

NMEA 183 output interface

Product reference: 90-60-357



USER GUIDE & INSTALLATION GUIDE

REV 2

Zi de Kerandré – Rue Gutemberg – 56700 – HENNEBONT – FRANCE

www.nke-marine-electronics.com

nke
MARINE ELECTRONICS



+33 297 365 685

TABLE OF CONTENTS

1	PRESENTATION	3
2	INFORMATION CONVERTED BY THE NMEA OUTPUT INTERFACE.....	3
3	FRAMES TRANSMITTED BY THE NMEA OUTPUT INTERFACE	4
4	TECHNICAL SPECIFICATIONS.....	6
5	DIAGNOSTIC FOR 1ST LEVEL TROUBLESHOOTING.....	7
6	INSTALLATION	7
6.1	LIST OF ACCESSORIES	7
6.2	INSTALLATION PRECAUTIONS.....	7
6.3	INSTALLATION OF THE INTERFACE.....	8
6.4	CONNECTING THE NMEA OUTPUT INTERFACE TO A PC AND A GYROGRAPHIC	9
6.5	CONNECTING THE NMEA OUTPUT INTERFACE TO A PC AND A TL25	10
6.6	CONNECTING THE NMEA OUTPUT INTERFACE TO A PC AND AN NMEA INPUT INTERFACE	11
6.7	CONNECTING THE NMEA OUTPUT INTERFACE TO A LISTENING APPARATUS	12

1. PRESENTATION

The **NMEA output interface** allows the conversion of the **Topline** data present on the NMEA data bus, so as to allow the interfacing between your Topline network and the equipment from a different manufacturer.

When the **NMEA output interface** is connected to the COM port of a PC with navigation software, the navigation information (heading and distance to Waypoint, cross-track error) may be resent from the same COM port on the Topline network via a Gyrographic, a TL25 or an NMEA input interface.

The **NMEA 0183** standard is a specification for communication between items of marine equipment and GPS equipment. It is defined, and controlled, by the *National Marine Electronics Association* (www.nmea.org) .

The 0183 standard uses a simple serial protocol to transmit a “phrase” to one or more listening units. An NMEA frame uses every ASCII character.

IMPORTANT

- Read this user guide entirely before starting the installation.
- Any electrical connection on the **TOPLINE bus** must carried out with the terminal box 90-60-417. Only use **TOPLINE bus** cable 20-61-001.

2. INFORMATION CONVERTED BY THE NMEA OUTPUT INTERFACE

Depending on the sensors connected to the **TOPLINE** bus, the following information is converted into NMEA format by the interface:

- Surface speed, daily log, total log
- Compass heading, UT time, UT date, depth
- Water temperature, air temperature
- Atmospheric pressure
- Apparent wind speed and angle
- True wind speed and angle
- True wind direction
- Heading and distance to waypoint
- Cross-track error, bottom speed and heading
- Latitude and longitude
- Mast angle
- Man over board

3. FRAMES TRANSMITTED BY THE NMEA OUTPUT INTERFACE

The frames transmitted by the NMEA interface depend on the sensors connected to the Topline bus.

Surface speed and compass heading:

\$IIVHW,x.x,T,x.x,M,x.x,N,x.x,K*hh

| | | | | | | Surface speed in kph
| | | | | | | Surface speed in knots
| | | | | Magnetic compass heading
| | | | True compass heading

Total log and daily log:

\$IIVLW,x.x,N,x.x,N*hh

| | | | Daily log in miles
| | | Total log in miles

Depth:

\$IIDPT,x.x,x.x,*hh

| | | Sensor offset, >0 = surface transducer distance, >0 = keel transducer distance.
| | Bottom transducer distance

\$IIDBT,x.x,f,x.x,M,,*hh

| | | | Depth in metres
| | | Depth in feet

Water temperature:

\$IIWTW,x.x,C*hh

| | | Temperature in degrees C

Apparent wind angle and speed:

\$IIVWR,x.x,a,x.x,N,x.x,M,x.x,K*hh

| | | | | | | Wind speed in kph
| | | | | | | Wind speed in m/s
| | | | | Wind speed in knots
| | | | Apparent wind angle from 0° to 180°, L=port, R=starboard

True wind direction and speed:

\$IIMWD,x.x,T,x.x,M,x.x,N,x.x,M*hh

| | | | | | | Wind speed in m/s
| | | | | | | Wind speed in knots
| | | | | Wind direction from 0° to 359° magnetic
| | | | Wind direction from 0° to 359° true

\$IIVWT,x.x,a,x.x,N,x.x,M,x.x,K*hh

| | | | | | | Wind speed in kph
| | | | | | Wind speed in m/s
| | | | Wind speed in knots
| | | True wind angle from 0° to 180°, L=port, R=starboard

Air temperature:

\$IIMTA,x.x,C*hh

| | Temperature in degrees C

Heading magnetic:

\$IIHDG,x.x,,,,*hh

| Heading magnetic

\$IIHDM,x.x,M*hh

| | Heading magnetic

Heading true:

\$IIHDT,x.x,T*hh

| | | Heading true

Barometer:

\$IIMMB,x.x,I,x.x,B*hh

| | | | Atmospheric pressure in bars
| | Atmospheric pressure in inches of mercury

Mast angle:

\$IIXDR,A,x.x,D,mastangle,*hh

| Measurement of the mast angle in degrees

UTC time and date:

\$IIZDA, hhmmss.ss,xx,xx,xxxx,*hh

| | | | | Year
| | | | Month
| | | Day
| | Time

Geographical position, latitude and longitude:

\$IIGLL, III.II,a,yyyyy.yy,a, hhmmss.ss, A,A*hh

| | | | | | Statut, A= valid data, V= non valid data
| | | | | | UTC time
| | | | | | Longitude, E/W
| | | | Latitude, N/S

Bottom heading and speed:

\$IIVTG,x.x,T,x.x,M,x.x,N,x.x,K,A*hh

| | | | | | | Bottom speed in kph
| | | | | | | Bottom speed in knots
| | | | | Magnetic bottom heading
| | | True bottom heading

Cross-track error:

\$IIXTE,A,A,x.x,a,N,A*hh

|_Cross-track error in miles, L= left, R= right

Heading and distance to waypoint:

\$IIRMB,A,x.x,a,,,III.II,a,yyyyy.yy,a,x.x,x.x,x.x,A,a*hh

| | | | | | | | | | Speed to WP in knots
| | | | | | | | | | True heading to destination in degrees
| | | | | | | | | | Distance to destination in miles
| | | | | | | | | | Longitude of the WP to destination, E/W
| | | | | | | | | | Latitude of the WP to destination, N/S
| | | | | | | | | | Direction of cross-track error, L/R
| | | | | | | | | | Distance of cross-track error in miles

Man over board:

\$TRWPL,,,,,MOB,*hh

|_Name of the WP

\$PMLR,05,01,02,037,*hh (this phrase launches the “MOB” procedure on compatible MLR GPS).

| | | | | Checksum
| | | | | Data bytes (02= MOB key of the GPS)
| | | | | Number of data bytes (01 = only 1 data byte)
| | | | | Type of phrase (05 = simulating key pressing on the keyboard)

4. TECHNICAL SPECIFICATIONS

- Power supply: 10 to 16VDC.
- Power consumption: 20mA.
- Tightness: IP54.
- Topline bus connection cable: 3 metre length.
- NMEA connection cable fitted with SubD 9-pin connector: 3 metre length.
- Weight: 380g (cable included).
- Operating temperature: -10°C to +50°C.
- Storage temperature: -20°C to +60°C.
- Characteristics of the NMEA frames:

The NMEA frames transmitted by the **NMEA output interface** comply with the NMEA 0183 V2.30 standard.

The format of the frames is: 4800 bauds / 8 bits with bit 7 at 0 / 1 start bit and 1 stop bit. With checksum.

The frames are continuously transmitted, and every frame is transmitted during each cycle.

Upon startup, the **NMEA output interface** sends a proprietary frame that indicates the Firmware's version number and creation date.

5. DIAGNOSTIC FOR 1ST LEVEL TROUBLESHOOTING.

This chapter can help you rapidly resolve minor problems which do not require the intervention of a specialist. Before contacting technical support, please check the troubleshooting table below.

Problem	Possible causes and solutions
The listening apparatus does not display the data from the NMEA output interface .	<p>The bus cable is not or is badly connected to the terminal box : check the plugging and the connection inside the terminal box. Check the state of the cables : they must not show any sign of wear or cut.</p> <p>The listening apparatus is not properly setup: NMEA 4800 bauds, 8 bits of data, 1 stop bit.</p> <p>Check that the NMEA frames transmitted by the NMEA output interface are compatible with the listening apparatus.</p> <p>You can check the frames using a PC with the NMEA output interface connected to a COM port and Windows HyperTerminal program (Start menu/All programs/Accessories/Communications/HyperTerminal). Port parameters: 4800 bits per second, 8 bits of data, no parity, 1 stop bit, no flow control.</p>

If you do not manage to solve the problem, please contact your distributor.

6. INSTALLATION

6.1 List of accessories

- TOPLINE Terminal box : 90-60-121

6.2 Installation precautions

The housing of the **NMEA output interface** is waterproof against water spray. Install the housing in a location that is unlikely to get flooded.

6.3 Installation of the interface

- Fix the housing using Ø4 screws

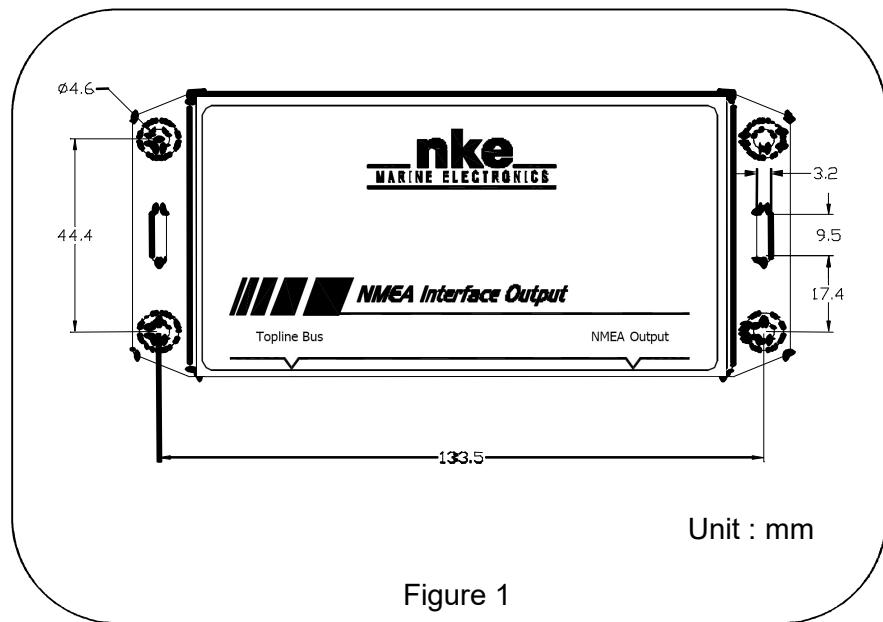


Figure 1

CAUTION:

- Connecting the **NMEA output interface** must be carried out with the power switched off.

6.4 Connecting the NMEA output interface to a PC and a Gyrographic

- Make the bus cable run from the **NMEA output interface** to the **TOPLINE** terminal box of your installation.
- Connect the bus cable inside the terminal box as shown in Figure 2.
- Connect the SubD connector to the PC's COM port (RS232) (a USB/RS232 adapter may be used).
- Setup your navigation software so that it transmits the navigation information on the PC's RS232 port, then perform the initialization of the Gyrographic's NMEA input interface (refer to the Gyrographic's user guide).

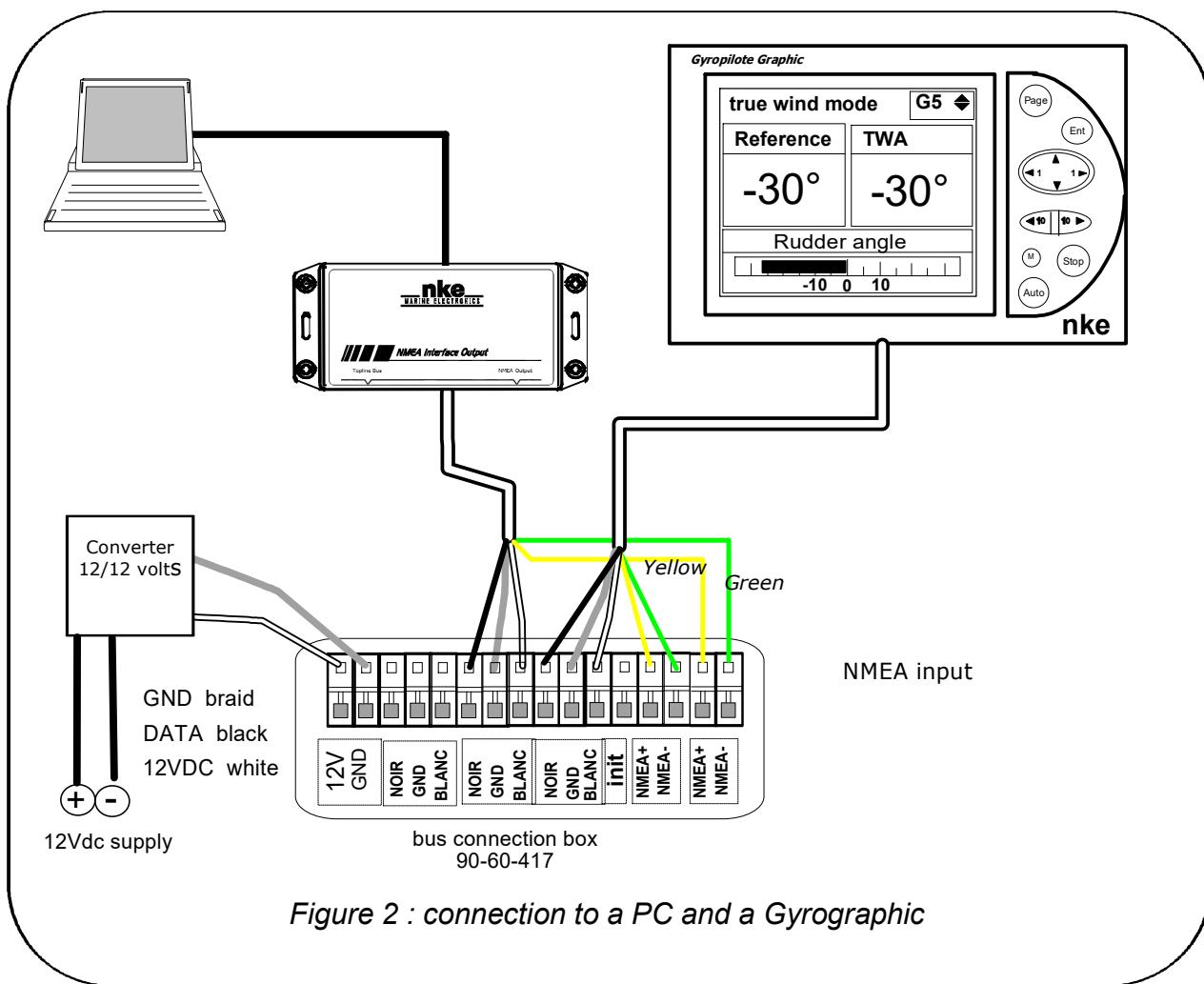
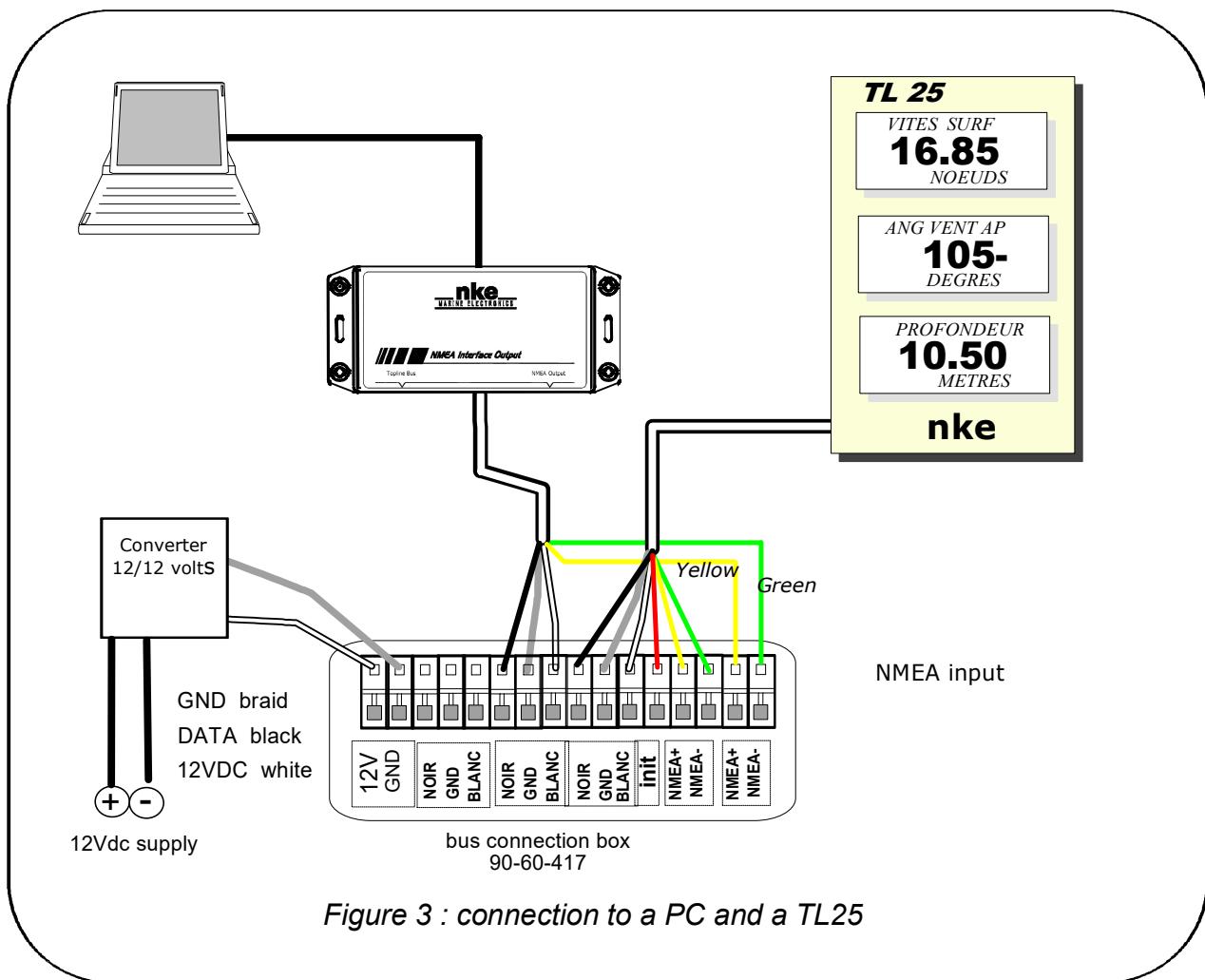


Figure 2 : connection to a PC and a Gyrographic

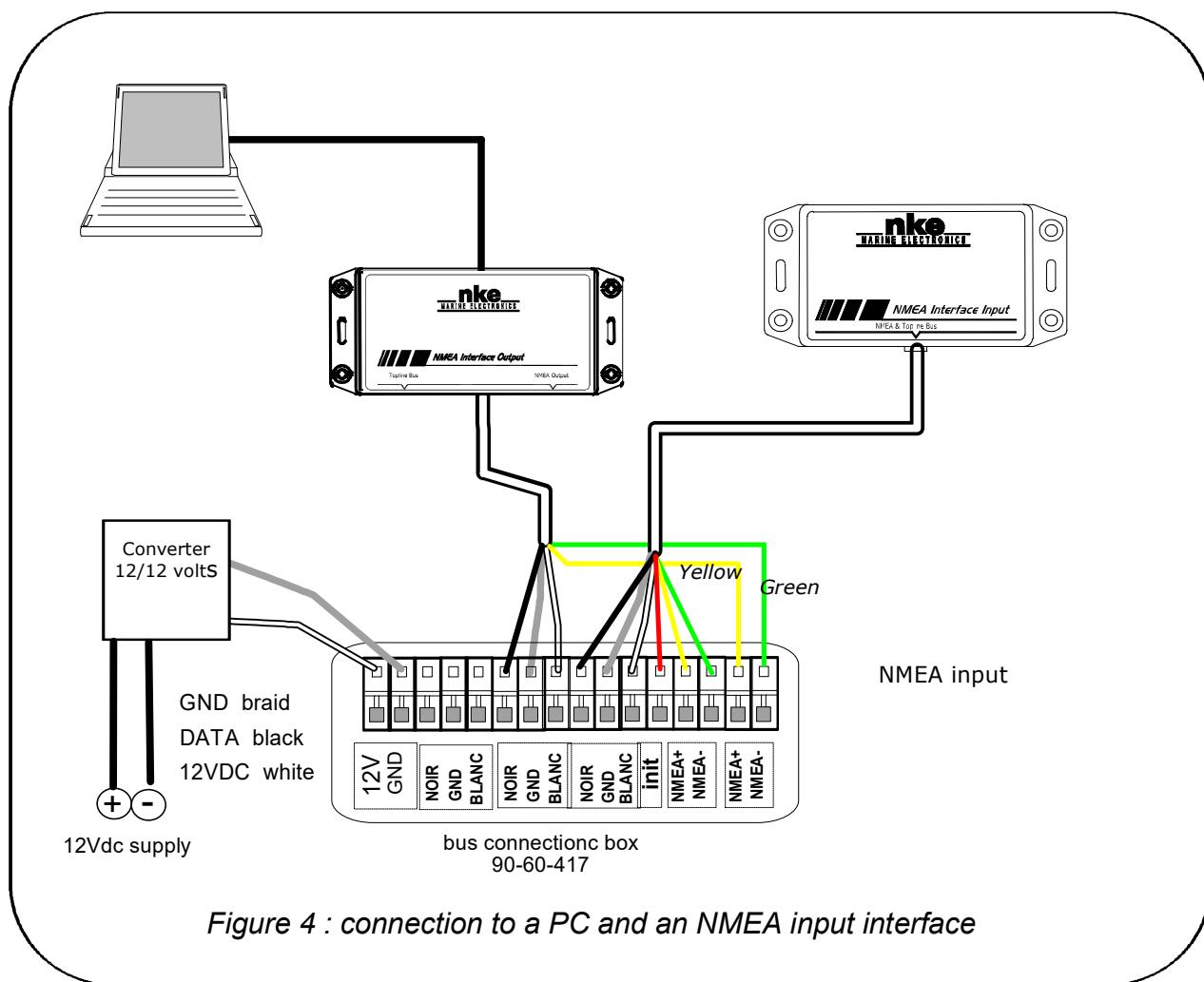
6.5 Connecting the NMEA output interface to a PC and a TL25

- Make the bus cable run from the **NMEA output interface** to the **TOPLINE** terminal box of your installation.
- Connect the bus cable inside the terminal box as shown in Figure 3.
- Connect the SubD connector to the PC's COM port (RS232) (a USB/RS232 adapter may be used).
- Setup your navigation software so that it transmits the navigation information on the PC's RS232 port, then perform the initialization of the TL25's NMEA input interface (refer to the TL25's user guide).



6.6 Connecting the NMEA output interface to a PC and an NMEA input interface

- Make the bus cable run from the **NMEA output interface** to the **TOPLINE** terminal box of your installation.
- Connect the bus cable inside the terminal box as shown in Figure 4.
- Connect the SubD connector to the PC's COM port (RS232) (a USB/RS232 adapter may be used).
- Setup your navigation software so that it transmits the navigation information on the PC's RS232 port, then perform the initialization of the NMEA input interface (refer to the user guide for the NMEA input interface).



6.7 Connecting the NMEA output interface to a listening apparatus

- Make the bus cable run from the **NMEA output interface** to the **TOPLINE** terminal box of your installation.
- Connect the bus cable inside the terminal box.
- Cut the SubD connector.
- Connect the blue wire to the “+NMEA” of the listening apparatus and the earthing braid to the “– NMEA”. Isolate the other wires.

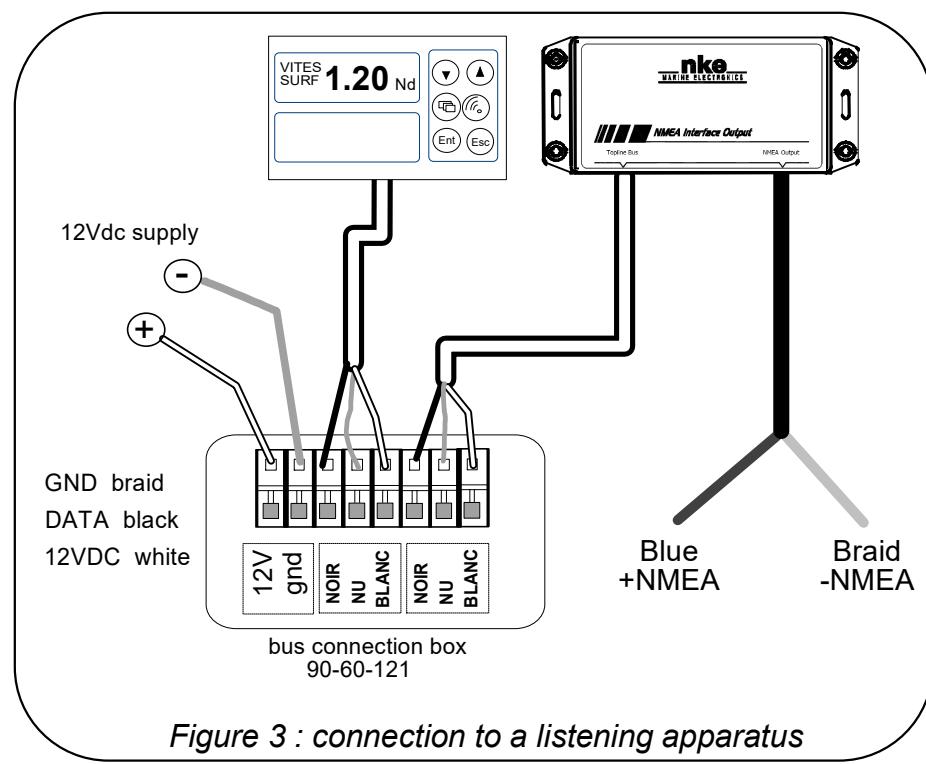


Figure 3 : connection to a listening apparatus

If you reduce the length of the bus cable, strip and galvanise the wires before connecting them inside the terminal box.

Identification of the cable wires

Bus cable 3 conductors	Wire identification
White wire	+12V
Black wire	Topline data
Braid	GND
NMEA cable 5 conductors	Wire identification
Braid	RX & TX – NMEA
Blue wire	TX +NMEA
Red wire	NC
White wire	RX +NMEA
Yellow wire	NC
Green wire	NC