-up Screen

Maintenance and TroubleShooting

Cleaning

The **NAV6** NAVTEX System may be cleaned when necessary by wiping with a cloth dampened with fresh water. Do not use solvents.

Fault Finding

Fault	Possible cause
LCD blank, RED LED On	Green wire connected to 12V
	Disconnect green wire – it should not be connected other than for programming
LCD blank, RED LED off	No power
	Check that 12V is connected to RED wire and 0V to its BLACK pair
RED LED flashing with a period of 2 seconds. Display not operating.	Low voltage
	There is insufficient voltage supplying the display
RED LED flashing with a period of 15 seconds. Display not operating.	Sleep Mode
	Press any key to activate the display
No NAVTEX messages received	Check for SIG or ERR on status line; see below. Check siting of antenna
SIG on status line (signal fault)	If this symbol appears for short periods – don't worry – it's caused by one or more NAVTEX stations transmitting carrier but no modulation, or by local interference.
	If this symbol persists then you may have a receiver error or interference from nearby equipment.
	Check for possible causes. Identify the local source of interference by turning off items of equipment (e.g. battery charger) until the SIG indicator is cleared
ERR on status line (communications error)	No power to Receiver
	No communications to Receiver
	Check connections to receiver. Check for 12V between YELLOW wire and its BLACK pair
	Display Mode set to "Slave"
	Always set the 'Display Mode' to "Master" in single display systems.
	Two or more master displays connected to a receiver
	Set the 'Display Mode' on one display to master and set all other displays to slave
No GPS indicator on status line	No NMEA data on NMEA input.
	Check the NMEA data connections.
	Check that the GPS unit is switched on.
	Check that the GPS unit is set to output compatible NMEA sentences (see Appendix III: NMEA Sentences Supported).

Antenna Fault Finding

ANTENNA - general

Check the cable between the NAVTEX antenna and the **NAV6**, ensure that it is not damaged. NAVTEX antenna must be mounted in an elevated position clear of obstructions

ACTIVE ANTENNA

Check that power is correctly applied to the centre of the coax cable. The power must be supplied from an external interface box.

Software Upgrade

The **NAV6** has FLASH memory based software. This allows the **NAV6** to be upgraded when new software releases are developed. Please check our website www.icselectronics.co.uk for information on new releases.

Fuses

The **NAV6** display and receiver have built-in resettable fuses on the 12V inputs. This fuse will trip if the unit due to a fault condition draws excessive currents. Power must be disconnected from the unit for 10 seconds in order for a fuse to reset.

Warranty

ICS Electronics Ltd warrants to the original end-user that this product will be free from defects in materials and workmanship for a period of one year from the date of purchase. During the warranty period, and upon proof of purchase, the product will be repaired or replaced (with the same or a similar model, which may be a refurbished model) at ICS Electronics' option, without charge for either parts or labour. For warranty repair, the unit must be returned, carriage pre-paid, to the ICS Electronics Ltd. dealer from whom it was first purchased. This limited warranty shall not apply if the product is modified, tampered with, misused, subjected to abnormal working conditions (including, but not limited to lightning and immersion in water) and use with power supplies and other options not specifically recommended by ICS Electronics Ltd.

Please contact us for further details of our warranty repair procedure.

Glossary

COG   Course Over Ground

GMDSS   Global Maritime Distress and Safety System

IMO   International Maritime Organisation

NMEA   National Marine Electronics Association

RS485   Serial data communication interface

RS232   Serial data communication interface

SAR   Search and Rescue

SOG   Speed Over Ground

SOLAS   Safety of Life at Sea

TTG   Time To Go

XTE   Cross Track Error

Optional Extras

NAV6 Options and Accessories

Part No.	Description
ICS.6020.00	NAV6 U Mounting Bracket
ICS.6020.27	Antenna Extension Cable 10m (Coax)
ICS.6020.28	Antenna Extension Cable 30m (Coax)
ICS.903.03	Antenna Mount Nylon Pushpit Rail (1"-14)
ICS.905.07	Antenna PSU Single Output (for Active Antennas)
ICS.6020.09	NAV6 Computer Interconnect lead (RS232)
ICS.918.01	NAV6 Printer with cable
ICS.6020.10	NAV6 Printer Connection Cable
ICS.500.10	PSU 24V-12V DC to DC Converter
ICS.500.09	PSU 12V-12V DC to DC Isolator
ICS.6020.29	NAV6 Screw Covers (Black)
MAN03030	Printed NAV6 User Manual

Software Upgrades and Programming Leads

Part No.	Description
ICS.6020.30	NAV6 Display USB/Serial Programming Lead
ICS.6050.01	NAV6 Standard Display to NAV6 Standard V2 Display
ICS.6050.02	NAV6plus Display to NAV6plus Display V2
ICS.6050.03	NAV6 Standard Display to NAV6plus Display V2
ICS.6050.04	NAV6 Standard Display V2 to NAV6plus Display V2
ICS.6050.05	NAV6 Rx V2 to NAV6 eNAVTEX Rx
ICS.6050.00	NAV6 eNAVTEX PC App

For further details, or to order, please contact your dealer.

Specification

Approval Standards

Meets the EMC requirements of IEC 60945

Power

Voltage range	10.8V to 15.6V
Consumption (Typical)	
Backlight full	310 mA (3.8 W at 12V)
Backlight off	165 mA (2.0 W at 12V)
Sleep mode	115 mA (1.4 W at 12V)

Display Unit

Operating Temperature Range	0 to +50degC
Storage Temperature Range	-20 to +55degC
Humidity	0 to 95%
Mounting	Above or below decks
Weight (without cable)	445 g (approx.)
Power	10.8V to 15.6V

Splash-proof

Message Storage

Sufficient non-volatile storage for 3 days transmissions under normal operating conditions. Normally much longer than 3 days of storage will be achieved

NMEA Input Interface Specification (**NAV6***plus* and **NAV6***repeater* only)

The unit meets the electrical requirements of NMEA 0183

Display Unit Features

1/2vga (480x320 pixels) monochrome LCD with 4 grey levels

32 step CCFL backlighting of LCD

128 step contrast adjustment of LCD

LED backlighting for keyboard

RS485 serial I/O port to receiver

NMEA input

RS232 printer output

Piezo buzzer for audible alarms

Internal temperature sensor

Non volatile memory

Receiver Module

Power Requirements   12V at 170mA
Antenna input   50ohm
Weight   300g
Physical Dimensions
Height 180mm, Width 122mm, Depth 36mm

Mounting
Bulkhead mounting via two self-tapping screws (supplied)
Connection
All connections made by screw terminal (with the exception of the PC USB connection)
Environmental
Not for outside use
Unit must be mounted below decks in a suitable dry location
Receive Frequency
490kHz and 518kHz

Antenna- Passive

Length   0.5m (1.5ft)
Weight   1kg
Bottom Diameter   28mm
Fittings   1"-14 threads female
Structure   Epoxy Fibreglass
Ferrule   Chrome Plated Brass
Base Torsion Force   5N at max Wind Speed
Frequency   490-518kHz
Impedance   50 ohm
Gain   -3db half wave dipole
Polarization   Vertical
Lighting Protection   DC Ground

Appendix I: NAVTEX Station Database

The **NAV6** and **NAV6***plus* Display unit include a pre-programmed NAVTEX station database.

For information purposes only. ICS do not accept any liability for this information; always check with the local NAVTEX provider for the latest NAVTEX information.

Additional information on changes the list of NAVTEX transmitting station may be found on our website at www.icselectronics.co.uk.

Appendix II: Message Type Indicators

NAVTEX broadcasts use following message type letter:

A	Navigational warnings
B	Meteorological warnings
C	Ice reports
D	Search and rescue information, and pirate warnings
E	Meteorological forecasts
F	Pilot service messages
G	DECCA messages
H	LORAN messages
I	OMEGA messages (Note: OMEGA has been discontinued)
J	SATNAV messages (i.e. GPS or GLONASS)
L	Navigational warnings - additional to letter A
V	Notice to Fishermen (U.S. only)
W	Environmental (U.S. only)
X	Special services - allocation by IMO NAVTEX Panel
Y	Special services - allocation by IMO NAVTEX Panel
Z	No message on hand

Appendix III: NMEA Sentences Supported

Data Item	Taken from NMEA Sentences
Time	RMC GGA GLL ZDA
Date	RMC ZDA
Lat/Long	RMC GGA GLL
Heading (True)	*HDT *HDG VHW
Heading (Magnetic)	*HDG VHW
Water Speed	*VBW VHW
Course (True)	RMC VTG
Course (Magnetic)	RMC VTG
Ground Speed	RMC *VBW VTG
Wind Speed	*MWV #VWR #VWT
Wind Angle	*MWV #VWR #VWT
Distance	VLW
Trip	VLW
Depth	*DPT DBT
Rate Of Turn	*ROT
Waypoint	RMB BWC BWR APB
Name	RMB BWC BWR
Lat/Long	ETA RMB ZTG
Range	RMB BWC BWR
Closing Speed	RMB WCV
Bearing (True)	RMB BWC BWR APB
Bearing (Magnetic)	BWC BWR APB
Cross Track Error	RMB XTE APB

* SOLAS required sentence

Obsolete

Note that if a data item is present in more than one sentence, then it is taken from the leftmost sentence in the table entry above.

i.e. if Range is available in BWC and BWR, it will be taken from BWC.