

Mx-STG2 6

6 fast strain gauge measurement inputs up to 100 kHz

- 6 dual sensor excitations (up to ± 5 V)
- Offset adjust functions, shunt check
- Internal resistors for bridge completion selectable
- 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 voltage (channel)	± 100 V (indefinitely), ± 200 V (short-time, $t < 1$ ms)
Channel sampling rates	10/ 20/ 50/ 100/ 200/ 500 ... 100 kHz
Channel sampling rates	10/ 20/ 50/ 100/ 200/ 500/ 1000/ 2000 Hz (CAN bis zu 2 kHz)
Aggregate sample rate	600 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	5.0 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	W212 mm x H60 mm x D35 mm (8.35 in x 2.36 in x 1.38 in)
Weight	700 g (1.54 lb)
Configuration interface	Ethernet
Data transfer rate	100 Mbit Ethernet (IEEE 802.3)
Input sockets	Lemo EGG 1B 307 (7-pin) SIM-DMS compatible
Input sockets	Lemo EGG 2B 310 (10-pin) for TEDS
Input sockets	SUB D (9-pin) female
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)
General channel properties	

A/D converter	24 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	10 M Ω (differential), 5 M Ω (ground related)
Hardware filter (fixed)	46 kHz cut off frequency for input ranges (± 0.05 / 0.1/ 0.2/ 0.5/ 1 V)
Hardware filter (fixed)	Typ RC 2-Pol
Hardware filter (fixed)	30 kHz cut off frequency for input ranges (± 0.005 / 0.01/ 0.02 V)
Hardware filter (fixed)	Type RC 3-pole
Hardware filter (switchable)	12 kHz cut off frequency
Hardware filter (switchable)	Type Butterworth (8-pole)
Hardware filter (switchable)	Accuracy 10 %
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 0.00002 %
Excitation	
Sensor excitation ranges	Bipolar ± 0.5 / ± 1.25 / ± 2.5 / ± 5 V
Accuracy excitation at ambient temperature 25 °C	0.5 %
Sensor excitation current	45 mA, short-circuit proof (software controlled)
ENOB (Effective Number Of Bits)	
ENOB 1.8Vpp sinus, measurement range 2Vpp, at 125 Hz	16.9 bit, without filter (full bandwidth)
ENOB 1.8Vpp sinus, measurement range 2Vpp, at 125 Hz	17.5 bit, with hardware and software filter (250 Hz, Butterworth)
ENOB 1.8Vpp sinus, measurement range 2Vpp, at 1 kHz	16.5 bit, without filter (full bandwidth)
ENOB 1.8Vpp sinus, measurement range 2Vpp, at 1 kHz	21.3 bit, with hardware and software filter (1250 Hz, Butterworth)
THD (Total Harmonic Distortion)	
THD 1.8Vpp sinus, measurement range 2Vpp, at 125 Hz	102 dB, without filter (full bandwidth)
THD 1.8Vpp sinus, measurement range 2Vpp, at 125 Hz	106 dB, with hardware and software filter (250 Hz, Butterworth)
THD 1.8Vpp sinus, measurement range 2Vpp, at 1 kHz	100 dB, without filter (full bandwidth)
THD 1.8Vpp sinus, measurement range 2Vpp, at 1 kHz	129 dB, with hardware and software filter (1250 Hz, Butterworth)
Offset drift AAF (Anti Aliasing Filter) ON	
Offset drift AAF ON - ambient temperature -40 ... 85 °C	Typ. $\pm 0.13 \mu\text{V}/^\circ\text{C}$ (± 0.005 V measurement range)
Offset drift AAF ON - ambient temperature -40 ... 85 °C	Max. $\pm 0.40 \mu\text{V}/^\circ\text{C}$ (± 0.005 V measurement range)
Offset drift AAF ON - ambient temperature 85 ... 105 °C	Typ. $\pm 0.30 \mu\text{V}/^\circ\text{C}$ (± 0.005 V measurement range)

Offset drift AAF ON - ambient temperature 85 ... 105 °C	Max. $\pm 0.90 \mu\text{V}/^\circ\text{C}$ ($\pm 0.005 \text{ V}$ measurement range)
Offset drift AAF ON - ambient temperature -40 ... 85 °C	Typ. $\pm 0.13 \mu\text{V}/^\circ\text{C}$ ($\pm 0.05 \text{ V}$ measurement range)
Offset drift AAF ON - ambient temperature -40 ... 85 °C	Max. $\pm 0.40 \mu\text{V}/^\circ\text{C}$ ($\pm 0.05 \text{ V}$ measurement range)
Offset drift AAF ON - ambient temperature 85 ... 105 °C	Typ. $\pm 0.27 \mu\text{V}/^\circ\text{C}$ ($\pm 0.05 \text{ V}$ measurement range)
Offset drift AAF ON - ambient temperature 85 ... 105 °C	Max. $\pm 0.80 \mu\text{V}/^\circ\text{C}$ ($\pm 0.05 \text{ V}$ measurement range)
Offset drift AAF ON - ambient temperature -40 ... 85 °C	Typ. $\pm 1.67 \mu\text{V}/^\circ\text{C}$ ($\pm 1 \text{ V}$ measurement range)
Offset drift AAF ON - ambient temperature 85 ... 105 °C	Max. $\pm 5 \mu\text{V}/^\circ\text{C}$ ($\pm 1 \text{ V}$ measurement range)
Offset drift AAF ON - ambient temperature 85 ... 105 °C	Typ. $\pm 2.33 \mu\text{V}/^\circ\text{C}$ ($\pm 1 \text{ V}$ measurement range)
Offset drift AAF ON - ambient temperature 85 ... 105 °C	Max. $\pm 7 \mu\text{V}/^\circ\text{C}$ ($\pm 1 \text{ V}$ measurement range)
Gain drift AAF ON	
Gain drift AAF ON - ambient temperature -40 ... 105 °C	Typ. $\pm 6.7 \text{ ppm}/^\circ\text{C}$ ($\pm 0.005 \text{ V}$ measurement range)
Gain drift AAF ON - ambient temperature -40 ... 105 °C	Max. $\pm 20 \text{ ppm}/^\circ\text{C}$ ($\pm 0.005 \text{ V}$ measurement range)
Gain drift AAF ON - ambient temperature -40 ... 105 °C	Typ. $\pm 6.7 \text{ ppm}/^\circ\text{C}$ ($\pm 0.05 \text{ V}$ measurement range)
Gain drift AAF ON - ambient temperature -40 ... 105 °C	Max. $\pm 20 \text{ ppm}/^\circ\text{C}$ ($\pm 0.05 \text{ V}$ measurement range)
Gain drift AAF ON - ambient temperature -40 ... 105 °C	Typ. $\pm 5 \text{ ppm}/^\circ\text{C}$ ($\pm 1 \text{ V}$ measurement range)
Gain drift AAF ON - ambient temperature -40 ... 105 °C	Max. $\pm 15 \text{ ppm}/^\circ\text{C}$ ($\pm 1 \text{ V}$ measurement range)
Channel strain gauge	
Measurement range strain gauge	$\pm 0.005/ 0.01/ 0.02/ 0.05/ 0.1/ 0.2/ 0.5/ 1 \text{ V}$
Accuracy at ambient temperature 25 °C	$\pm 0.01 \%$ measurement range $\pm 1\text{V}$
Accuracy at ambient temperature 25 °C	$\pm 0.02 \%$ measurement range $\pm 0.05/ \pm 0.1/ \pm 0.2/ \pm 0.5 \text{ V}$
Accuracy at ambient temperature 25 °C	$\pm 0.075 \%$ measurement range $\pm 0.005/ \pm 0.01/ \pm 0.02 \text{ V}$
Drift of excitation at ambient temperature -40 ... 105 °C	10 ppm/K
Special functions STG	Bridge adjust
Special functions STG	Shunt check
Special functions STG	Shunt resistor simulation 5 ... 200 k Ω
Special functions STG	Resistor for bridge completion 120, 350, 1000 Ω
Special functions STG	4-wire / 6-wire connection
Accessories	
System cable	630-507.pdf
System cable	630-302.pdf
System cable	630-501.pdf
System cable	630-524.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	600-747.pdf
Input cable	670-850.pdf
Input cable	620-700.pdf

