Features

- Engine monitoring purposely designed for turbines
- Modular solution allowing a number of display options
- One unit is all that is needed to cover most applications
- Additional units can easily expand scope of monitoring
- Minimal wiring install effort through a single connector

Description

The TM1 connects to sensors inside, on and near a turbine engine to acquire and pass along operational parameters via CAN bus to HMI (human-machine interface) equipment for display as operator instruments on DX1 displays, commercial off-the-shelf dashboard devices, or both.

The TM1 can team up with one or more of our DX1 displays to provide engine instruments at a dedicated spot on your instrument panel and where space may be at a premium.

The TM1 can also work with one or more of our LSI units to pass on CAN bus data over USB to tablets or mini-PCs, which opens up a host of display possibilities, including use of large format monitors/displays. Dedicated dashboard software from various vendors allow the customization of the human-machine interface (HMI).

A third option to present gauges is to use equipment from other vendors that is able to read our published CAN bus messages directly.

All the methods listed above will work independently of each other and thus create redundancy.

Measurements

The TM1 can read three temperatures through k-type thermocouples. One is typically reserved for core turbine temperature (ITT/EGT), reading up to 1200ºC. The other two will read temps between -100 to 411ºC and is typically used for oil temperature and outside air temperature.

The TM1 can also read three pressures through 0.5-4.5VDC ratiometric transducers. Typically one or two inputs are for engine torque, the others for oil pressure and fuel pressure.

The TM1 can also read two speeds from tachometer generators. This is typically employed to sense N1 and N2.

Various tachometer generator frequencies (up to 20KHz) and conversion ratios are accommodated.

The TM1 can also read fuel flow from a pulse-based fuel flow sensor. It accommodates various frequencies (up to 10KHz) and k-factors. Besides flow rate the TM1 also provides an accurate totalization count (or fuel used).

The TM1 can also read one amps and voltage through a current sensing shunt. It was designed for standard 50mV shunts but will sense differential voltages up to 75mV. It thus accommodates various shunts and reads voltages up to 50 volts.

The TM1 can also read 5 discreet inputs where each can be either open (floating), powered high, or powered low (grounded). These are typically used for chip detects, prop in beta, etc.

Applications

The TM1 will work anywhere a turbine engine can be used, whether the operator is in close proximity to the engine as on an aircraft or many meters away as on a yacht. The CAN bus can provide reliable communication of up to 40 meters.

The way in which the TM1 solution separates measurement acquisition from HMI display allows sensor wires to be shorter rather than longer thereby not only reducing the total amount of cable but improving measurement quality by reducing exposure to noise and interference.

The TM1 was designed to provide reading accuracy and responsiveness tailored to turbine applications.

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General Specifications

1	Operational Voltage Range	10 ... 40 VDC
2	Operating Temperature Range	-40 ... +85 ºC
3	Max. Operating Altitude	55,000 feet
4	Dimensions	100 x 75 x 25mm
5	Weight	180 g
6	Power Consumption (no external loads)	50mA

Unit Dimensions
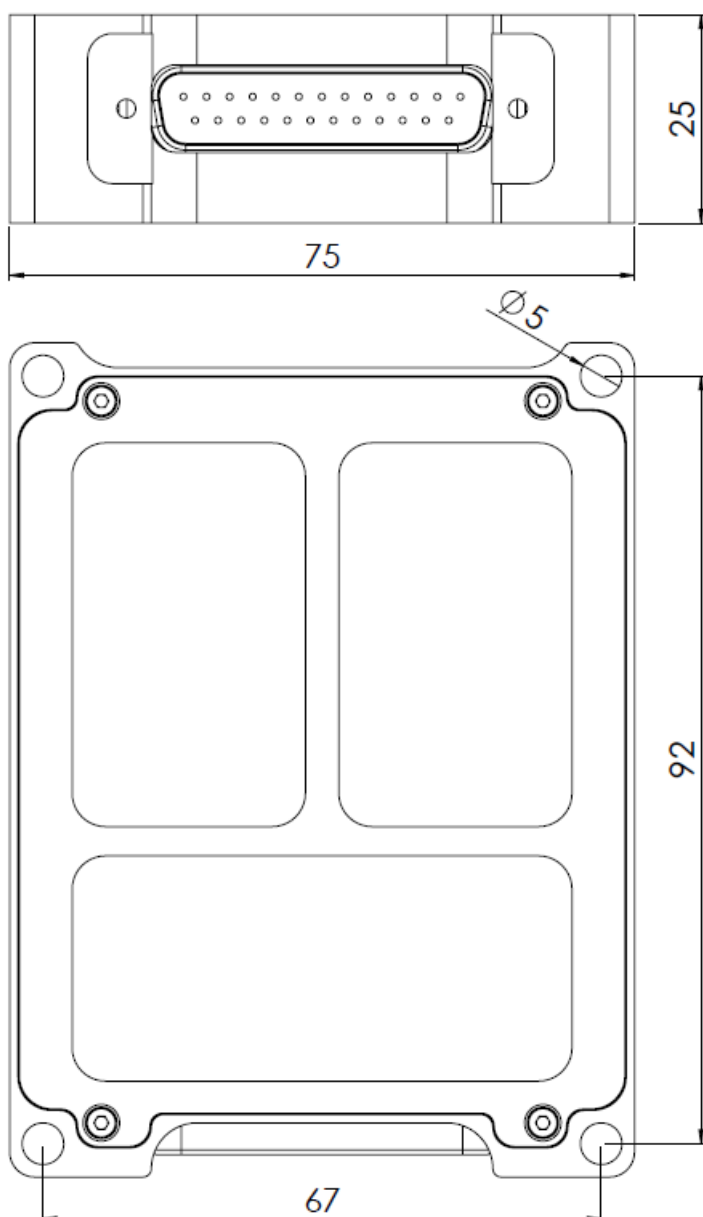
1. The TM1 uses a 25-pin DSUB (M24308 series) male connector. The recommended mating receptacle (female) for it is the M24308/2-3

2. The unit is secured through four 5mm holes on each corner accepting AN3 bolts