

Nav6 Printer User Guide

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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

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Congratulations on purchasing this superb **ICS Electronics Ltd** product. 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.

QUICK START

You will find this product extremely easy to operate.

- Follow the installation guidelines
- Re-check the cable connections
- Apply power
- Set up the Nav6 display product to enable printing
- Switch on the Nav6 Printer
- You can now print Navtex messages and/or NMEA data.

INTRODUCTION

Your Nav6 Printer can be used in conjunction with a Nav6 or Nav6plus Navtex receiving system, or with a Nav6 Repeater to provide a permanent record of Navtex messages, NMEA data or ship's log, as appropriate.

The following three paragraphs relate to the three Nav6 display products (Nav6, Nav6plus & Nav6 Repeater) - read the one that applies to your Nav6 system for an overview of what you can print.

Nav6 Navtex System

In a Nav6 Navtex system the Nav6 Printer can be used to print messages from pre-selected stations and/or message types automatically, as they are received.

The Nav6 Printer can also be used to print manually-selected messages whenever they are required (for forwarding on to crew members etc).

Nav6plus / Nav6applus Navtex System

In a Nav6plus or Nav6applus Navtex system the Nav6 Printer can be used to print messages from pre-selected stations and/or message types automatically, as they are received.

The Nav6 Printer can also be used to print manually-selected messages whenever they are required (for forwarding on to crew members etc).

If you have an integrated navigation system (which also has a GPS receiver) which is connected to the NMEA input of the Nav6plus, you can print a log at pre-programmed intervals. The information printed may include the following:

- Position
- Course and speed through the water
- Log of distance travelled
- Wind speed and direction
- Depth

The Nav6 Printer can also be used to print the full contents of the Nav6 display NMEA log file at any time, under manual control.

Nav6 Repeater

If you are using the Nav6 Repeater as a large format display for your GPS or integrated navigation system you can print a log at pre-programmed intervals. The information printed may include the following:

- Position
- Course and speed through the water
- Log of distance travelled
- Wind speed and direction
- Depth

The Nav6 Printer can also be used to print the full contents of the Nav6 Repeater NMEA log file at any time, under manual control.

Installation of the Printer Unit

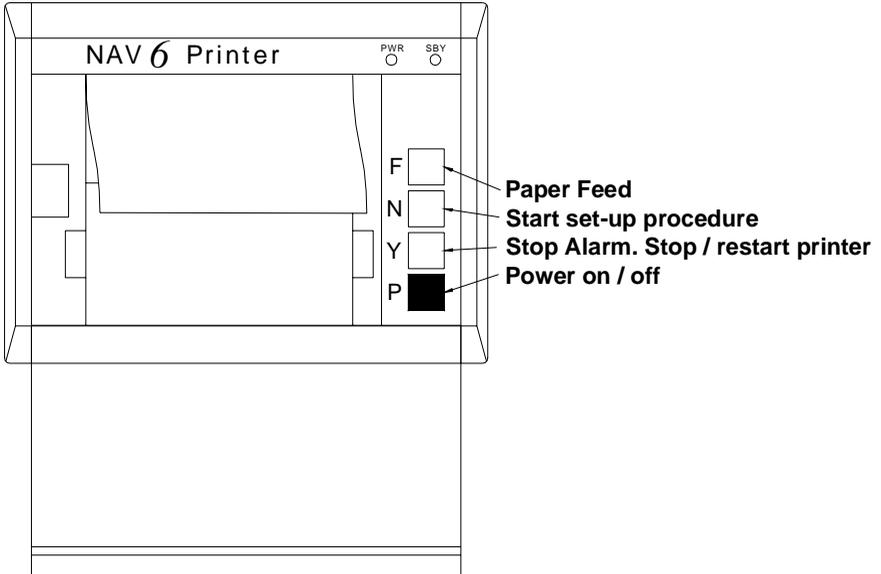
Permanent installation of the Nav6 Printer can be made using the U-bracket provided. Alternatively, the optional FMT-4 flush panel mounting kit may be purchased.

Please read the installation section of this user guide thoroughly before attempting installation of the NAV6 printer.

HOW TO OPERATE YOUR NAV6 PRINTER

Control Buttons

The Nav6 Printer has a small number of control buttons. The control buttons are located under the paper loading door. Push a top corner of the door to release the locking door catch.



Basic Controls

F: Paper Feed

Press and hold the **F** button to feed the paper.

N: Start set-up procedure

Press the **N** button to enter set-up mode.

Y: Stop Alarm. Stop / restart printer

When the printer is on, it can be put into / out of standby by pressing the **Y** button. This can enable print-outs to be paused if required. When in standby mode, the front red 'SBY' LED is not illuminated

P: Power on / off

Once power has been applied, the printer can be switched on and off by pressing the red power **P** button.

Several buttons have second functions. These are used when responding to the 'SET-UP' menu prompts.

LEDs

There are two LEDs along the top of the Nav6 Printer

- PWR ON when power is applied to the printer
- SBY ON when the printer is ready to print

Alarms

The alarm will sound under the following circumstances:

- Paper out
- Low battery (supply is less than 9 volts)

INITIAL OPERATION

- Switch on the Nav6 Printer by apply 12V to its power connections and pressing the red power **[P]** button
- The "PWR" light will illuminate, and the Nav6 Printer will sound one short beep
- The "SBY" light will illuminate
- The printer will perform several line feeds
- The Nav6 Printer is then ready to print

Test the interface between the Nav6 display product and the Nav6 Printer as follows :

- On the Nav6 display product set "manual print" to "On" and the output format to "Printer" (Setup Mode, NAVTEX View, Options Page)
- On the Nav6 display product print a NAVTEX message to the printer by pressing the **[PRINT]** softkey on the NAVTEX Mode, Print View

If the message is not printed then follow the fault finding guide at the end of this manual.

PRINTER SETUP

- Open the paper loading door
- Press the **[N]** button to start the set-up procedure

The current baud rate will be printed.

- Press the **[Y]** button to accept the current setting

The baud rate should be 4800 for Nav6 applications, if you need to change it then :

- Press the **[N]** button

A choice of 6 settings are displayed

- 0) 300 1) 600 2) 1200
- 3) 2400 4) 4800 5) 9600

- Press the **N** button to step through the choices (to select 4800 press the **N** button 4 times)
 - Press the **Y** button to accept the setting
- The current baud rate will be printed.
- Press the **Y** button to accept the current setting

The current linefeed setting will be printed.

- Press the **Y** button to accept the current setting

The linefeed setting should be OFF for Nav6 applications, if you need to change it then :

- Press the **N** button

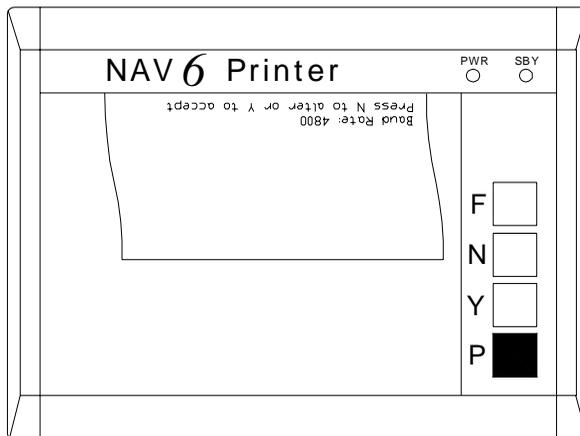
The linefeed setting will toggle & be printed out.

- Press the **Y** button to accept the current setting

or

- Press the **N** button to change the current setting

A "Setup complete" message will be printed.



NAV6 / NAV6PLUS / NAV6 REPEATER SETUP

You will need to set up your Nav6 display to enable printing to the Nav6 Printer. There are four types of print format – any combination of print formats is supported.

Auto Printing NAVTEX messages

- Set NAVTEX “auto print” to “On” (Setup Mode, NAVTEX View, Options Page)
- Set the NAVTEX output format to “Printer” (Setup Mode, NAVTEX View, Options Page)
- Set the NAVTEX print filtering to select which message types from which stations should be printed (Setup Mode, NAVTEX View, Options Page, Print Setup)

Auto printing of NAVTEX messages will now occur when new NAVTEX message transmissions are received from the selected stations

Manual Printing of NAVTEX messages

- Set NAVTEX “manual print” to “On” (Setup Mode, NAVTEX View, Options Page)
- Use the **PRINT** softkey on the Navtex Mode, Print View to print the Navtex message currently at the top of the screen

Auto Printing NMEA data at a fixed interval of time

- Set Navigate “auto print” to “On” and set the required logging interval (Setup Mode, Navigate View, Options Page)

Auto printing of Navigation logs will now occur at the chosen Navigate logging interval.

Manual Printing of the Navigation Log

- Set Navigate “manual print” to “On” 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 Mode, Log View

Paper Saving Tip

When printing Navtex messages and you do not require the full Navtex header (including UTC date & time, the source frequency and station name) then set the output format to “data” rather than “printer”. The Navtex message identifier is still printed but two lines of print are saved for every Navtex message printed. To make use of this feature :

- Set the NAVTEX output format to “Data” (Setup Mode, NAVTEX View, Options Page)

TEARING OFF A PRINT-OUT

Use a **gentle** up or downward and sideways motion to tear the paper at the exit point of the Nav6 Printer case.

DO NOT PULL THE PAPER THROUGH THE PRINTER AS THIS ACTION MAY DAMAGE THE PRINTER MECHANISM

Always use the **F** button to feed the paper clear of the mechanism.

PAPER LOADING

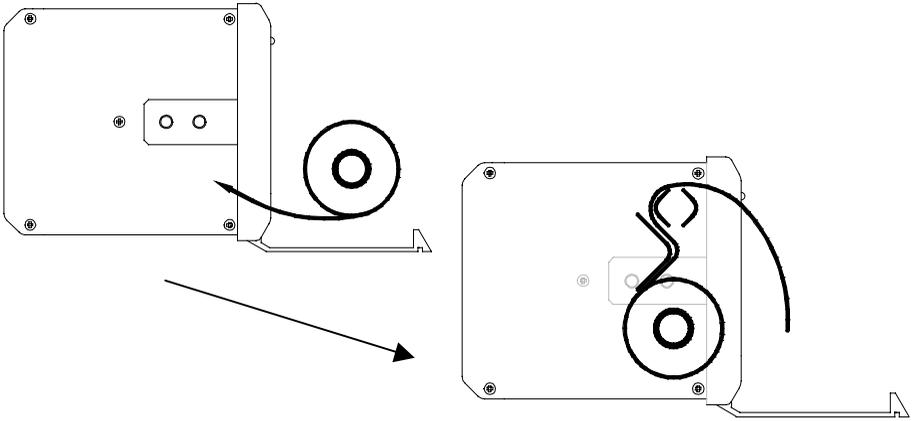
The Nav6 Printer is supplied with one roll of paper fitted. At the end of this paper roll the Nav6 Printer will sound an alarm and printing will stop. Early warning that the paper is about to run out is given by red stripes on the paper.

- To remove the remaining paper, open the paper loading door. Push a top corner of the door to release the locking door catch
- Tear off the paper where it enters the printer mechanism
- Remove the old paper roll
- Remove the plastic spindle from inside the paper roll
- Press the **F** button to feed the remaining paper through the printer mechanism

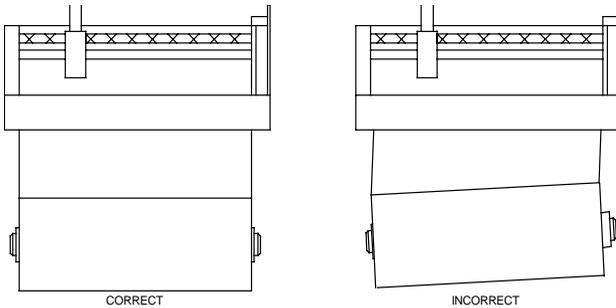
DO NOT PULL THE PAPER THROUGH THE PRINTER AS THIS ACTION MAY DAMAGE THE PRINTER MECHANISM

- Place the new roll onto the spindle with the paper emerging from the top of the roll pointing towards you
- Mount the new roll and spindle onto the roll bracket
- Insert the paper into the slot at the base of the printer mechanism, and feed it in as far as it will go

It is important that the edge of the new paper roll is cut straight and that the paper is dry. Use a pair of scissors to prepare a clean straight paper edge.



- Check that the paper roll is correctly aligned with the print mechanism as shown below



- Press the **F** button until the paper appears through the door exit

New supplies of paper rolls can be ordered from ICS dealers or directly from ICS in the UK.

Tel +44 (0) 1903 731101 Fax +44 (0) 1903 731105

Quote order code: NAVTEX Rolls. This specifies a box of eight rolls of paper.

The paper roll size is 80mm x 20m with a maximum diameter of 42mm and an internal spindle (hole) diameter of 12mm.

INSTALLATION

Mechanical Installation

The U-bracket supplied can be used to mount the Nav6 Printer above or below a horizontal (or almost horizontal) surface. If the Nav6 Printer is to be mounted through a flat panel, it is advised that you purchase the FMT-4 flush mounting kit option.

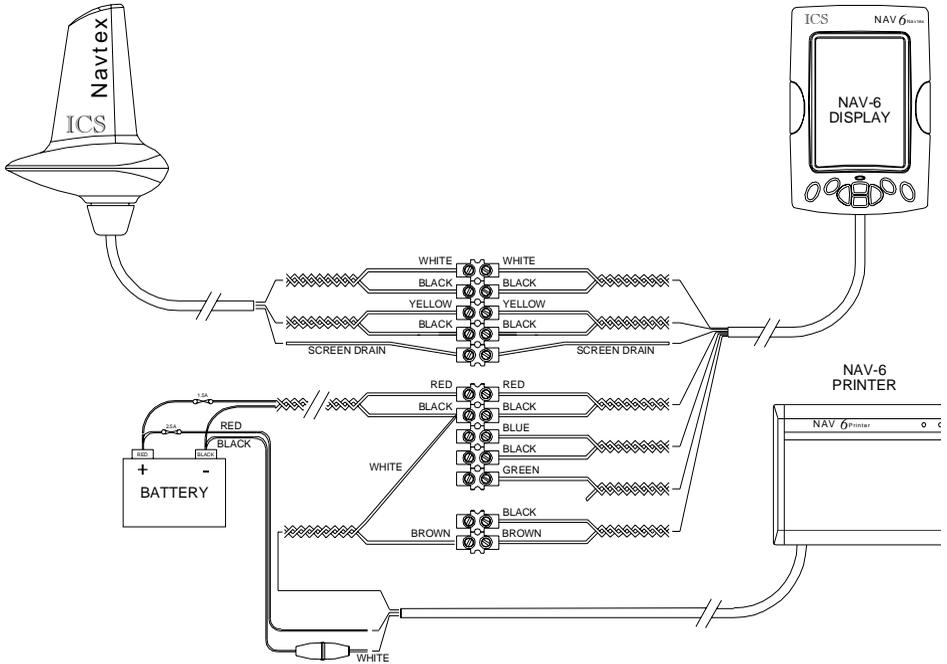
The NAV6 Printer should not be mounted in a position where spray can reach it in a rough sea, or where it is exposed to direct sunlight.

Installation of the Nav6 Printer is straightforward and can be carried out with just a drill and screwdriver.

- Use cable ties to restrain the wiring from any vibration that might weaken it over a prolonged period
- The connecting cables should be restrained from movement by securing them to the rear of the Nav6 Printer or to adjacent woodwork

Electrical Installation

An overview of the Nav6 Printer system connections is shown below:



Connecting to a Power Supply

The Nav6 Printer should be powered from a nominal 12Vdc switched supply, capable of providing a continuous 2A (in addition to the current required by the Nav6 display).

- To allow the unit to be isolated for service, a 2.5A circuit breaker (or a 2.5A fuse and switch) should switch the power supply to the printer. We recommend that the printer is switched separately from the rest of the Nav6 system
- The connection to the boats power supply should be made with the cable supplied, which may be extended if required
- 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
- The connection between the Nav6 Printer and the Nav6 / Nav6plus / Nav6 Repeater should be less than 5 metres
- Carefully check all connections before applying power
- Switch on the power supply by closing the 2.5A circuit breaker or power panel switch

Check that the red 'PWR' LED illuminates, followed shortly by an audible 'beep' and the red 'SBY' LED illuminating

- Note that vessels that require isolation may need to install a DC to DC converter – if in doubt ask your dealer
 - 24V vessels should install the 24V / 12V DC to DC converter
- Testing The Nav6 After Installation

Connects to a Nav6 Display

- Connect the printer interface cable to the Nav6 & wire it into your Nav6 display as follows :
- The connection to the Nav6 Display should be made with the cable supplied
- Use the WHITE and BROWN twisted pair for connection to your Nav6 display (or Nav6hub)
- Connect the WHITE wire to 0V (the BLACK paired with RED on the display cable)
- Connect the BROWN wire to RS232 TX (TX from display)

The Nav6 Printer Cable

The printer cable consists of two twisted pairs:

<i>Twisted Pair</i>	<i>Core Colour</i>	<i>Signal description</i>
BROWN twisted with WHITE	BROWN	RS232 TX
	WHITE	0V input
RED twisted with BLACK	BLACK	0V input
	RED	12V input
Screen	Silver	Nominally 0V

Note : if you have a Nav6hub then follow the wiring instructions contained in the Nav6hub User Manual instead.

Safety Warning

The ICS NAV6 Printer has been designed and manufactured to be completely safe when installed in accordance with these installation instructions.

It is essential that a fuse or circuit breaker be installed in the supply cable. The NAV6 printer is supplied with a DC power cable and in-line 2.5 amp fuse. It is essential that this fuse is included in the finished installation.

If all tests are successfully completed, the following is printed:

- The HEAD RESISTANCE letter is for service use only, and should match the head resistance marked on the printer assembly
- The PAPER SENSOR tests whether the Nav6 Printer can recognise the presence of paper in the roll holder
- CPU and RAM lines test the memory and central processor
- ROM and ROMDATE lines may change in line with product development
- The last three lines of this printout test the printer

A shortened version of the self test is carried out automatically each time the Nav6 Printer is switched on, but the results are not reported unless a fault is detected

MAINTENANCE AND TROUBLE SHOOTING

Cleaning

The Nav6 Printer may be cleaned when necessary by wiping with a cloth dampened with fresh water. Do not use solvents.

Fault Finding Guide

If the Nav6 Printer does not operate as expected, check that:

- The Nav6 Printer is connected to a power supply ($10.8 V_{dc} - 15.6 V_{dc}$) as detailed in the installation section of this user guide. Check that the in-line fuse has not blown
- The connections to the Nav6 display (or to the Nav6hub) are correct as described above

Printer

- If there is no sign of life from the printer, check that a small piece of paper is not jammed under the print head
- If the printer operates but nothing is printed, check that the paper roll is of a type recommended by ICS and that heat sensitive side of the paper is uppermost

Paper Out Alarm

- Check that the paper roll is correctly fitted

Self Test

- Run a system self test, refer to 'self test' section for details

Should any item on the self-check fail, turn the Nav6 Printer off and on again and repeat the system self test. If any item on the self check list fail a second time, contact your supplier for advice or contact the ICS Electronics Technical Helpline for assistance.

Telephone +44 (0)1903 738706

Facsimile +44 (0)1903 738747

Email: support@icselectronics.co.uk

Printer Jam

Mishandling of the paper when installing a new paper roll can sometimes cause the printer to jam.

If the moving printer head is allowed to catch the edge of the paper roll the printer mechanism may stall. This will result in a 'printer fault' being reported by the unit (alarm : 'bleep', 'bleep', 'bleep').

This condition may be avoided by first ensuring that the new paper roll has a flat cleanly cut edge.

- Consult the 'Paper Loading' instructions for details of the paper load procedure

Should a paper jam occur, do not pull on the paper or try to force the printer head sideways as such action may cause damage to the printer and may invalidate your warranty.

Clearing a Paper Jam

As the procedure to clear a 'stalled printer' involves disassembly of the main unit it is recommended that this should only be attempted by authorised service personnel.

In the first instance :

Contact the dealer who supplied your unit for further instructions.

If you are still not satisfied contact the ICS Electronics Technical Helpline for assistance.

Telephone +44 (0)1903 738706

Facsimile +44 (0)1903 738747

Email: support@icselectronics.co.uk

Software Upgrade

From time to time software upgrades may be available. Please check our website for information on new releases.

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.

PACKING LIST AND OPTIONS

Packing List

For the Nav6 Printer contents – please see the packing list enclosed.

Options

The following Nav6 Printer ancillary parts can be purchased:

Option	<i>ICS Part Number</i>
NAV-PSX: Mains/battery auto standby power unit (220/110V AC and 24V DC input with 13.8V DC output)	913.07
FMT-4: Flush panel mounting kit	913.19
NAV-ROLLS: Box of eight paper rolls	913.13

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Fax +44 (0) 1903 731105

Quote order code: NAVTEX Rolls. This specifies a box of eight rolls of paper.

The paper roll size is 80mm x 20m with a maximum diameter of 42mm and an internal spindle (hole) diameter of 12mm.

Specifications may be changed without notice.

Nav6 Printer Connections

Should you need to make up a new interface cable for the Nav6 Printer, the connections should be :

Pin	Function
1	Not used
2	Screen
3	Not used
4	Not used
5	Serial B (negative)
6	Serial A (positive)
7	0V input
8	12V input
9	Not used
10	Not used

- The label on the rear of the Nav6 Printer identifies each connection.
- Pin 1 is located closest to the edge of the Nav6 Printer case.
- The power supply input should be within the range 10.8 – 15.6Vdc.

SPECIFICATIONS

Approval Standards

tba

Power

Voltage range	10.8V to 15.6V
Consumption (Typical)	
Standby	125mA (1.5 W at 12V)
Printing	210 mA (2.5 W at 12V)

Printer Unit

Operating Temperature Range	0 to +40degC
Storage Temperature Range	-20 to +55degC
Humidity	0 to 95%
Mounting	Below decks
Weight (without cable)	1200 g (approx.)

Printer Specification

Type	Thermal, 40 chars per line
Character Matrix	7 x 5
Paper Roll	80mm wide x 20m long
Paper Out	Audible alarm
Front Panel	Four push-button switches located under the paper load door

Controls

Power ON/OFF

Paper feed

Two menu set up keys

Interface Parameters

serial RS232 compatible

8 data bits

1 stop bit

No parity

Baud rate 4800

Auto Linefeed

Selectable (Default : OFF)

Rear Connections

10 way plug in connector

Alarms

Paper Out

Low battery supply < 9vdc

Mounting

Shelf/bulkhead

FMT-4 panel mount option