

M-SENS 8

8-channel analog measurement module with sensor excitation

- Measurement modes: V, mA selectable for each input
- 8 sensor excitations (bipolar ± 15 V, up to ± 45 mA)
- TEDS class 2 support
- Measurement data output to CAN
- Galvanic isolation (inputs, CAN, supply, enclosure)
- Designed for engine compartment applications
- Toolless module to module connection
- Ruggedized and compact modules for harsh environments



Channel volt	
Measurement range SENS	$\pm 0.1 / 0.2 / 0.5 / 1 / 2 / 5 / 10 / 20 / 30 / 50 / 100$ V
Accuracy at ambient temperature 25 °C	± 0.10 % (bipolar measurement ranges) ± 0.15 % (unipolar measurement ranges)
Drift for ambient temperature -40 ... 85°C	± 40 ppm/K
Drift for ambient temperature 85 ... 105 °C	± 80 ppm/K
Drift for ambient temperature 105 ... 125 °C	± 250 ppm/K
Channel current	
Measurement range	0 ... 20 mA, ± 20 mA
Accuracy	± 0.50 %
Internal shunt resistor	50 Ω
General channel properties	
Special functions	Offset adjust, during measurement, multiple groups
AD converter	16 bit / SAR (successive approximation register)
Oversampling	2 kHz
Channel sampling rates	1 / 2 / 5 / 10 / 20 / 50 / 100 / 200 / 500 / 1000 / 2000 Hz
Aggregate sample rate	16 kHz
Hardware filter (switchable)	150 Hz (M-SENS 8 / M-SENS 8 DSP) Accuracy 10 %
Software filter types	Bessel Butterworth Elliptic (8-pole)

Channel impedance	10 M Ω
Software filter (DSP selectable)	6 / 7.5 / 9.96 / 15 / 30 / 39.96 min 1 / 1.25 / 1.67 / 2.5 / 5.0 / 6.67 / 10 / 12.5 Hz 16.67 / 25 / 50 / 66.7 / 100 / 125 Hz (M-SENS 8 DSP) Accuracy 0.05 %
Channel LED	Yes
Channel LED	Yes Channel LED is flashing during configuration
TEDS	Class 2
Excitation	
Sensor excitation ranges	Bipolar ± 2.5 / ± 5 / ± 7.5 / ± 8 / ± 10 / ± 12.5 / ± 15 V
Accuracy excitation at ambient temperature 25 °C	± 0.30 %
Accuracy excitation at ambient temperature 85 °C	± 0.50 %
Accuracy excitation at ambient temperature 120 °C	± 0.70 %
Sensor excitation current	30 mA (for V output ± 2.5 / ± 10.0 V) 40 mA (for V output ± 5.0 / ± 12.5 V) 45 mA (for V output ± 7.5 / ± 15.0 V)
Galvanic isolation	
Input ↔ module power supply	± 100 V (indefinitely), ± 200 V (short-time, $t < 2$ ms)
Input ↔ CAN	± 100 V (indefinitely), ± 200 V (short-time, $t < 2$ ms)
Input ↔ enclosure	± 100 V (indefinitely), ± 200 V (short-time, $t < 2$ ms)
Input ↔ input	± 100 V (indefinitely), ± 200 V (short-time, $t < 2$ ms)
Input ↔ excitation	± 100 V (indefinitely), ± 200 V (short-time, $t < 2$ ms)
Device	
Inputs	8
Maximum input protection voltage (channel)	± 100 V (indefinitely), ± 200 V (short-time, $t < 2$ ms)
Voltage supply	9 ... 36 VDC
Supply voltage thresholds	On 9 ± 0.3 VDC / Off 6 ± 0.3 VDC
Power consumption, typical	3.5 W (all excitations off)
Working temperature range	-40 ... 125 °C (-40 ... 257 °F)
Storage temperature range	-55 ... 150 °C (-67 ... 302 °F)
IP-Code	IP 67 (ISO 20653 - 2013)
Relative humidity	5 ... 95 %
Dimensions	W204 mm x H41 mm x D55 mm (8.03 in x 1.61 in x 2.17 in)
Weight	695 g (1.53 lb)

Configuration interface	CAN high speed
Data transfer rate	Software selectable up to 1 MBit/s (ISO11898-2)
Housing material	Aluminum, gold anodized
Input sockets	Lemo EGG 1B 307 (7-Pin) ODU series F, size 1 (5-pin) S11F1C-T05MJG0-2500
Status LED	Yes
Derating (decrease of total output power)	-1.25 % /K for ambient temperature > 85 °C
Accessories	
System cable	620-502 M-CAN cable SUBD/S Term. 620-560 M-CAN cable 620-561 M-PWR term cable, banana 620-567 M-CAN/PWR term: cable SubD/S, banana M-CAN-ABS
Input cable	600-731 SENS LEMO1B7p cable banana 600-866 SENS LEMO 1B7p cable BNC/P 620-674 SENS LEMO 1B6p I-measure cable open 670-807 SENS LEMO 1B 6p cable open 670-810 SENS LEMO 1B 7p cable open 670-811 SENS LEMO 1B 7p TEDS cable open