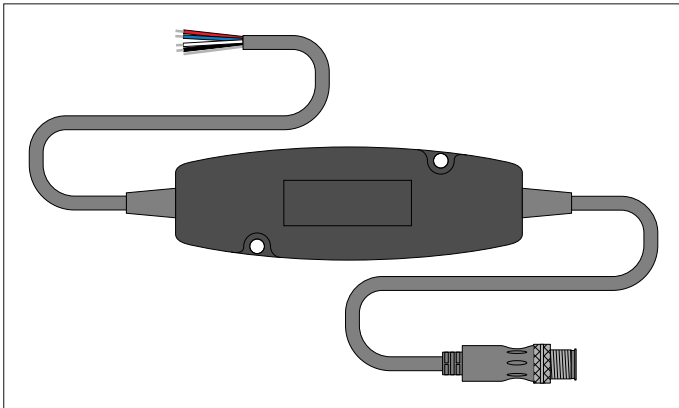


Actisense NGW-1 NMEA Converter Installation instructions

Product overview

The Actisense® NGW-1 converter (**A80721**) enables you to transmit or receive data between NMEA 0183 and NMEA 2000 devices.

An example of this includes connecting a third party NMEA 0183 device to a Raymarine® MFD with an NMEA 2000 connection.



The NGW-1 converter is typically used when:

- Transmitting or receiving data between current generation Raymarine® NMEA 2000 equipment and third-party NMEA 0183 products.
- Transmitting or receiving data between current generation Raymarine® NMEA 2000 equipment and legacy Raymarine® NMEA 0183 products.

Important:

When attempting to transmit or receive data, the NGW-1 converter's baud rate must be set to the same rate as your connected NMEA 2000 and NMEA 0183 devices. By default, the NGW-1 converter's baud rate is set to **38400**. If required, you can change the converter's baud rate by using the 'Actisense Toolkit' software, via a PC connection. For more information, refer to the *NMEA Conversion Gateway NGW-1 Install/User Manual*: <https://actisense.com/downloads/>

Important:

The example scenarios listed within this document may not cover your required configuration. You may need to reconfigure the converter by using the 'Actisense Toolkit' software via a PC connection. For more information, refer to the *NMEA Conversion Gateway NGW-1 Install/User Manual*: <https://actisense.com/downloads/>

If in doubt about the suitability of the NGW-1 converter for your system, contact Raymarine® product support: <https://www.raymarine.com/service-and-support/>

Cable connections overview

The details listed below provide an example of how to connect a device using the Actisense NGW-1 converter.

Important:

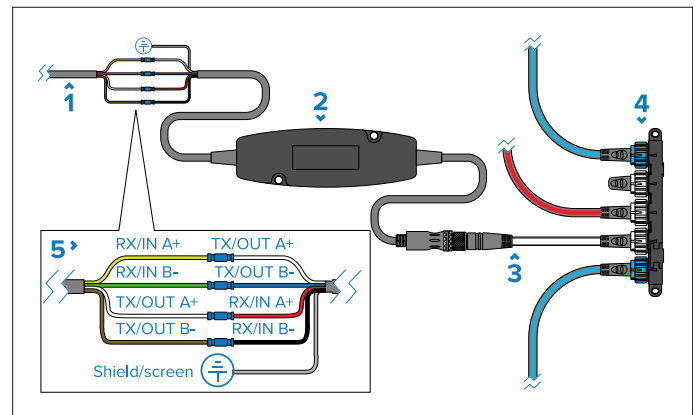
All connections should be made with devices powered off.

Important:

Converter and device wire colors may vary. Before making connections, ensure that you refer to the instructions supplied with your NMEA 0183 device and those found within this document to identify the correct signals required.

Connect the converter to your NMEA 2000 or SeaTalkng® network, using either a DeviceNet to SeaTalkng® adapter cable, or a DeviceNet cable as appropriate. Then, connect the converter's NMEA 0183 wires to the relevant wires on your NMEA 0183 device.

Example NMEA 0183 device connection using the Actisense® NGW-1 converter



1. Device NMEA 0183 wires.
2. Actisense® NGW-1 converter (A80721).
3. SeaTalkng™ to DeviceNet adapter cable.
4. SeaTalkng™ network (requires dedicated 12 V dc power supply).
5. NMEA 0183 wire connections. It is recommended that wire connections are made using crimps and then insulated using insulation tape.

Converter signal (wire color)	NMEA 0183 device signal
TX/OUT A+ (White)	RX/IN A+
TX/OUT B- (Blue)	RX/IN B-
RX/IN A+ (Red)	TX/OUT A+
RX/IN B- (Black)	TX/OUT B-
Shield/Screen	Vessel Ground

If your NMEA 0183 device has only 3 NMEA 0183 wires, the connection will differ from that described above. Please see below for alternative wiring:

Connect to receiving device

Converter signal (wire color)	Receiving NMEA 0183 device signal
TX/OUT A+ (White)	RX/IN
TX/OUT B- (Blue)	NOT CONNECTED
Shield/Screen	Vessel Ground

Connect to transmitting device

Converter wire color / signal	Transmitting NMEA 0183 device signal
RX/IN A+ (Red)	TX/OUT
RX/IN B- (Black)	Vessel Ground
Shield/Screen	Vessel Ground

Network connections

Typically, the Actisense® NGW-1 converter can be used in the following 4 common scenarios:

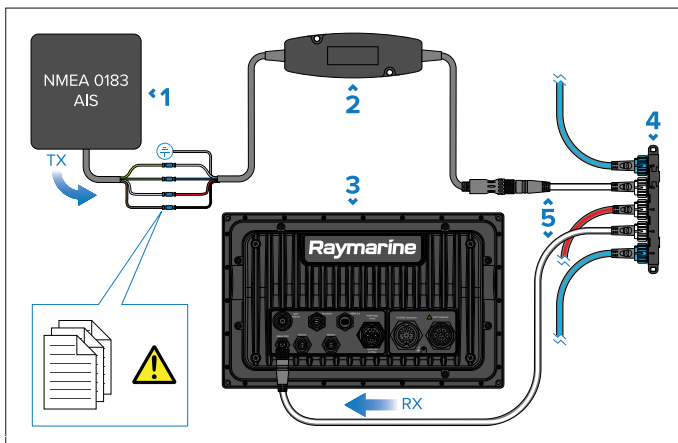
1. A NMEA 0183 AIS unit — transmitting AIS data to a NMEA 2000 multifunction display: [AIS to MFD connection scenario \(p.2\)](#)
2. A NMEA 2000 multifunction display — sharing GPS position data to a NMEA 0183 VHF radio: [MFD to VHF Radio connection scenario \(p.2\)](#)
3. A NMEA 0183 VHF radio — transmitting DSC data to a NMEA 2000 multifunction display: [VHF Radio to MFD connection scenario \(p.3\)](#)
4. A NMEA 2000 multifunction display — transmitting steering message data to a NMEA 0183 autopilot: [MFD to Autopilot connection scenario \(p.3\)](#)

Note:

For further information on the cables and accessories required in the example scenarios, refer to: [Accessories \(p.4\)](#)

AIS to MFD connection scenario

Third-party NMEA 0183 AIS device transmitting AIS data to a Raymarine® NMEA 2000 MFD.



Important:

Converter and device wire colors may vary. Before making connections, ensure that you refer to the instructions supplied with your NMEA 0183 device and those found within this document to identify the correct signals required.

1. Third-party NMEA 0183 AIS (transmitting AIS data).
2. Actisense® NGW-1 converter (A80721).
3. Raymarine® NMEA 2000 multifunction display (receiving AIS data).
4. SeaTalkng™ network (requires dedicated 12 V dc power supply).
5. SeaTalkng™ (female) to DeviceNet (female) adapter cable (0.4 m (1.3 ft) — A06045), (1 m (3.3 ft) — A06075) (**not supplied**).

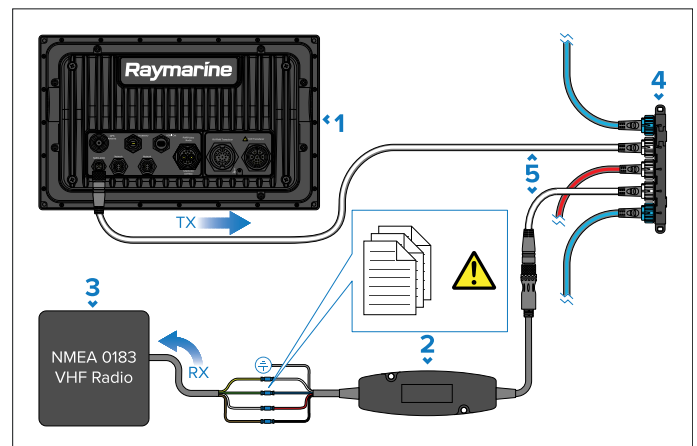
Supported NMEA 0183 sentences (AIS to MFD)

The following NMEA 0183 sentences apply to the AIS to MFD connection scenario and are enabled by default.

Sentence	Description
VDO	AIS VHF data-link own-vessel report
VDM	AIS VHF data-link message

MFD to VHF Radio connection scenario

Raymarine® NMEA 2000 multifunction display transmitting GPS position data to a third-party NMEA 0183 VHF radio.



1. Raymarine® NMEA 2000 multifunction display (transmitting GPS position data).
2. Actisense® NGW-1 converter (A80721).
3. Third-party NMEA 0183 VHF Radio (receiving GPS position data).
4. SeaTalkng™ network (requires dedicated 12 V dc power supply).

- SeaTalkng™ (female) to DeviceNet (female) adapter cable (0.4 m (1.3 ft) — A06045), (1 m (3.3 ft) — A06075) **(not supplied)**.

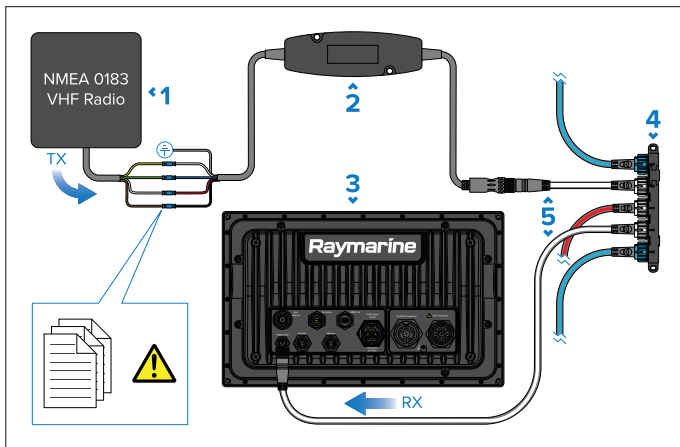
Supported NMEA 0183 sentences (MFD to VHF)

The following NMEA 0183 sentences apply to the MFD to VHF radio connection scenario.

Sentence	Description
RMC	Recommended Minimum Specific GNSS Data
DTM	Datum reference

VHF Radio to MFD connection scenario

Third-party NMEA 0183 VHF radio transmitting DSC data to a Raymarine® NMEA 2000 multifunction display.



Important:

Converter and device wire colors may vary. Before making connections, ensure that you refer to the instructions supplied with your NMEA 0183 device and those found within this document to identify the correct signals required.

- Third-party NMEA 0183 VHF Radio (transmitting DSC data).
- Actisense® NGW-1 converter (A80721).
- Raymarine® NMEA 2000 multifunction display (receiving DSC data).
- SeaTalkng™ network (requires dedicated 12 V dc power supply).
- SeaTalkng™ (female) to DeviceNet (female) adapter cable (0.4 m (1.3 ft) — A06045), (1 m (3.3 ft) — A06075) **(not supplied)**.

Supported NMEA 0183 sentences (VHF to MFD)

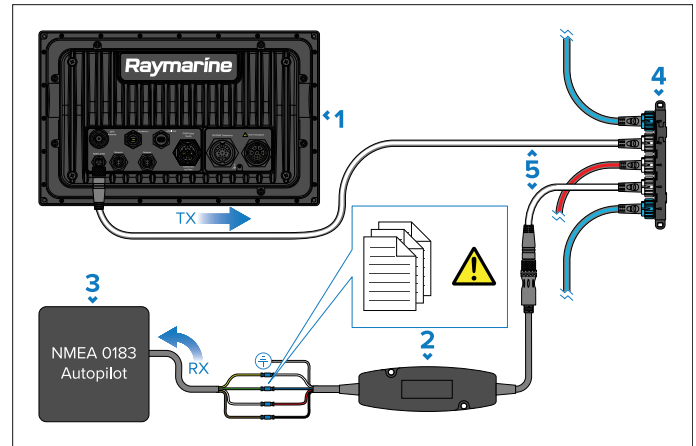
The following NMEA 0183 sentences apply to the VHF Radio to MFD connection scenario and are enabled by default.

Actisense NGW-1 NMEA Converter Installation instructions

Sentence	Description
DSC	Digital selective calling information
DSE	Expanded digital selective calling

MFD to Autopilot connection scenario

Raymarine® NMEA 2000 multifunction display transmitting steering message data to a third-party NMEA 0183 autopilot.



Important:

Converter and device wire colors may vary. Before making connections, ensure that you refer to the instructions supplied with your NMEA 0183 device and those found within this document to identify the correct signals required.

- Raymarine® NMEA 2000 multifunction display (transmitting steering message data).
- Actisense® NGW-1 converter (A80721).
- Third-party NMEA 0183 Autopilot (receiving steering message data).
- SeaTalkng™ network (requires dedicated 12 V dc power supply).
- SeaTalkng™ (female) to DeviceNet (female) adapter cable (0.4 m (1.3 ft) — A06045), (1 m (3.3 ft) — A06075) **(not supplied)**.

Supported NMEA 0183 sentences (MFD to Autopilot)

The following NMEA 0183 sentences apply to the MFD to Autopilot connection scenario and are enabled by default.

Sentence	Description
APB	Heading / Track controller autopilot sentence 'B'
RMB	Recommended minimum navigation information

Supported NMEA 2000 PGNs

Transmit:

PGN	Description
129038	AIS Class A Position report
129039	AIS Class B Position Report
129040	AIS Class B Extended Position Report
129041	AIS Aids to Navigation (AtoN) Report
129793	AIS UTC and Date Report
129794	AIS Class A Static and Voyage Released Data
129798	AIS SAR Aircraft Position Report
129801	AIS Addressed Safety Related Message
129802	AIS Safety Related Broadcast Message
129808	DSC Call Information

Receive:

PGN	Description
127237	Heading/Track Control
129025	Position, Rapid Update
129026	COG & SOG, Rapid Update
129029	GNSS Position Data
129283	Cross Track Error
129284	Navigation Data
129809	AIS Class B "CS" Static Data Report, Part A
129810	AIS Class B "CS" Static Data Report, Part B
129811	AIS Single Slot Binary Message
129812	AIS Multi Slot Binary Message
129044	Datum

LED Diagnostics and troubleshooting

Problems with the Actisense NGW-1 and their possible solutions are described here.

Problem	Possible causes and solutions
NMEA 2000 network is active, but no connection is found (NMEA 2000 LED does not flash).	<ul style="list-style-type: none"> Ensure that the NMEA 2000 network cables are sound and properly connected. Check to see whether your PGN messages are supported.
NMEA 0183 device is active, but no connection is found (NMEA 0183 LED does not flash).	<ul style="list-style-type: none"> Ensure that the NGW-1 is correctly connected to your NMEA 0183 device. For cable connection information, refer to the following section: Cable connections overview (p.1) Ensure that the same Baud rate has been set on both devices.
No data is received from either connection (LEDs flash once every 10 seconds).	<ul style="list-style-type: none"> Ensure that the NMEA 2000 network cables are sound and properly connected. Check to see whether your PGN messages are supported. Ensure that the NGW-1 is correctly connected to your NMEA 0183 device. For cable connection information, refer to the following section: Cable connections overview (p.1) Ensure that the same Baud rate has been set on both devices.
Firmware is not detected / has been lost (LEDs flash in an alternating pattern).	Attempt to reinstall the latest firmware.

Additional information

For additional configuration information and instructions on how to change firmware, please refer to the *NMEA Conversion Gateway NGW-1 Install/User Manual*, via the Actisense website:



Actisense website:

<https://actisense.com/downloads/>

Accessories

Item	Part number
SeaTalkng to DeviceNet (female) adaptor cable 0.4 m (1.3 ft)	A06045
SeaTalkng to DeviceNet (female) adaptor cable 1 m (3.3 ft)	A06075
5-Way SeaTalkng connector	A06064