HIGH FREQUENCY GPS

Product # 90-60-397-000

USER MANUAL AND INSTALLATION GUIDE

REV 2

nke MARINE ELECTRONICS

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Content

1 OPERATION

1.1 Introduction

Thank you for purchasing the **nke *High Frequency* GPS**.

The **nke *High Frequency* GPS,** WAAS/EGNOS enabled (differential system which enhances the accuracy of GPS), is connected directly to the Topline bus and delivers data at high frequency, up to 10Hz.

The NMEA output can be set up. Data is exported at 10Hz in NMEA format, and is compatible with the nke Processor.

An external alarm output allows a « mooring alarm » function.

IMPORTANT

Please take time to read this manual carefully before you start installation.

Any connection to the ***TOPLINE bus*** must be performed through the specific interface box # 90-60-417 and <u>only</u> with the ***TOPLINE bus*** cable # 20-61-001.

1.2 System configuration

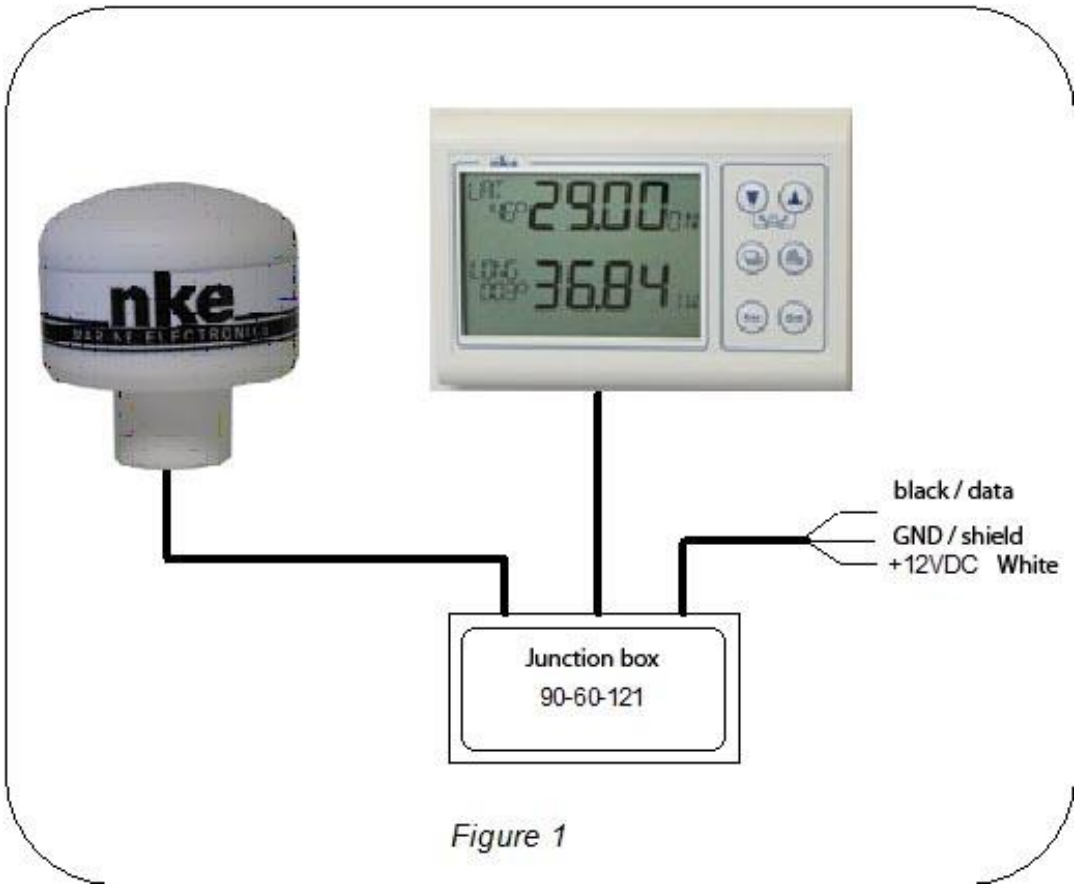

Figure 1

1.3 Technical specification

- Cold start : 29 seconds (Time To First Fix),
- Hot start : 25 seconds (Time To First Fix),
- Sensibility : -165dbm (tracking),
- Geodetic system : WGS84,
- Compatibility : WAAS/EGNOS/MSAS
- Max acquisition rate : 20Hz,
- Positioning accuracy : 2,5m CEP
- Protocol : 1 Topline + 1 NMEA0183-HS (38400 bauds)
- Max consumption : 600mW
- Power supply : 9V to 33Volts (12 volts via Topline bus)
- Cable : 10m
- Protection : IP67
- Operating temperature : -10° à +50°
- NMEA version : 3.01
- Weight : 500g

1.4 List of channels displayed

When the **nke *High Frequency* GPS** is connected to the ***Topline bus***, the following channels are created on your system.

CHANNEL	DISPLAY	UNITS
Latitude	LAT	Degrees
Longitude	LONG	Degrees
Course over ground	COG	Degrees
Speed over ground	SOG	Knots
Time	TIME	Hours/minutes/seconds
Date	DATE	Day/month/year
Magnetic variation	Mag Var	Degrees

Please note: The Latitude and Longitude channels cannot be displayed on the Gyrographic display.

The Magnetic Variation channel is available to display only on the Gyrographic display.

In case the satellite fix is lost, the system keeps the last known data live on the ***Topline bus*** for 20 seconds.

When the system is switched on the error message « Fail » will be displayed as long as the **nke *High Frequency* GPS** has not acquired a satellite fix.

1.5 Damping the channels

The channels « SOG » and « COG » allow damping to be applied to the value displayed.

The damping level controls the rate at which the displayed value is updated.
Adjustment may be required to the Speed Over Ground channel according to the sea conditions to stabilise the the value displayed.

The damping value ranges from **1** to **32,** with **8** as the default value for SOG and **2** for GOG. The lower the value, the faster the value displayed is updated.

The maintenance software Toplink and the Multigraphic (firmware ≥ V1.7) can be used to adjust this setting.

1.6 Processor compatibility

When a HR or REGATTA processor is installed in a system, the **nke *High Frequency* GPS** does not broadcast to any channel on the Topline bus. This is to prevent any address conflict. In this specific situation, only the NMEA0183 is active.

1.7 NMEA 183 output

The **nke *High Frequency* GPS** has a NMEA 183 output (yellow wire) that can be set up. This is done via the ***Topline bus*** with the ***Toplink*** software. Your specialist dealer can set this up:

- Baud rate (0 = 4800, 1 = 9600, 2 = 19200, 3 = **38400**, 4 = 57600 or 5 = 115200).

  The Baud rate will determine the NMEA sentences and output frequency.

1.7.1 High Speed rate

The default NMEA 183 output setup complies with the NMEA-HS protocol (38400 bauds) as the table below:

Sentence	Description	Frequency
$GPGGA	GPS Fix Data	10 Hz
$GPGSA	GNSS DOP and Active Satellites	1 Hz
$GPGSV	GNSS Satellites in View	1 Hz
$GPRMC	Recommended Minimum Specific GNSS Data	20 Hz
$GPVTG	Course Over Ground and Ground Speed	1 Hz
$IIXDR	Internal temperature	1 Hz
$IIXDR	Batteries voltage	1 Hz

1.7.2 Low speed frequency

For users who wish to set up the NMEA output at the standard 4800 Baud rate, the frequencies will be limited as shown in the table below:

Sentence	Description	Frequency
$GPGGA	GPS Fix Data	0,5 Hz
$GPGSA	GNSS DOP and Active Satellites	0,5 Hz
$GPRMC	Recommended Minimum Specific GNSS Data	5 Hz
$GPVTG	Course Over Ground and Ground Speed	0,2 Hz
$IIXDR	Internal temperature	0,2 Hz
$IIXDR	Batteries voltage	0,2 Hz

1.8 1PPS output

The green wire is used for the GPS 1PPS output. This output (“1 pulse per second”) allows synchronizing with UTC.

1.9 Audible alarm

An embedded buzzer is used to warn the users about the various working modes the **nke *High Frequency* GPS** antenna is using:

- Satellites search: repeated short bips (at 1Hz)
- 2D fix mode: 2 long and unique bips
- 3D fix mode: 3 long and unique bips

1.10 Magnetic variation

The magnetic variation is calculated by an algorithm from the current GPS position and a data table which is updated once every 5 years

The Magnetic Variation channel is updated every 10 minutes.

1.11 Electromagnetic compatibility

The **nke *High Frequency* GPS** complies with CEM regulation which are compulsory for CE certification. Relevant regulation: NF EN 60945 regarding all navigation systems and marine radio communication.

1.12 1st level trouble shooting

In this section you can find solutions to simple problems which does not require calling a specialist and without loosing time. Please read carefully this manual before calling customer support.

Trouble	Possible causes and solutions
Topline network does not display any GPS data	Please check that the GPS is correctly connected to the nke bus. When starting the system, the **nke *High Frequency* GPS** generates a short audible signal once every second.

If the problem is not solved, please contact your nke dealer.

2 INSTALLATION

2.1 Preparing installation

Choosing the right location for the antenna is very important in order to receive an accurate GPS signal. The **nke *High Frequency* GPS** antenna can be mounted on a pushpit or a specific small mast. Think about the following requirements when choosing the location:

- The **nke *High Frequency* GPS** antenna must be installed in a location free from any objects shielding the horizon. A low location is preferable as this will ensure the best stability for the antenna.
- Choose a location far from other antennas such as radar or VHF to avoid interferences.
- Distance to a compass must exceed 30cm to avoid interference..
- Avoid the radar range.
- The antenna must be as horizontal as possible.
- On a sailing boat, avoid installing on the mast head.
- In order to reduce the noise generated by other magnetic sources such as radar, radio, engine or generators, ensure that cables run more than one meter from other cables.

2.2 Mounting on a small mast or pushpit

The **nke *High Frequency* GPS** is compatible with all standard fittings available on the market: Ø 1'' (2,54cm), 14 TPI (Threads Per Inch).

The wire can output either on the side or the centre of the fitting.

WARNING

During installation, be carefull not to damage the cable. Water protection can be compromised by a dammaged cable causing serious damage to your **nke *High Frequency* GPS**.

2.3 Connection to the nke bus

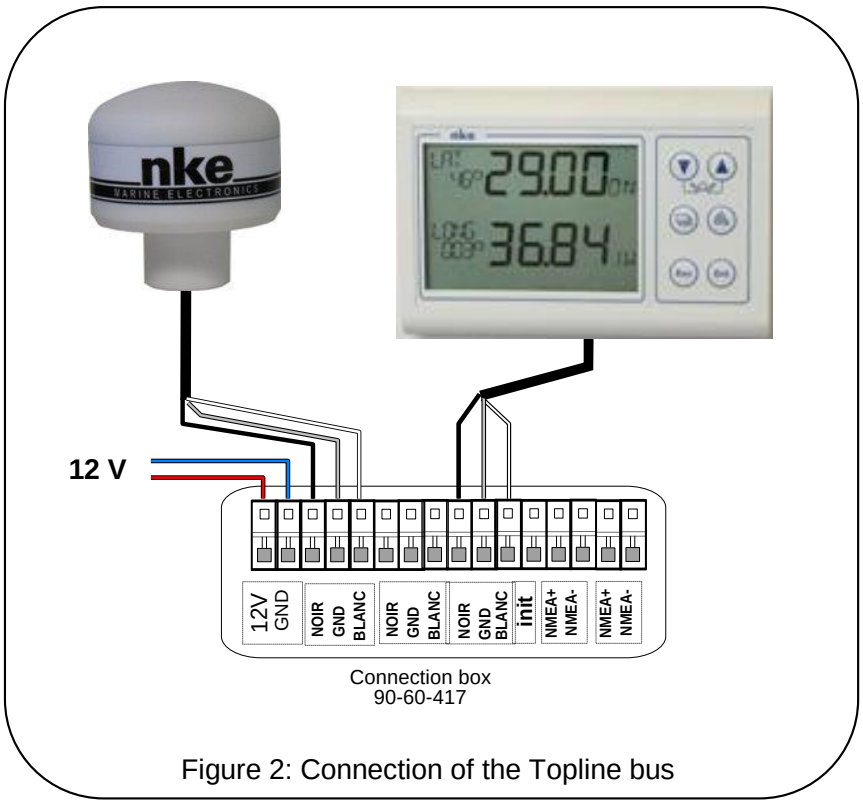

Figure 2: Connection of the Topline bus

2.4 NMEA connection

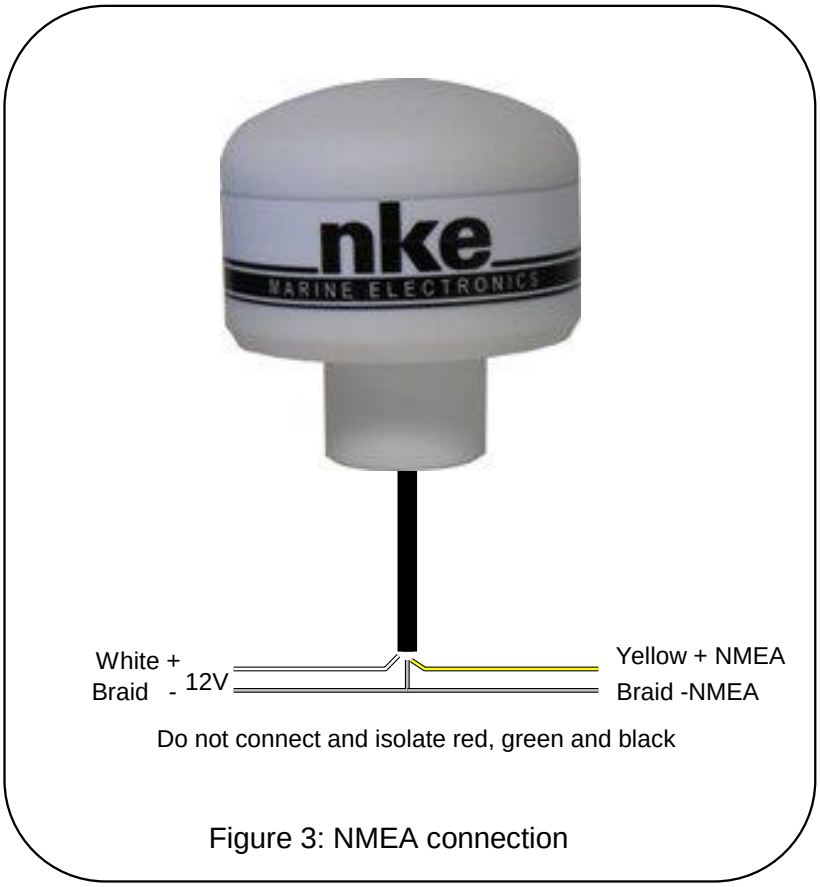

Figure 3: NMEA connection

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