

Mx-SENS2 4

4 fast analog measurement inputs each 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



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 % from the selected measuring range
Drift for ambient temperature -40 ... 105 °C	20 ppm/K
Measurement input IEPE	
Filtergrenzen (Hochpass)	1 Hz / 200 Hz adjustable (accuracy 20%)
Regulierter nominaler Ausgangsstrom	4.5 mA ± 10 %
IEPE-Messbereich	$\pm 0.1 / \pm 0.2 / \pm 0.5 / \pm 1.0 / \pm 2.0 / \pm 5.0 / \pm 10$ V
Leerlaufspannung	24 V
Channel current	
Measurement range	0 ... 20 mA, ± 20 mA
Accuracy	± 0.30 %
Internal shunt resistor	50 Ω
General channel properties	
A/D converter	16 bit / SAR (successive approximation register)
Spezialfunktionen	Offset adjust, during measurement, multiple groups Sensor breakage detection (activation via software setting)
Oversampling	100 kHz
Channel sampling rates	1/ 2/ 5/ 10/ 20/ 50/ 100/ 200/ 500 Hz 1/ 2/ 5/ 10/ 20/ 50/ 100 kHz (CAN up to 2 kHz)
Aggregate sample rate	400 kHz

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IPETRONIK GmbH & Co. KG • Phone: +49 7221 99 22 - 0 • Web: www.ipetronik.com • E-mail: info@ipetronik.com

Hardware filter (switchable)	Butterworth (8-pole) 12 kHz (optional 20 kHz) Cut-off frequency Accuracy 5 %
Hardware filter (fixed)	49 kHz Cut-off frequency Typ RC 4-Pol Accuracy 25 %
Software filter types	Bessel Butterworth Elliptic (8-pole)
Channel impedance	5 M Ω
Software filter (DSP selectable)	1.0/ 1.25/ 1.67/ 2.5/ 5.0/ 6.67/ 10/ 12.5/ 16.67/ 25/ 50/ 33.34 kHz 10/ 12.5/ 16.67/ 25/ 50/ 100/ 125/ 166.67/ 250/ 500/ 666.67 Hz Accuracy 0.05 %
Channel LED	Yes During configuration - blinking In case of overcurrent of sensor supply
Channel LED	Yes
TEDS	Class 2
ENOB (Effective Number Of Bits)	
ENOB 3.6Vpp Sinus, Messbereich 4Vpp, bei 125 Hz	Typ. 15.7 bit, without filter (full bandwidth) Typ. 19.1 bit, with hardware and software filter (250 Hz, Butterworth)
ENOB 3.6Vpp Sinus, Messbereich 4Vpp, bei 1 kHz	Typ. 14.3 bit, without filter (entire bandwidth) Typ. 16.8 bit, with hardware and software filter (1250 Hz, Butterworth)
THD (Total Harmonic Distortion)	
THD 3.6Vpp Sinus, Messbereich 4Vpp, bei 125 Hz	Typ. 95 dB, without filter (entire bandwidth) Typ. 122 dB, with hardware and software filter (250 Hz, Butterworth)
THD 3.6Vpp Sinus, Messbereich 4Vpp, bei 125 Hz	Typ. 95 dB, without filter (entire bandwidth) Typ. 122 dB, with hardware and software filter (250 Hz, Butterworth)
THD 3.6Vpp Sinus, Messbereich 4Vpp, bei 1 kHz	Typ. 87 dB, without filter (entire bandwidth) Typ. 114 dB, with hardware and software filter (1250 Hz, Butterworth)
THD 3.6Vpp Sinus, Messbereich 4Vpp, bei 1 kHz	Typ. 87 dB, without filter (full bandwidth) Typ. 114 dB, with hardware and software filter (1250 Hz, Butterworth)
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	± 0.50 %
Accuracy excitation at ambient temperature 85 °C	± 0.70 %
Sensor excitation current	40 mA (for V output $\pm 5.0 / \pm 12.5$ V) 60 mA (for V output $\pm 7.5 / \pm 15.0$ V) 30 mA (for V output $\pm 2.5 / \pm 10.0$ V)
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)
Device	
Eingänge	4
Maximum input protection voltage (channel)	±100 V (continuous), ±200 V (short-time, t < 1 ms)
Voltage supply	9 ... 36 VDC
Supply voltage thresholds	On 9 ±0.3 VDC / Off 6 ±0.3 VDC
Power consumption, typical	4.2 W (all excitations off)
Working temperature range	-40 ... 105 °C (-40 ... 221 °F)
Storage temperature range	-55 ... 105 °C (-67 ... 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)
Status LED	Yes
Accessories	
Module	X-FEED
System cable	X-Link-DEF X-Link-TERM USB2ETH-XLINK 630-500 630-501 630-504 630-505 630-507 630-524 630-302
Input cable	SENS8-TEDS 600-731 600-866 620-695 670-807 670-810 670-811