



nemo gateway

Installation Guide



WARNINGS

Use of the Nemo Gateway is at your own risk. Rose Point Navigation Systems does not warrant the accuracy of any information processed by the Nemo Gateway.

The Nemo Gateway contains magnetic material and should not be placed near a compass or other device that may be sensitive to magnetic interference.

The information in this user guide is subject to change without notice. Please refer to our website for up-to-date documentation, schematics, specifications, and firmware.

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Introduction

Thank you for purchasing a Rose Point Navigation Systems Nemo Gateway. The Nemo Gateway is a bridge between the NMEA 0183, NMEA 0183-HS, NMEA 2000 marine electronic device network communication standards and your shipboard Ethernet-compatible navigation systems and devices (e.g. computers running Coastal Explorer/Rose Point ECS, tablets, phones).

The Nemo Gateway has been certified by the NMEA to meet the NMEA 2000 standard and conforms to the NMEA 0183 and NMEA 0183-HS standards. Due to the technical nature and complexity of these standards it is recommended the Nemo Gateway is installed by an NMEA certified installer.

Package Contents

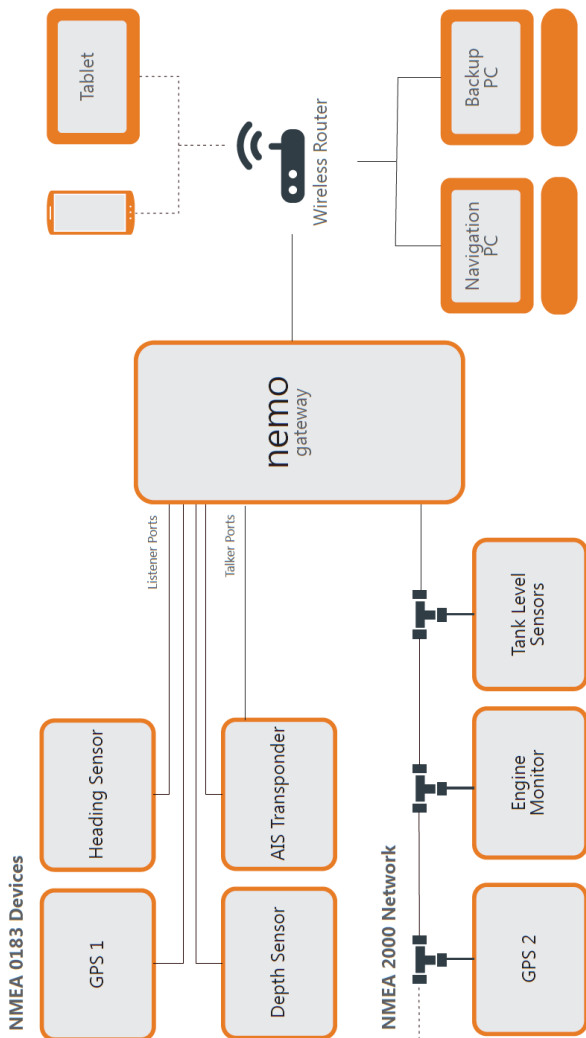
- This installation guide
- Nemo Gateway
- Power terminal connector
- NMEA 0183/0183-HS terminal connectors

Installation Requirements

The minimum requirements for using the Nemo Gateway are:

- An iOS or Android device with companion app installed or PC running the latest version of Rose Point ECS™ or Coastal Explorer™
- Ethernet cable
- Ethernet network or available Ethernet port on PC running Rose Point ECS™ or Coastal Explorer™
- Compatible with 12V and 24V systems (8 - 32 VDC power source, negative ground)
- Secure mounting in a dry location
- No strain shall be placed on any connectors

Device Connectivity



Gateway Connections

POWER

The Nemo Gateway is a 12V/24V device and may be powered by 8 – 32 volts DC, negative ground. If an AC to DC adapter is being used, it needs to be a 12V 2A adapter, and must be connected to an uninterruptable power supply. The Nemo Gateway needs to be protected with an inline 3-amp fast acting fuse or circuit breaker.

Recommendation: The power source should be independent of the vessels starting battery system.

ETHERNET

Connect an Ethernet cable between the ETHERNET port on the Nemo Gateway and your PC or network (router, switch or hub). If connecting the Nemo Gateway to your network, your PC(s) may connect to the same network via Ethernet or Wi-Fi. If utilizing Wi-Fi, your router or access point would provide the Wi-Fi connectivity.

When connecting to an existing network the Nemo Gateway should be able to operate without additional configuration, either by acquiring a DHCP or Link-Local IP address. Changes to the configuration can be made following the steps in section **Device Configuration** of this manual.

The Nemo Gateway can output NMEA 0183 information over UDP, allowing multiple devices on the same network to receive data simultaneously.

Recommendation: All devices critical to the navigation system should use a wired Ethernet connection.

NMEA 2000

The Nemo Gateway has been certified by the NMEA to meet version 3.10 of the NMEA 2000 standard.

The Nemo Gateway has a single NMEA 2000 terminal used to connect it to the bus with a drop cable. Ensure that the drop cable used to connect to the NMEA 2000 backbone is no more than 6 meters in length.

Accessory Port (ACCY)

The ACCY port is reserved for future use. Please do not plug any devices into the ACCY port unless specifically approved by Rose Point Navigation Systems. Please refer to our website for updates regarding the use of this port.

NMEA 0183

The Nemo Gateway conforms to the NMEA 0183 and NMEA 0183-HS marine electronic device network communication standard. All NMEA 0183 ports are capable of communicating in NMEA 0183 (4800 baud) and NMEA 0183-HS (38,400 baud) modes via two talker ports and four listener ports.

NMEA 0183 and NMEA 0183-HS standards define device ports as either *Talker* or *Listener*. A *Talker* is a port on a device (e.g. GPS) that is transmitting information. A *Listener* is a port on a device (e.g. chart plotter) that is receiving information. Some devices are capable of being both a *Talker* and a *Listener*, for example an AIS transponder or chart plotter.

Common talker devices include GPS's, depth sounders, water speed indicators, compasses, and wind indicators. Common listener devices include: AIS transceivers, autopilots and chart plotters. Most of the common listener devices mentioned will also have *Talker* ports

Note: A Talker may be connected in parallel to up to 10 Listeners, while a Listener may only connect to a single Talker.

Note: Talker 1 and Listener 1 operate at the same baud rate, but are otherwise independent. Talker 2 and Listener 2 can also only have one baud rate, but are otherwise independent.

Example:

Nemo Port 1 Talker - Connect autopilot ("Talking to AP")

Nemo Port 1 Listener - Connect GPS device ("Listening to GPS")

Baud Rate set to 4,800 for Nemo Port 1 – This setting applies to both the *Talker* and *Listener* (Autopilot and GPS)

When using NMEA 0183-HS, a three conductor, shielded cable is to be used and requires two connections to be made in addition to the A and B wires used in the NMEA 0183 protocol. These additional connections are a common ground line (C) and shield (S). The ground line (C) is connected to both devices while the shield (S) is only connected to the *Talker*. (See page 6)

Default port configuration

The following table describes the default port configuration. These defaults may be adjusted in Rose Point ECS, Coastal Explorer or the companion app.

Changes to the configuration can be made by following the steps in **Device Configuration** section of this manual.

Port Number	Protocol	Baud Rate
1	NMEA 0183-HS	38,400 baud
2,3,4	NMEA 0183	4800 baud

Typically, an AIS transponder would be connected to port 1, while other NMEA 0183 devices should be connected to ports 2, 3 and 4. If you are not connecting an AIS or other NMEA 0183-HS device you may change the configuration and use port 1 for a NMEA 0183 device.

Automatic Protocol (Baud Rate) Detection

The Nemo Gateway is capable of automatically detecting the protocol (baud rate) of devices connected to the NMEA 0183 and NMEA 0183-HS ports. This feature is enabled within Rose Point ECS, Coastal Explorer or via the Nemo Gateway companion app (available on iOS or Android).

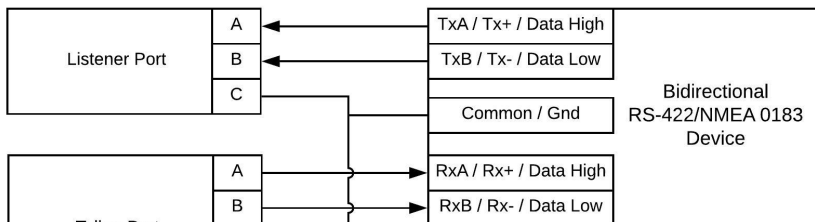
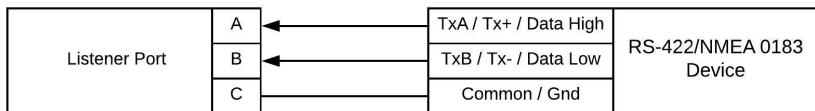
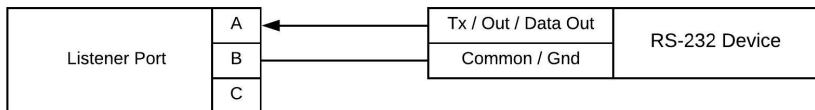
Understanding NMEA 0183 Device Connections

The NMEA 0183 standard has evolved over the years, and with it so have the official wiring labels. This means that different manufacturers might designate wiring pinouts a little differently from one another. The diagram on the following page shows a few possible pinout labels that you may encounter on your marine devices. The labels on your electronics devices may have different designations than shown in the diagram.

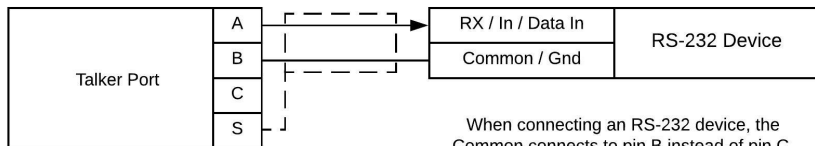
Sample NMEA 0183 Wiring Schematic

Rose Point Nemo Gateway

On-Board Devices



An AIS is one of the few devices that may need a bidirectional connection. By default, the Nemo Gateway is configured to connect to a high speed device, such as an AIS, using Port 1.



When connecting an RS-232 device, the Common connects to pin B instead of pin C.

If cable is shielded, the shield should be connected to the *Talking* device.
(Never both devices)

NMEA 0183 Compatibility

The Nemo Gateway conforms to version 4.10 of the NMEA 0183 standard and is compatible with older versions.

Note: Current versions of the standard require use of differential pair wiring for communication via the RS-422 protocol while older versions (and non-compliant devices) use the RS-232 protocol which uses a single signal wire and a ground connection.

The documentation for some devices may reference the NMEA 0183 and NMEA 0183-HS connections in different ways. If it is unclear how to connect your NMEA compatible device to the Nemo Gateway please contact the manufacturer of the connecting device for additional support. See the “Sample NMEA 0183 Wiring Schematic” on the previous page to see how sensors should be connected to the Nemo Gateway. Additional sample wiring schematics are available on our website.

NMEA 0183 / NMEA 0183-HS Listeners

The four differential opto-isolated three terminal listener ports conform to the NMEA 0183 and NMEA 0183-HS marine electronic device network communication standard. These ports are capable of interfacing with most fully and partially compliant devices that are transmitting any properly formed sentences. Only NMEA 0183 and NMEA 0183-HS devices are to be connected to these ports.

Each listener port is isolated from all other listener ports. Each listener is designed for operation with a minimum differential input voltage of 2.0 Volts and shall not take more than 2.0 mA from the line at that voltage.

The listener circuit consists of an Altec PHP03-3.81 connector followed by a 240 ohm resistor on the A line followed by isolation and protection circuitry.

NMEA 0183 / NMEA 0183-HS Talkers

The two differential four-terminal talker ports conform to the NMEA 0183 and NMEA 0183-HS marine electronic device network communication standard. Only NMEA 0183 and NMEA 0183-HS devices are to be connected to these ports.

Each talker port is capable of driving a load of 50 mA using a 5V differential pair. The circuit is composed of a UA9638 driver connected to an Altec PHP04-3.81 terminal.

Gateway Configuration

Rose Point ECS or Coastal Explorer

Note: You must install the latest release of Rose Point ECS™ or Coastal Explorer™ to ensure proper communication with the Nemo Gateway.

Coastal Explorer 2011 / Rose Point ECS 2011:

In Rose Point ECS or Coastal Explorer use **Main Menu > Configure Vessel and Electronics > Electronics**. Select the appropriate device in the list and click **Gateway Settings**

Coastal Explorer 4.0 / Rose Point ECS 4.0:

In Rose Point ECS or Coastal Explorer use **Settings > Electronics > Rose Point Nemo Gateway > Gateway Settings**

The system's default web browser will open and present the Configuration Interface.

Note: The configuration site can also be accessed by typing in the IP address of the Nemo Gateway into a web browser.

See "Configuration Interface" for additional information. For a more detailed explanation of Nemo Configuration, please see our Nemo Gateway support page on www.rosepoint.com.

Companion App

The companion app "Nemo Gateway" may be installed on iOS and Android devices through their respective app stores.

Accessing Configuration Interface

Connect the mobile device to the Wi-Fi network that the Nemo Gateway is connected to.

Launch the companion app and wait for your Nemo Gateway to be discovered. Once discovered; click or tap on Nemo Gateway listing.

This will launch the Configuration Interface.

See "Configuration Interface" for additional information.

Configuration Interface

See “Accessing Configuration Interface” to launch the Configuration Interface.

Security

To prevent unintentional changes, you may enable “Password Mode”. This option can be found in the **System Settings > Security** section and will enable the requirement to enter a user name and password prior to adjusting any settings.

When enabling the “Password Mode”, you must provide the user name and password you wish to use.

To reset the credentials please see “Reset” in “Troubleshooting”.

NOTE: The Nemo Gateway does not provide secure data transmission, secure firmware updates, or encrypted storage of settings and information. It is required for the user to maintain physical security of the Ethernet network to which the Nemo Gateway is connected.

Firmware

Firmware information is available in the **System Settings > Firmware** section of the app. If an update is available there will be a notice on the top of the main view.

The version currently installed on the Gateway will be displayed, as well as if an update is available.

“Firmware Update Available” and an **Update Now** button is displayed on the Firmware view when the firmware is out of date. Select the **Update Now** button to install the latest version of firmware. The new firmware will then download, install, and the gateway will reboot.

The “Branch” section allows the user to select what version of firmware will be downloaded. This option should be left on **Default** unless otherwise instructed by Rose Point Navigation Systems.

Update from File can be used to install a firmware version that the user has stored locally on their system.

IP Address

Select “IP Address” from the menu bar. Click on the “Edit” button to adjust the settings.

The Gateway is capable of acquiring a DHCP address (default) or being set to a static IP.

Port Configuration

Each port's settings can be modified by selecting the desired port from the menu bar.

For more information about outputting NMEA data from ports; see section "Advanced Port Output".

Restart System

Select "Restart System" from the menu bar. Then select the **Restart** button on the confirmation panel.

System Logs

System Log files may be acquired by selecting "Log Files" from the System Settings menu. Log files may also be downloaded or emailed depending on whether a PC or a mobile device is being used, respectively. These logs are used for troubleshooting purposes and may be requested by Rose Point Navigation Systems if there are issues with the device.

Sensors

The Nemo Gateway is capable of interpreting NMEA data being processed through its data ports. This allows the Nemo Gateway to distinguish between devices and assign priorities to sensors.

When the Nemo is generating NMEA data using "Auto" as the source (see "Advanced Port Output"), having properly prioritized sensors will guarantee that the Nemo is listening to and generating data from the appropriate sensors.

Priorities may be set for each class (e.g. Position, Speed, Depth, etc.) of data. By default, the priorities are chosen by the order the devices are discovered; the first – highest priority, the last – lowest priority. To change the priority, select Sensors > Sensor Class > Edit button, and drag the *three-bar-icon* up and down to rearrange the order (top - highest, bottom – lowest).

Individual sensors can also be enabled/disabled in this menu.

Advanced Port Output

Please refer to our Nemo Gateway Configuration Guide online for the most current configuration walkthroughs. The device's configuration interface is subject to change without notice.

Each port that is capable of outputting data will have a "Talker Options" section.

Generating Data

Ports can generate data (translate) from sources of other data formats. Data generation may operate in auto (default), or manual mode.

Auto Mode

The output is set up for the user using default port outputs. The default output sentences/PGNs will be listed upon selecting Auto. These defaults can also be found on the Nemo Gateway support page on www.rosepoint.com

Manual Mode

The user can set up the output as needed by using this mode. By selecting Edit next to Generate Sentences, followed by selecting "Add a Generated PGN/Sentence," the user can specify the type, source, ID, and rate of the data being output.

Disabled

The Nemo Gateway will not generate any data for this port. (However, if configured, Coastal Explorer and Rose Point ECS can still output information through these Talker Ports)

Repeating Data

The UDP and NMEA 0183 ports can repeat data received on other ports of the same data format (NMEA 0183). Each source may be toggled On/Off individually.

To configure data repetition options:

Port (UDP/NMEA 0183) > Talker Options > Repeating > Edit

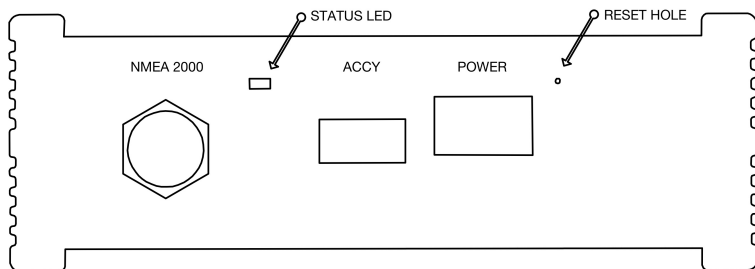
Note: When possible, the Nemo Gateway should be set up to generate all outgoing data. The ability to repeat data being received from other NMEA 0183 ports is designed to output sentences that the Nemo Gateway cannot parse or generate on its own.

For more information about generating data, please refer to the Nemo Gateway configuration guide found on www.rosepoint.com

Specifications

Voltage	8 – 32 VDC, negative ground
Typical Current Draw	200 mA @ 12 VDC* 100 mA @ 24 VDC* * Varies by number of devices connected and amount of data transfer
Max. Current Draw	3 Amp Max * Recommended Fuse: 3A Fast acting
Dimensions	4.94 x 5.06 x 1.75 inch (12.6 x 12.85 x 4.45 cm)
Weight	0.9 lbs. (0.41 kg)
Supported Protocols	IEC 61162-1 (NMEA 0183) IEC 61162-2 (NMEA 0183-HS) IEC 61162-3 (NMEA 2000) UDP Broadcast TCP
Operating Humidity	5% to 90% non-condensing

Troubleshooting



Reset

The Gateway may be reset to factory default settings, excluding firmware.

Conducting Reset

Ensure the power is off or unplugged and then using a pointed object, lightly depress the button inside the unmarked small round hole near the POWER port (you will feel it click). While pressing the reset button, apply power to the Nemo Gateway.

Once power is applied wait until the Diagnostic LED flashes rapidly, oscillating between green and red. Once Diagnostic LED oscillating starts; release reset button.

The device will reboot and all settings, apart from the firmware version, will be reset to factory defaults. This will also reset the security password if it has been enabled.

Firewall

If using our PC based navigation system and the Nemo is discoverable but no data is being received, make sure that Rose Point ECS and Coastal Explorer are permitted through the system's firewall.

Status LED

A single LED provides operational status. The following table may help in self-diagnosing the system status.

Color Flash Pattern	Mode / Error Condition	Required Action
Off	Power off	Check power to device and correct wiring
Amber Solid	Initializing	None
Amber Blinking	General error	Power cycle device
Green Solid	Correct Operation	None
Green "Heartbeat"	Connecting to network	None
Green Intermittent Blinking	Unable to acquire DHCP address	If DHCP server on network (e.g. Network Router): Check network cabling (LAN connection) and reboot Nemo Gateway With no DHCP server on network (e.g. direct connection to PC): None
Green Fast Blinking	Updating Firmware	Wait for reboot to complete

Use and License Agreement

By installing or using this product, you agree to all the terms of the accompanying USE AND LICENSE AGREEMENT, including limitations on liability and authorized use. The agreement is subject to change without notice. The latest version of this agreement is available at <http://www.rosepoint.com/legal>.

Return Policy

If You, the original purchaser of the Nemo Gateway (“Product”) made by Rose Point Navigation Systems, discover a defect in the Product covered by the limited warranty set forth in the license accompanying the Product when You purchased it, as amended by the license posted at rosepoint.com/legal (“License”), You must contact Rose Point for an RMA at: 425-605-0985 within the warranty period set forth in the License. If You fail to do so, You waive any rights under the warranty.

When you contact Rose Point for an RMA you will need to provide the Serial Number of the Product which can be found on the back of the unit or on the original box the unit was packaged in. If the Product is covered by the limited warranty, Rose Point will issue you an RMA number that must accompany the return.

Proof of purchase in the form of a dated invoice or receipt is required.

You are responsible for arranging for and paying for freight/shipping when returning Product.

Upon receipt of the Product accompanied by an RMA and invoice, Rose Point will inspect the Product to confirm that the Product is covered by the warranty. If it is, Rose Point may repair and return the Product, replace the Product, or provide a refund at the sole option of Rose Point. Rose Point will pay the cost of shipping within the U.S. for any repaired or replaced Product under warranty.