

Q.brixx XE A108 MEMS-4M1

I/O Module for 4 single-axis MEMS sensors

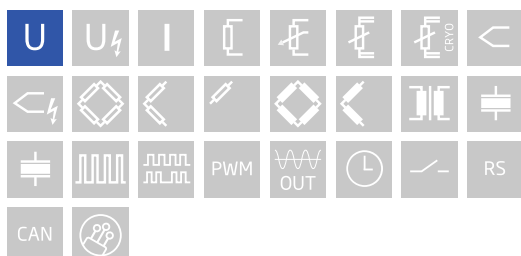
Q.brixx XE is a new addition to the Q.series product family - the ideal EtherCAT DAQ solution for on-the-go applications in potentially harsh environments. Q.brixx XE DAQ systems consist of up to 10 measurement modules capable of up to 100 kHz sampling per channel and an integrated EtherCAT bus coupler providing short cycle times and low jitter for accurate synchronization, all within a robust aluminum housing capable of withstanding severe shock and vibration without sacrificing performance.

- DC (distributed clock) for data synchronization
- FoE (file access over EtherCAT, ETG.1000.5) and CoE (CAN over EtherCAT, ETG.50001.1)
- Configurable PDO mapping to optimize the data throughput
- Electromagnetic Compatibility according to EN61000-4 and EN55011
- Power supply 10 ... 30 VDC



Key Features

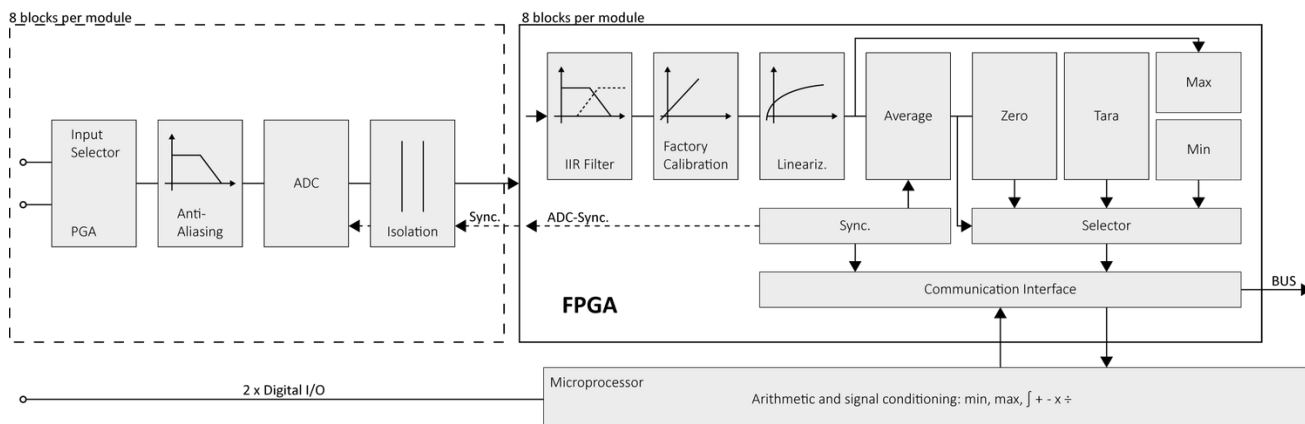
- I/O module for 4 single-axis MEMS sensors
Four 1/4-28 input sockets (4 pole) MicroCom CMR
Sensor supply galvanic isolated
- 4+4 Analog input channels
AI1,AI2,AI3,AI4 differential /single-ended switchable in groups
AI5,AI6,AI7,AI8 single-ended (e.g. for temperature input/compensation)
- High-accuracy digitization
24-bit ADC, 20 kHz sample rate per channel
- Signal conditioning
linearization, filtering, average, scaling, min/max, RMS, arithmetic, alarm
- 3-Way galvanic isolation
500 VDC channel to channel, channel to power supply, and channel to bus



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Block diagram



Technical Data

Pin assignment

Pin			
1		Power	Supply +15 V
2		Return	Supply GND
3		AI _n +	Analog IN +
4		AI _n - / Temp	Analog IN - / temperature

Analog Input

Channels	4 + 4 AI1, AI2, AI3, AI4 differential / single ended, switchable in groups AI5, AI6, AI7, AI8 single ended (e.g. for temperature input/compensation)
Accuracy	0.01 % typical 0.025 % in controlled environment ¹ 0.05 % in industrial area ²
Linearity error	0.01 % typical full-scale
Repeatability	0.003 % typical (within 24 hrs)
Isolation voltage	500 VDC channel to channel, to power supply, and channel to bus ³

¹ according to EN 61326 2006: appendix B

² according to EN 61326 2006: appendix A

³ noise pulses up to 1000 VDC, continuous up to 250 VDC

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Voltage Measurement

Input range	± 10 VDC	
Margin of error	± 2 mV	
Resolution	1.5 μ V	
Long-term stability	< 50 μ V / 24 hrs	< 200 μ V / 8000 hrs
Temperature drift	< 200 μ V / 10 K Offset drift	< 100 ppm / 10 K Gain drift
Signal-to-noise ratio	> 100 dB at 100 Hz	> 120 dB at 1 Hz
Input impedance	> 1 M Ω	
Overvoltage protection	± 200 V	

Analog-to-Digital Conversion

Resolution	24-bit
Sample rate	20 kHz per channel
Modulation method	sigma-delta
Anti-aliasing filter	2 kHz, 3rd order
Digital filters	Infinite impulse response (IIR), low-pass, high-pass, band-pass, Butterworth or Bessel (2nd, 4th, 6th or 8th order), frequency range 0.1 Hz to 1 kHz (adjustable via software)
Averaging	configurable or automatic according to the user-defined data rate

Sensor excitation

Channels	4
Voltage	15 V
Current	max. 20 mA (short circuit proof)
Accuracy	< 3 %
Load regulation	< 0.1 %
Noise	1.2 mV (RMS)

Communication Interface

Protocols	proprietary Localbus (115200 bps to 48 Mbps, latency < 100 ns) ASCII (19200 bps to 115200 bps) Modbus RTU
Data format	8E1
Electrical standard	ANSI/TIA/EIA-485-A, 2-wire

Input Power

Input voltage	10 to 30 VDC, overvoltage and overcurrent protection
Power consumption	3.5 W (approx.)
Input voltage influence	< 0.001 % / V

Environmental Specifications

Electromagnetic compatibility (EMC)	according to IEC 61000-4 and EN 55011
Operating temperature	-20°C to +60°C
Storage temperature	-40°C to +85°C
Relative humidity	5 - 95 % at 50°C (non-condensing)

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Remarks

Validity of all listed specifications are subject to a warm-up period of at least 45 minutes

Specifications subject to change without notice

Mechanical information

Material	Aluminum
Measurements (W x H x D)	30x 137 x 135mm
Weight	approx. 500 g

Ordering Information

Article number	585531
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