

Q.bloxx XE A104 plus

Multi Channel Module for Thermocouples and Voltages

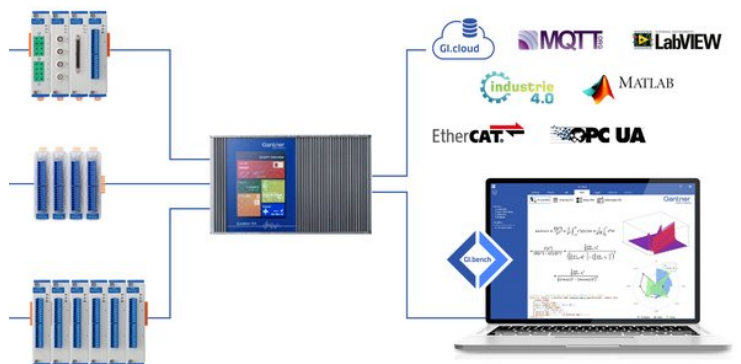
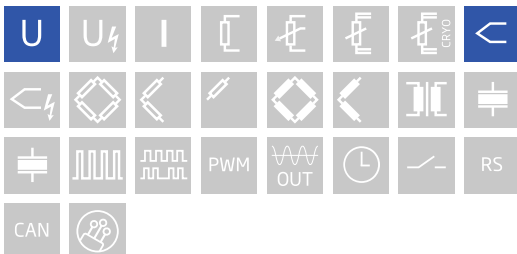
Q.bloxx XE is a new addition to the Q.series product family - the ideal EtherCAT DAQ solution for widely distributed installations that require higher performance and custom sensor terminations. Q.bloxx XE measurement modules possess integrated signal conditioning and arithmetic functions, packaged in modular, DIN Rail mountable enclosures that easily snap together for system expansion and are capable of measuring up to 100 kHz per channel with short cycle times and low jitter for accurate synchronization.

- RS-485, 2-wire, EtherCAT (LVDS)
- 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 and DIN rail mounting (EN60715)



Key Features

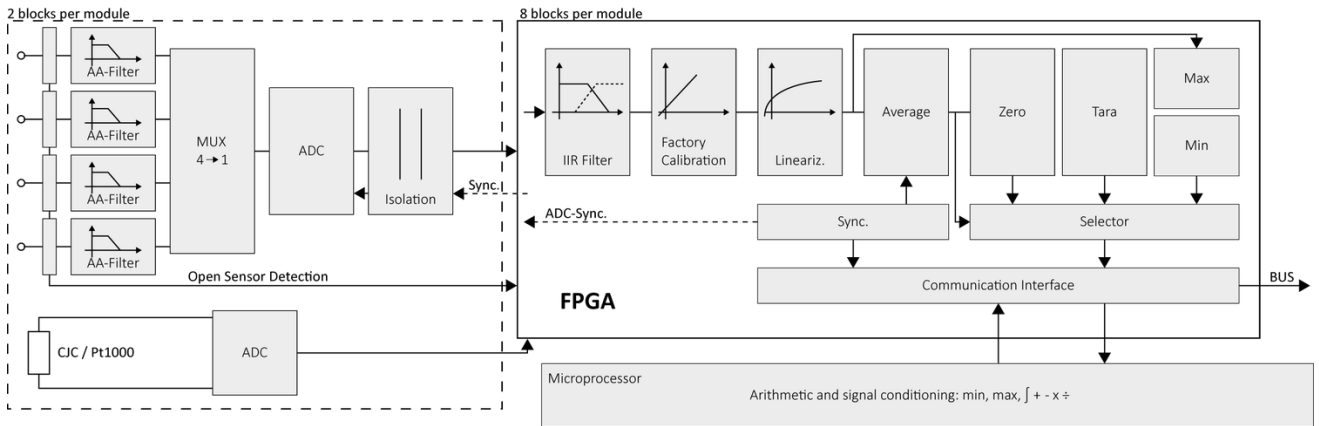
- **8 galvanic isolated input channels**
thermocouples and voltages in the range of ± 80 mV
- **Active input stage each channel**
high CMRR caused by special separated input stages with anti-aliasing filter each channel, high resistive thermocouples possible
- **Cold junction compensation**
good thermal coupling by means of cold junction compensation per connector
- **Dynamic linearization**
optimized positioning of the interpolation points within the selected range, type B, E, J, K, L, N, R, S, T, U
- **High accuracy digitalization**
24 bit ADC, 100 Hz sample rate per channel
- **Signal conditioning**
digital filter, average, scaling, min/max storage, arithmetic, alarm
- **Galvanic isolation**
channels to power supply and to interface
Isolation voltage 500 VDC



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Block diagram



Technical Data

Analog Input

Channels	8
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 h)
Input impedance	>500 MΩ
Cable break detection	no influence on measurement result
common-mode rejection ratio (CMRR)	>120 dB
Isolation voltage	500 VDC channels to power supply channel to bus ³
	100 VDC continuous, channel to channel

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

Measurement Mode Voltage

Error	range	max. error	resolution
	±80 mV	±10 μV	10 nV
Long-term drift	<1 μV / 24 h	<10 μV / 8000 h	
Temperature influence	Offset drift	Gain drift	
	<2 μV / 10 K	<0.02 % / 10 K	
Signal-to-noise ratio	>100 dB at 100 Hz		

Measurement Mode Thermocouple

	Type	range	adjusted with cold junction compensation	not adjusted, with CJC terminal
Deviation in the relevant input range The specifications are valid with enabled mains frequency rejection 50 Hz resp. 60 Hz	Type B	400°C to 1820°C	< ±1.5 °C	< ±2.5°C
	Type E, J, K	-100 to 1000°C	< ±0.5°C	< ±1.0°C
	Type E	-270°C to 1000°C	< ±0.8°C	< ±1.0°C
	Type K	-270°C to 1372°C	< ±0.8°C	< ±1.0°C
	Type L	-200°C to 900°C	< ±0.5°C	< ±1.0°C
	Type N	-100°C to 1000°C	< ±0.5°C	< ±1.0°C
	Type N	-270°C to 1300°C	< ±0.8°C	< ±1.0°C
	Type R, S	-50°C to 1768°C	< ±1.0°C	< ±1.5°C
	Type T, U	-100°C to 400°C	< ±0.5°C	< ±1.0°C
	Type T	-270°C to 400°C	< ±0.8°C	< ±1.0°C
Long-term drift	< 0.025°C / 24 h		< 0.05°C / 8000 h	
Temperature influence	Offset drift		Gain drift	
	< 0.05°C / 10 K		< 0.02% / 10 K	
Uncertainty CJC	< 0.3°C			

Analog/Digital-Conversion

Resolution	24-bit
Update rate	100 Hz per channel
Modulation method	Sigma-Delta
Anti-aliasing filter	20 Hz, 3rd order
Digital Filter	Infinite impulse response (IIR), low-pass, Butterworth or Bessel (2nd, 4th, 6th or 8th order), frequency range 0.1 Hz to 10 Hz (adjustable via software)
Averaging	sliding 10 x 10 ms for optimization of the precision (always active)
	in addition optional filter for mains frequency rejection 50 Hz (measuring rate 6 Hz) or 60 Hz (measuring rate 10 Hz)

Communication Interface

Protocols	proprietary Localbus (115200 bps to 24 Mbps, latency <100 ns) ASCII (19200 bps to 115200 bps) Modbus RTU Profibus-DP (19200 bps to 12 Mbps) (special Firmware required)
Data format	BE1
Electrical standard	ANSI/TIA/EIA-485-A, 2-wire

Power Supply

Input voltage	10 to 30 VDC, overvoltage and overcurrent protection
Power consumption	approx. 2 W
Input voltage influence	< 0.001 %/V

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Environmental

Operating temperature	-20°C to +60°C
Storage temperature	-40°C to +85°C
Relative humidity	5 % to 95 % at 50°C, non-condensing

Remarks

Warm-up time	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 and ABS
Measurements (W x H x D)	30x 145 x 135mm
Weight	approx. 500 g

Ordering Information

Article number	643526
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