Actisense®

# EMU-1

GEEK MODE ON

## NMEA 2000® Engine Monitoring Unit

### Technical Specifications

| Power Supply | |
|---|---|
| Supply Voltage | 9 to 35V DC |
| Supply Current | Typically < 25mA @ 12V DC |
| Supply Protection | Continuous reverse polarity protection and load dump protection (meets SAE J1113) |
| Supply Connector | Pluggable 2-way screw terminal, 3.5mm pitch |
| Supply Voltage (NMEA 2000 Port) | 9 to 29V DC |
| Supply Current (NMEA 2000 Port) | < 20mA @ 12V DC from NMEA 2000 bus |
| Load Equivalent Number (LEN) | 1 |
| Supply Protection (NMEA 2000 Port) | Continuous reverse polarity protection |
| **NMEA 2000 Port - In/Out** | |
| Compatibility | Fully NMEA 2000 certified |
| Galvanic Isolation | NMEA 2000 port |
| Speed / Baud Rate | 250kbps |
| NMEA 2000 Connector | M12 male (A coded) connector |
| **Gauge Inputs** | |
| Voltage Range | 0 to 35V DC |
| Input Impedance | > 50kΩ |
| Sender Current Feed | 0, 4mA or 18mA |
| Accuracy | <= 2% |
| Input Connector | Pluggable 6-way screw terminal, 3.5mm pitch |
| Input Protection | Overvoltage protection to ±40V |
| **Alarm Inputs** | |
| Voltage Range | 0 to 37V DC |
| Input Impedance | > 50kΩ |
| Threshold Voltage | Configurable, default is 5V |
| Alarm Polarity | Configurable, default is alarm on low input |
| Accuracy | <= 2% |
| Input Connector | Pluggable 4-way screw terminal, 3.5mm pitch |
| Input Protection | Overvoltage protection to ±40V |

| Tacho Inputs | |
|---|---|
| Voltage Range | ±3 to ±60V |
| Input Impedance | > 100kΩ to ground |
| Input Pulse Range | 4 to 30,000Hz |
| Accuracy | <= 1% |
| Sender Compatibility | Ignition coil, alternator ("W", "R" or "AC") terminal, hall effect, VR or inductive sender |
| Threshold | Automatically adjusts to signal level |
| Input Connector | Pluggable 4-way screw terminal, 3.5mm pitch |
| Input Protection | Can withstand an ignition pulse to ±500V |
| **Engine Log** | |
| Engine Hours | 2 separate engine hour logs internally connected to the tacho Inputs. Hours are logged when RPM is present, stored in non-volatile memory |
| **Mechanical** | |
| Housing Material | Polycarbonate |
| Protective Lid Material | Polycarbonate |
| Sealing Materials | Expanded silicone foam gasket, closed cell polyurethane splash guard and ePTFE waterproof vent |
| Dimensions | 127mm (L) x 112mm (W) x 48mm (H) |
| Weight | 250g |
| Mounting | 4 x 3.5mm lugs to allow panel mount with self-tapping s/s screws (included), optional DIN Rail mount available on request |
| **Approvals and Certifications** | |
| Fully NMEA 2000 Certified | |
| EMC | EN 60945 (sections 9 & 10) |
| Environmental Protection | IP65 (PCB housing) |
| Operating Temperature | -20°C to +55°C |
| Storage Temperature | -30°C to +70°C |
| Recommended Humidity | 0 - 93% RH |
| Guarantee | 3 years |

**Part Number: A-EMU-1-BAS**

All specifications are taken with reference to an ambient temperature of 25°C unless otherwise specified.
All specifications correct at time of print.

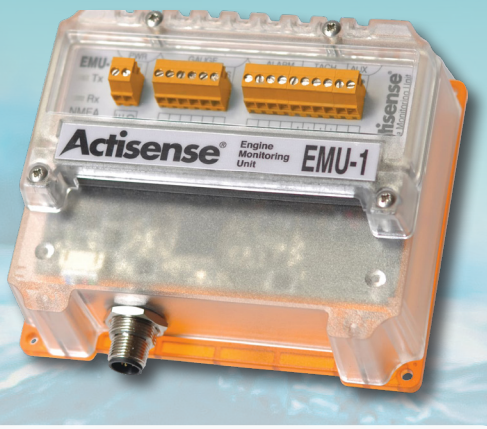
# Actisense®

# EMU-1

## NMEA 2000® Engine Monitoring Unit

The Actisense EMU-1 is a specialized analogue to NMEA 2000 Gateway which converts data from analogue engine gauges/ senders into NMEA 2000 data. The EMU-1 enables the sharing of engine data throughout the NMEA 2000 bus. It digitises analogue engine sensors, enabling NMEA 2000 display devices to monitor the connected engine(s) on a vessel.

The EMU-1 can monitor vital engine parameters such as temperature, pressure, RPM and fluid levels from up to two engines.




| Feature | Advantage | Benefit |
|---|---|---|
| • Converts analogue signals in to digital NMEA 2000 data | ✓ Allows analogue engines without an "ECU" to share data digitally | ✓ The EMU-1 upgrades an existing engine, allowing older engines to be used with to the latest digital MFDs |
| • 6 Gauge inputs | ✓ Connects to resistive/voltage gauges or resistive senders | ✓ Wide compatibility with existing installations |
| • 2 Tacho inputs | ✓ Connects directly to the RPM signals from 1 or 2 engines (with a common ground) | ✓ The EMU-1 can work with up to two engines simultaneously |
| • 4 Alarm inputs | ✓ Connects directly to alarm switches or Gauge signals and maps them to NMEA 2000 alarms | ✓ Most MFD's understand the NMEA 2000 engine alarm signals, altering users of engine issues, such as 'Over Temperature' |
| • 2 auxiliary inputs | ✓ Additional voltage monitoring | ✓ Future expansion opportunity to support new functionality |
| • Custom Conversion Curves | ✓ If the Actisense Toolkit's Conversion Curve library doesn't match, a custom Conversion Curve can be designed | ✓ A user can quickly create a custom Conversion Curve without searching for gauge or sender datasheets |
| • Switchable Sender current source | ✓ Allows control over the current used to power a resistive Sender without a gauge | ✓ When an analogue gauge is not present, the EMU-1 can automatically power the Sender directly |
| • Fluid level Gauge and Sender compatibility | ✓ Allows use of Fluid Level Gauges (sharing the engine's common ground) to expand the EMU-1's functionality | ✓ The EMU-1 is a flexible analogue to digital solution, reducing installation cost, and offering wide Fluid / Tank Level support |
| • Logs total engine hours | ✓ Accumulates engine running hours when the Tacho input indicates engine rotation | ✓ Accumulated engine running hours are stored and shared as NMEA 2000 data |
| • Wide operating voltage | ✓ Allows operation on 12V or 24V systems | ✓ Compatible with all common power systems |
| • Input protection | ✓ Protects against reverse polarity and transients | ✓ Protects against installation faults, provides peace of mind |
| • Custom IP65 case | ✓ Electronic parts and connections are protected from water and dust ingress | ✓ Supports installation in more humid below deck, areas of the vessel |
| • Diagnostic LEDs | ✓ Clear feedback on operational status and NMEA 2000 communications | ✓ Allows a user to quickly diagnose the EMU operation and NMEA 2000 communication |
| • Pluggable 2-Part screw terminal connectors | ✓ Clear feedback on operational status and NMEA 2000 communications | ✓ Fast and Simple installation saves time and money |
| • Panel or optional DIN rail mount | ✓ Can mount to bulkhead or DIN rail using optional mounting brackets | ✓ Flexible installation options to save time and money |

Le spécialiste des équipements électroniques
Zac de la plaine - 1, rue Brindejonc des Moulinais
31500 TOULOUSE
Tél : +33 (0)5 67 77 94 44
info@pst-france.fr - www.pst-france.fr