Issue 1.00

Engine Monitoring Unit

EMU-1

Quick Start Guide

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Actisense®
Award Winning NMEA Specialists

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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Fair Use Statement

Product Registration

Please register your product via the online form at:
http://www.actisense.com/product-registration/

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.

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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

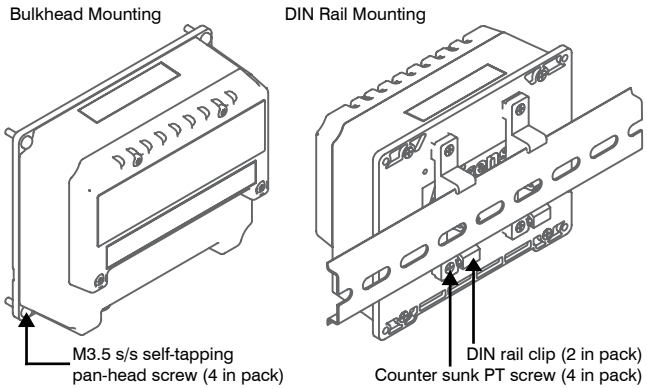
The Actisense EMU-1 is a specialised analogue to NMEA 2000 Gateway which converts data from analogue engine gauges/senders into NMEA 2000 data. Please refer to the FAQs for gauge/sender compatibility details. The EMU-1 can monitor vital engine parameters such as temperature, pressure RPM and fluid levels from up to two engines.

The EMU-1 has a PC based configuration tool that allows the settings inside the EMU-1 to be changed to best suit the engine it is working with, making it a flexible solution for many engine makes and models. An Actisense PC to NMEA 2000 Gateway (NGT-1) is required to configure the EMU-1.

It is recommended that an Actisense NGT-1 NMEA 2000 PC Interface is available for every EMU-1 installation. The NGT-1 can be used to update the Firmware, connect the Configuration Tool and display data on a PC for diagnostic and information purposes, using NMEA Reader. Please visit the NGT-1 page for product details.

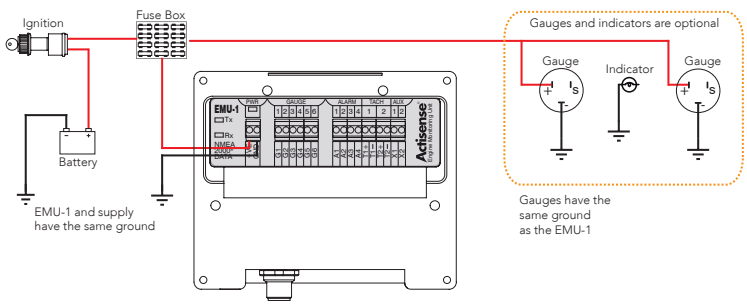
Mounting the EMU-1

If the EMU-1 is required to work in parallel to the engine gauges: Find a suitable mounting location as close as possible to the gauge panel.
If the EMU-1 is the only device connected to the engine senders: Find a suitable mounting location as close as possible to the engine senders.
The wiring between the gauges/senders and the EMU-1 should not exceed 2 metres to help keep the readings as accurate as possible. Refer to the User Manual for full details



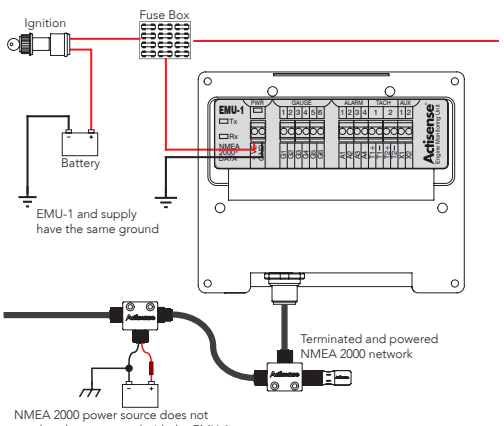
Powering the EMU-1

The EMU-1 can operate between 9 and 35 VDC and will typically use 25mA at 12 VDC.
If the engine gauges are to remain in-circuit, the EMU-1 must be powered from exactly the same power supply as the gauges otherwise the measurements will not be accurate. The EMU-1 gauge ground and power ground must be common to prevent ground loops.



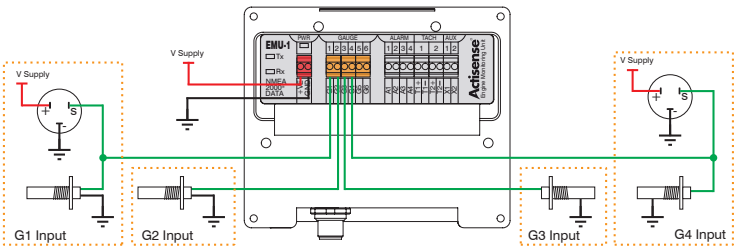
Connecting to the NMEA 2000 Network

The EMU-1 must be connected to a spare T-piece on the NMEA 2000 network. If a T-piece isn't available, one must be installed. The length of cable from the T-piece to the EMU-1 (also known as an 'instrument drop') must not exceed 6 metres, in accordance with the NMEA 2000 specification.



Gauges Input Connections

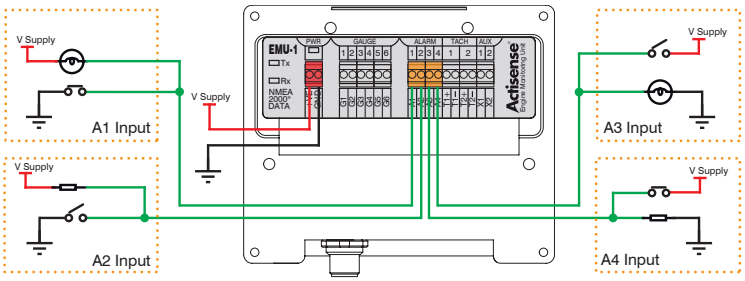
The diagram below illustrates the 4 different options available for connecting a gauge/sender to the EMU-1.



G1 Input = Insulated terminal sender with gauge
G2 Input = Insulated terminal sender without gauge
G3 Input = Standard grounded sender with gauge
G4 Input = Standard grounded sender without gauge

Alarm Input Connections

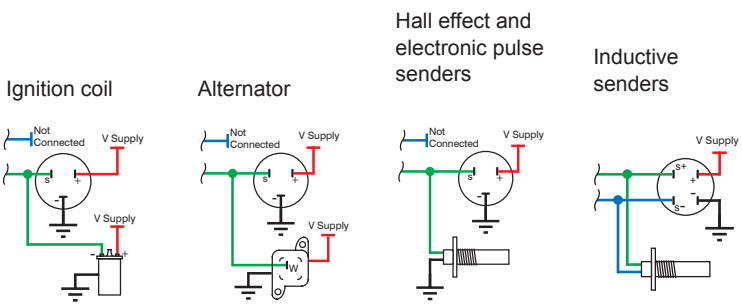
The diagram below illustrates 4 different options for connecting a switch, alarm indicator or gauge/sender to the EMU-1.



Supported Switch and Installation Types
Normally Open switches (see examples A1 and A4)
Normally Closed switches (see examples A2 and A3)
Active High (see examples A3 and A4)
Active Low (see examples A1 and A2)

Tach Input Connections

The EMU-1 has 2 Tacho inputs designed for connection to any of the sender options illustrated in the diagrams below.
The Pulses per Revolution (PPR) must be calibrated using the Actisense Toolkit application to allow the correct RPM to be calculated. Refer to the User Manual for full details.



Supported Switch and Installation Types
Normally Open switches (see examples A1 and A4)
Normally Closed switches (see examples A2 and A3)
Active High (see examples A3 and A4)
Active Low (see examples A1 and A2)

Configuring the EMU-1

An Actisense NGT-1 is required by the Actisense Toolkit application to configure the EMU-1. Actisense Toolkit is freely available for download from www.actisense.com