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M-SENS 8plus

8-channel analog measurement module with sensor excitation

- Measurement ranges voltage ±10 mV up to ±100 V; current ±20mA
- 8 sensor excitations (bipolar ±15 V, up to ±45 mA)
- Measurement data output to CAN
- Galvanic isolation (inputs, CAN, supply, enclosure)
- Designed for engine compartment applications
- Ruggedized and compact modules for harsh environments

Device	
Maximum input protection voltage (channel)	±100 V (indefinitely), ±200 V (short-time, t < 2 ms)
Channel sampling rates	1/ 2/ 5/ 10/ 50/ 100/ 200/ 500/ 1000/ 2000 Hz
Aggregate sample rate	16 kHz
Oversampling	2 kHz
Voltage supply	9 ... 36 VDC
Supply voltage thresholds	Switch-on 9 ±0.3 VDC / Switch-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)
Input sockets	Lemo EGG 1B 307 (7-Pin)
Input sockets	ODU series F, size 1 (5-pin)
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)
General channel properties	
A/D converter	16 bit / SAR (successive approximation register)
Special functions	Offset adjust, during measurement, multiple groups

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Channel LED	Available
Flashing mode of channel LED	During configuration - blinking
Channel impedance	10 MΩ
Hardware filter (switchable)	150 Hz (M-SENS 8plus/M-SENS 8plus DSP), Butterworth (8-pole)
Hardware filter (switchable)	Accuracy 10 %
Software filter types	Butterworth, Bessel, Elliptic (8-Pol)
Software filter (DSP selectable)	6/ 7.5/ 9.96/ 15/ 30/ 39.96/ min
Software filter (DSP selectable)	1/ 1.25/ 1.67/ 2,5/ 5.0/ 6.67/ 10/ 12.5 Hz
Software filter (DSP selectable)	16.67/ 25/ 50/ 66.7/ 100/ 125 Hz (M-SENS 8plus DSP)
Software filter (DSP selectable)	Accuracy 0.05 %
Channel current	
Measurement range current	0 ... 20 mA, ±20 mA
Accuracy at ambient temperature 25 °C	±0.40 %
Internal shunt resistor	50 Ω
Excitation	
Sensor excitation ranges	Bipolar ±2.5/ ±5/ ±7.5/ ±8/ ±10/ ±12.5/ ±15V
Accuracy excitation at ambient temperature 25 °C	±0.25 %
Accuracy excitation at ambient temperature 85 °C	±0.40 %
Accuracy excitation at ambient temperature 120 °C	±0.50 %
Sensor excitation current	30 mA (for V output ±2.5 / ±10.0 V)
Sensor excitation current	40 mA (for V output ±5.0 / ±12.5 V)
Sensor excitation current	45 mA (for V output ±7.5 / ±15.0 V)
Derating (decrease of total output power)	-1.25 % /K for ambient temperature > 85 °C
Channel volt	
Measurement range SENS	±0.01/ 0.1/ 0.2/ 0.5/ 1/ 2 /5 / 10/ 20/ 30/ 50/ 100 V
Accuracy at ambient temperature 25 °C	±0.10 % (unipolar measurement ranges)
Accuracy at ambient temperature 25 °C	±0.06 % (bipolar 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
Drift for ambient temperature 105 ... 125 °C	±450 ppm/K (for 10 mV measurement range)
Accessories	
System cable	620-561.pdf
System cable	620-502.pdf
System cable	620-560.pdf
System cable	620-567.pdf
System cable	620-509.pdf
System cable	M-CAN-ABS.pdf
System cable	M-DEF-200.pdf
Input cable	600-866.pdf
Input cable	600-807.pdf

Input cable	600-810.pdf
Input cable	620-674.pdf

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