

# Q.bloxx XE A104 TCx

## Thermocouple Measurement Module

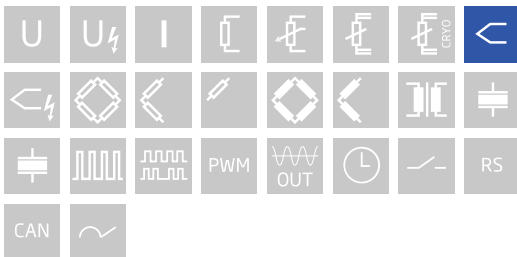
Q.bloxx XE is a new addition to the Q.series product family - the ideal EtherCAT DAQ solution for widely distributed installations that require higher performance and custom sensor terminations. Q.bloxx XE measurement modules possess integrated signal conditioning and arithmetic functions, packaged in 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

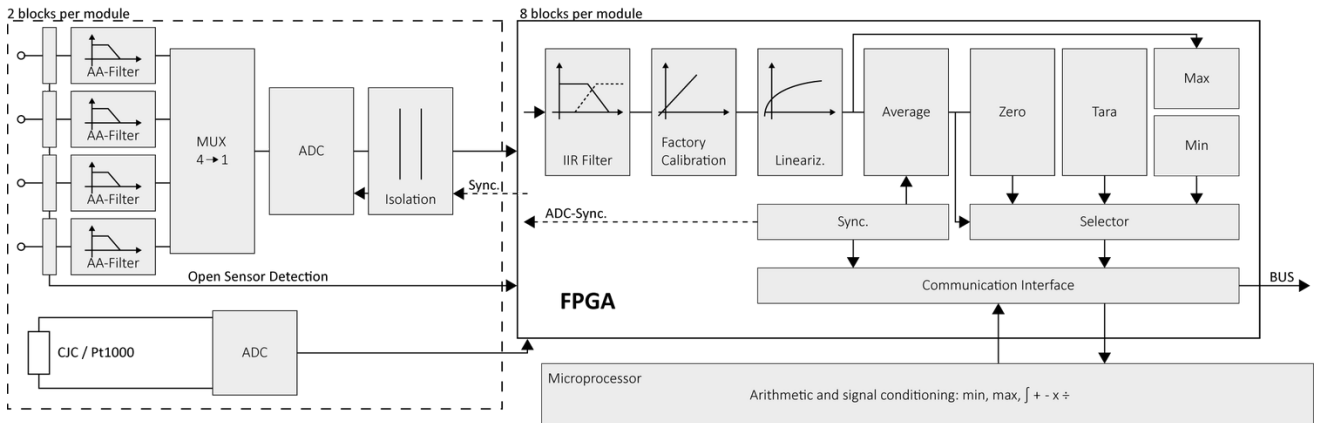
- 8 analog input channels thermocouple (type B / E / J / K / L / N / R / S / T / U), voltage ( $\pm 80$  mV)
- High-accuracy digitization 24-bit ADC, 100 Hz sample rate per channel, 50/60 Hz mains rejection
- Automatic linearization correction optimal position of the interpolation points adjusted to the input range
- Simplified wiring direct connectivity with mini-TC plugs, built-in cold junction compensation
- Open thermocouple detection detect broken wire, loose connection or thermocouple burnout
- 3-Way galvanic isolation Channel to channel, channel to power supply and bank
- Electromagnetic compatibility (EMC) according to IEC 61000-4 and EN 55011



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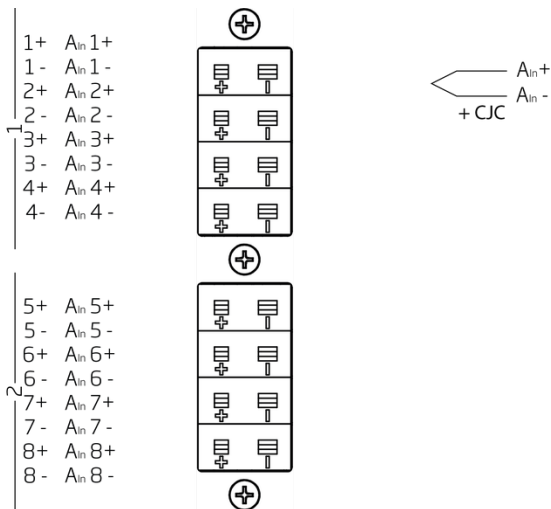
## Thermocouple Measurement Module

### Block diagram



### Technical Data

#### Terminal assignment thermocouple type



### Analog Input

Channels	8
Input impedance	>10 MΩ
Isolation voltage	500 VDC channels to power supply channel to bus <sup>1</sup>
	100 VDC continuous, channel to channel

<sup>1</sup> noise pulses up to 1000 VDC, continuous up to 250 VDC

### Thermocouple Measurement

	Type	Set measuring range	margin of error	
	Deviation in the relevant Temperature range The specifications are valid with enabled mains frequency rejection 50 Hz resp. 60 Hz	Type B	0°C to 1820°C	100°C to 400°C
400°C to 1820°C				< ±2.5°C
Type E		-270°C to 1000°C	-250°C to -100°C	< ±2.5°C
			-100°C to 1000°C	< ±1°C
		-200°C to 1000°C	-200°C to -100°C	< ±1.5°C
			-100°C to 1000°C	< ±0.8°C
Type K		-270°C to 1372°C	-250°C to -100°C	< ±2°C
			-100°C to 1372°C	< ±1°C
		-200°C to 1200°C	-200°C to -100°C	< ±1.5°C
			-100°C to 1200°C	< ±0.8°C
Type J		-210°C to 1200°C	-210°C to -100°C	< ±1.5°C
			-100°C to 1200°C	< ±0.8°C
Type T		-270°C to 400°C	-250°C to -100°C	< ±2°C
			-100°C to 400°C	< ±1°C
		-200°C to 400°C	-200°C to -100°C	< ±1.5°C
			-100°C to 400°C	< ±0.8°C
Type S		-50°C to 1768°C	-50°C to 400°C	< ±2°C
			400°C to 1768°C	< ±1.5°C
Type N		-270°C to 1300°C	-250°C to -100°C	< ±2°C
			-100°C to 1300°C	< ±1°C
	-200°C to 1300°C	-200°C to -100°C	< ±1.5°C	
		-100°C to 1300°C	< ±0.8°C	
Type U	-200°C to 600°C	-200°C to -100°C	< ±2°C	
		-100°C to 600°C	< ±0.8°C	
Type R	-50°C to 1768°C	-50°C to 100°C	< ±2°C	
		100°C to 1768°C	< ±1.5°C	
Type L	-200°C to 900°C	-200°C to 0°C	< ±1.5°C	
		0°C to 900°C	< ±0.8°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-to-Digital Conversion

Resolution	24-bit
Sample rate	100 Hz per channel fast mode 10 Hz per channel with 60 Hz mains frequency rejection 6 Hz per channel with 50 Hz mains frequency rejection
Modulation method	sigma-delta
Digital filters	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	configurable or automatic according to the user-defined data rate

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## Thermocouple Measurement Module

### Communication Interface EtherCAT

Electrical standard	RS-485, 2-wire
Protocols	EtherCAT (LVDS)

### Input Power

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

### Environmental Specifications

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

### Remarks

Are subject to a warm-up period of at least 45 minutes

in a controlled electromagnetic environment<sup>1</sup>

With configuration: Low-pass 10Hz<sup>2</sup>

Specifications subject to change without notice

<sup>1</sup> according to EN 61326 2006: appendix B

<sup>2</sup> according to EN 61326 2006: appendix A

### Mechanical information

Material	Aluminum and ABS
Measurements (W x H x D)	30x 145 x 135mm
Weight	approx. 500 g
Protection class	IP20

### Ordering Information

Article number	644123
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