

Mx-SENS2 4

4 fast analog measurement inputs up to 100 kHz

- Measurement modes: SENS, mA, IEPE, individual for each input
- 4 separate dual sensor excitations (up to ± 15 V, up to ± 60 mA)
- Offset adjust functions
- TEDS Class-2 supported
- Measurement data output via XCP on Ethernet or CAN
- Designed for engine compartment applications
- Toolless module to module connection
- Ruggedized and compact modules for harsh environments



Device	
Maximum input protection voltage (channel)	± 100 V (indefinitely), ± 200 V (short-time, $t < 1$ ms)
Channel sampling rates	1/ 2/ 5/ 10/ 20/ 50/ 100/ 200/ 500 Hz
Channel sampling rates	1/ 2/ 5/ 10/ 20/ 50/ 100 kHz (CAN up to 2 kHz)
Aggregate sample rate	400 kHz
Oversampling	100 kHz
Voltage supply	9 ... 36 VDC
Supply voltage thresholds	Switch-on 9 ± 0.3 VDC / Switch-off 6 ± 0.3 VDC
Power consumption, typical	4.2 W (all excitations off)
Working temperature range	$-40 \dots 105$ °C ($-40 \dots 221$ °F)
Storage temperature range	$-55 \dots 105$ °C ($-67 \dots 221$ °F)
IP-Code	IP 67 (ISO 20653 - 2013)
Relative humidity	5 ... 95 %
Dimensions	W106 mm x H60 mm x D62 mm (4.17 in x 2.36 in x 2.44 in)
Weight	500 g (1.10 lb)
Configuration interface	Ethernet
Data transfer rate	100 Mbit Ethernet (IEEE 802.3)
Input sockets	Lemo EGG 1B 307 (7-pin) SIM-DMS compatible
Galvanic isolation	
Input module power supply	± 100 V (indefinitely), ± 500 V (pulse voltage)
Input CAN	± 100 V (indefinitely), ± 500 V (pulse voltage)
Input enclosure	± 100 V (indefinitely), ± 500 V (pulse voltage)
Input input	± 100 V (indefinitely), ± 500 V (pulse voltage)
Input excitation	± 100 V (indefinitely), ± 500 V (pulse voltage)
General channel properties	
A/D converter	16 bit / SAR (successive approximation register)
Special functions	Offset adjust, during measurement, multiple groups

Sensor break detection	For sensor excitation
Channel LED	Available
Flashing mode of channel LED	During configuration - blinking
TEDS	Class 2 (licensing option)
Channel impedance	5 M Ω
Hardware filter (fixed)	49 kHz cut off frequency
Hardware filter (fixed)	Type RC 4-pole
Hardware filter (fixed)	Accuracy 25 %
Hardware filter (switchable)	Type Butterworth (8-pole)
Hardware filter (switchable)	12 kHz (optional 20 kHz) cut off frequency
Hardware filter (switchable)	Accuracy 5 %
Software filter types	Butterworth, Bessel, Elliptic (8-pole)
Software filter (DSP selectable)	10/ 12.5/ 16.67/ 25/ 50/ 66.67/ 100/ 125/ 166.67/ 250/ 500/ 667 Hz
Software filter (DSP selectable)	1.0/ 1.25/ 1.67/ 2.5/ 5.0/ 6.67/ 10/ 12.5/ 16.67/ 25/ 33.34 kHz
Software filter (DSP selectable)	Accuracy 0.05 %
Channel current	
Measurement range current	0 ... 20 mA, \pm 20 mA
Accuracy at ambient temperature 25 °C	\pm 0.30 %
Internal shunt resistor	50 Ω
Excitation	
Sensor excitation ranges	Bipolar \pm 2.5/ \pm 5/ \pm 7.5/ \pm 8/ \pm 10/ \pm 12.5/ \pm 15V
Accuracy excitation at ambient temperature 25 °C	\pm 0.50 %
Accuracy excitation at ambient temperature 85 °C	\pm 0.70 %
Sensor excitation current	30 mA (for V output \pm 2.5 / \pm 10.0 V)
Sensor excitation current	40 mA (for V output \pm 5.0 / \pm 12.5 V)
Sensor excitation current	60 mA (for V output \pm 7.5 / \pm 15.0 V)
Channel volt	
Measurement range SENS	\pm 0.1/ 0.2/ 0.5/ 1/ 2/ 5/ 10/ 20/ 50/ 100 V
Accuracy at ambient temperature 25 °C	0.06 % of selected measurement range
Drift for ambient temperature -40 ... 85 °C	20 ppm/K
ENOB (Effective Number Of Bits)	
ENOB 3.6Vpp sinus, measurement range 4Vpp, at 125 Hz	typ. 15.7-bit, without filter (full bandwidth)
ENOB 3.6Vpp sinus, measurement range 4Vpp, at 125 Hz	typ. 19.1-bit, with hardware and software filter (250 Hz, Butterworth)
ENOB 3.6Vpp sinus, measurement range 4Vpp, at 1 kHz	typ. 14.3-bit, without filter (full bandwidth)
ENOB 3.6Vpp sinus, measurement range 4Vpp, at 1 kHz	typ. 16.8-bit, with hardware and software filter (1250 Hz, Butterworth)
THD (Total Harmonic Distortion)	
THD 3.6Vpp sinus, measurement range 4Vpp, at 125 Hz	typ. 95 dB, without filter (full bandwidth)
THD 3.6Vpp sinus, measurement range 4Vpp, at 125 Hz	typ. 122 dB, with hardware and software filter (250 Hz, Butterworth)

THD 3.6Vpp sinus, measurement range 4Vpp, at 1 kHz	typ. 87 dB, without filter (full bandwidth)
THD 3.6Vpp sinus, measurement range 4Vpp, at 1 kHz	typ. 114 dB, with hardware and software filter (1250 Hz, Butterworth)
Channel IEPE	
Nominal current, regulated	4.5 mA \pm 10 %
IEPE measurement range	\pm 0.1/ \pm 0.2/ \pm 0.5/ \pm 1.0/ \pm 2.0/ \pm 5.0/ \pm 10 V
Off-load voltage	24 V
Cut-off frequency range (high pass)	1 Hz / 200 Hz selectable (accuracy 20%)
Accessories	
System cable	630-524.pdf
System cable	630-507.pdf
System cable	630-302.pdf
System cable	630-501.pdf
System cable	630-522.pdf
System cable	630-500.pdf
System cable	630-504.pdf
System cable	630-505.pdf
System cable	USB2ETH-XLINK.pdf
System cable	X-Link-DEF.pdf
System cable	X-Link-TERM.pdf
Input cable	620-674.pdf
Input cable	600-810.pdf
Input cable	620-695.pdf
Input cable	600-866.pdf
Input cable	600-807.pdf
Input cable	670-811.pdf