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Actisense NGW-1 NMEA Conversion Gateway User Guide

Contents

Actisense NGW-1 NMEA Conversion Gateway

Important Notices

The device to which this manual relates complies with the Electromagnetic Compatibility requirements according to EN60945. The unit should always be used in conjunction with appropriately approved, shielded cable and connectors as per NMEA 0400 to ensure compliance. A declaration of conformity is available for download at **www.actisense.com.**

If the device to which this manual relates is to be installed within five metres of a compass, please refer to the 'Compass Safe Distance' section in the 'Technical Specifications' table.

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Product Registration

Please register your product via the online form at http://actisense.com/support/prodreg.html.

Your product package includes a unit serial number. The serial number is six digits long and can be found below the barcode on the label. Your registration will assist Actisense Support to link your product to your details, simplifying any future assistance you may require.

Product Disposal

Please dispose of this product in accordance with the WEEE Directive. The product should be taken to a registered establishment for the disposal of electronic equipment.

Technical Accuracy

To the best of our knowledge the information contained in this document was correct at the time it was produced. Active Research Ltd cannot accept liability for any inaccuracies or omissions.

The products described in this manual and the specifications thereof may be changed without prior notice. Active Research Ltd cannot accept any liability for differences between the product and this document. To check for updated information and specifications please check actisense.com.

Active Research Ltd will not be liable for infringement of copyright, industrial property rights, or other rights of a third party caused by the use of information or drawings described in this manual.

Product Guarantee

This product comes with a three year 'return to base' guarantee. If you suspect that the unit is faulty please refer to the Troubleshooting Section of the User Manual before contacting support.

It is a requirement of the guarantee that all installations of electronic equipment follow the NMEA 0400 specification. Any connection to a battery or power supply must meet the mandatory essential safety requirements that may be imposed by local regulatory agencies. Actisense products are intended for use in a marine environment, primarily for below deck use. If a product is to be used in a more severe environment, such use may be considered misuse under the Active Research Ltd guarantee.

Introduction & Features

The Actisense NGW-1 is an intelligent Gateway that converts NMEA 0183 data to NMEA 2000 (and vice versa), allowing you to share information between devices from the two standards. This creates the possibility of upgrading some of the vessel's electronics to NMEA 2000 and keeping the remaining NMEA 0183 devices. This can help spread the cost of transitioning to NMEA 2000, reducing the initial upgrade cost to accommodate a new NMEA 2000 device.

The ISO variant connects easily to NMEA 0183 devices with a dedicated pair of data wires for transmit and receive, allowing the NGW-1 to share data bi-directionally if required. As with all the latest Actisense products, OPTO-Isolation is included on the input and ground breaking ISO-DriveTM technology on the output to keep your devices safe from hazardous ground loops.

A USB option is available for installations operating with PC software that requires NMEA 0183 data.

## Powering the NGW-1

ISO Variants:

All ISO variants of the NGW-1 receive their power supply when connected to a correctly powered NMEA 2000 backbone. The backbone must also be correctly terminated to allow connected devices to communicate. Refer to the "Connecting to an NMEA 2000 Network" section for more information.

USB Variants:

All USB variants will be powered by the PC/laptop USB connection once the USB drivers have been successfully installed. Depending on the settings of the PC/laptop that the NGW-1 is connected to, the latest Actisense USB drivers will install automatically from Windows update. If this does not happen, the same USB driver files are available on the CD that is included in the box with the NGW-1 or from the NGW-1 'downloads' web page.
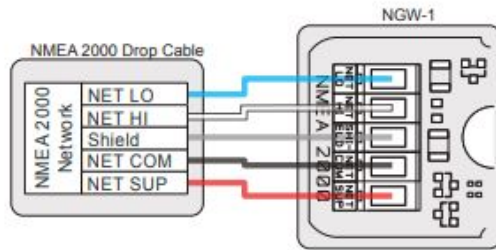
Connnecting to an NMEA 2000 Network

The illustration below provides an example of the minimum requirements for an NMEA 2000 network. The horizontal cable illustrating the backbone is not always needed in reality as a backbone can be formed by simply connecting T-pieces directly to each other. The cable connecting a device to a T-piece must not exceed 6 metres as defined in the NMEA 2000 specification:
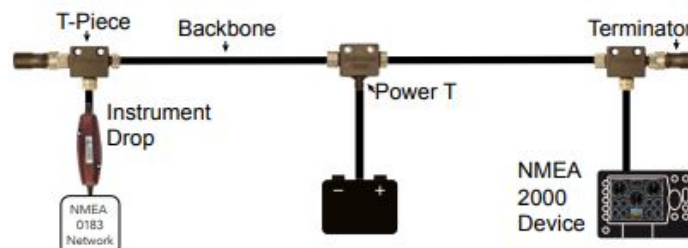
NMEA 2000 Pin Out

The diagram below illustrates the standard wiring colours used by all NMEA 2000 devices (like the NGW-1):

Wire Colour	NMEA 2000	PCB Label
Shield/Screen	Shield	SHIELD
Blue	Net Low	NET LO
White	Net High	NET HI
Black	Net Common	NET COM
Red	Net Supply	NET SUP

Connnecting to a SeaTalkNG Network

Raymarines SeaTalkNG network uses exactly the same data as a standard NMEA 2000 network. The only difference is the physical network connections. To connect any standard NMEA 2000 device (like the NGW-1) to an STNG network, simply use an NMEA 2000 to STNG adapter cable (product code: STNG-A06045) between the device and the STNG network.

Connnecting to NMEA 0183 Devices

The diagrams below illustrate how to connect the loose wires from any ISO variant NGW-1 to the TX/RX terminals of any NMEA 0183 Talker/Listener.
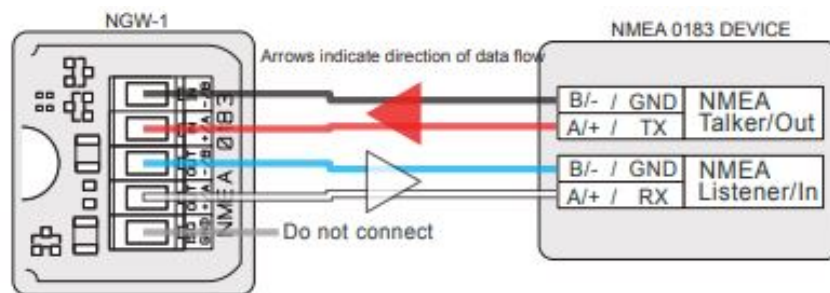
| Wire Colour	Label	Connnects To
Black	IN B / –	Talker OUT B / – / GND
Red	IN A / +	Talker OUT A / + / Data
Blue	OUT B / –	Listener OUT B / – / GND
White	OUT A / +	Listener OUT A / + / Data
Shield / Screen	ISO GND	Not Connected

Changing Firmware

From NGW-1 firmware v2.500 and above, switching between 'AIS conversions' firmware and 'Standard conversions' firmware is not required, instead Actisense Toolkit allows for quick NGW-1 configuration changes to be performed using the "Start with…" configuration option to choose the base conversions ('Standard', 'AIS/Full' etc.) and then change as required.

NGW-1 firmware v2.210 and below, both the 'Standard conversions' firmware and 'AIS conversions' firmware can be installed into any hardware variant (ISO, USB, STNG) using the corresponding ActiPatch. The firmware has all possible conversions enabled by default, ready to go and NMEA Reader can be used to disable any of those conversions that are not required.

If there is a requirement to change between the 'Standard conversions' and 'AIS conversions' firmware, download the ActiPatch that matches the NGW-1 hardware variant (ISO, USB, STNG) from the NGW-1 Download page and use it to update the firmware. The NGW-1 must also be powered.

Connnecting to a PC/laptop

The diagrams below illustrate how to connect the loose wires from any ISO variant NGW-1 to a serial cable (DB9F). If the PC/laptop does not have a serial port, a USB-serial converter will also be needed.
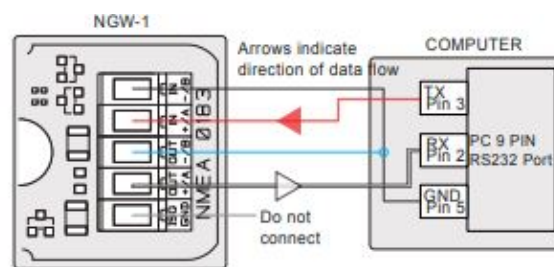
LED Behaviour

There are 2 LEDs inside the NGW-1, one on the NMEA 0183 side, one on the NMEA 2000 side. On start up, these LEDs will flash alternately and very quickly for 2 seconds.

The primary function of the NGW-1 NMEA 0183 LED is to indicate reception of a valid NMEA 0183 sentence. The NMEA 2000 LEDs main function is to indicate reception of a PGN on the NGW-1 conversion list. It is normal for the NMEA 0183 LED to flash faster than the NMEA 2000 LED due to the smaller bandwidth available to NMEA 0183.

If no data is present on either input, both LEDs will flash once every 10 secs (for firmware v2.210) or 5 secs (for firmware v2.500+). This could be a result of incorrect wiring, mismatched baud rates or no data available.

If any irregular behaviour is observed, please consult the NGW-1 User Manual (available on the CD provided or via the NGW-1 'downloads' web page) or the video in the Actisense Support Centre which can be accessed via the main menu from the Actisense website.

Documents / Resources

	Actisense NGW-1 NMEA Conversion Gateway [pdf] User Guide NGW-1, NMEA Conversion Gateway
	Actisense NGW-1 NMEA Conversion Gateway [pdf] User Guide NGW-1, NMEA Conversion Gateway, NGW-1 NMEA Conversion Gateway, Conversion Gateway