

# Q.bloxx XL A104 TCx

## Thermocouple Measurement Module

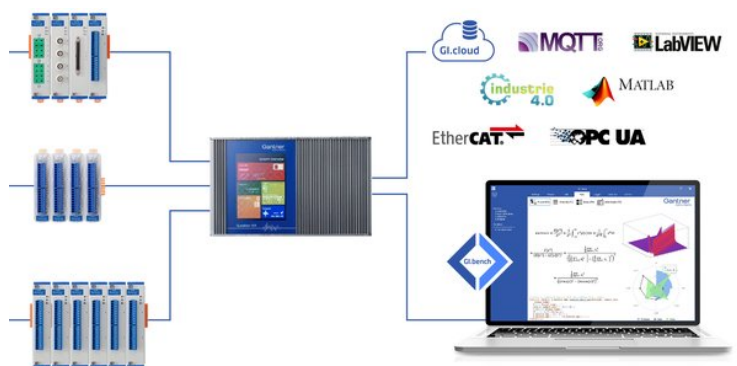
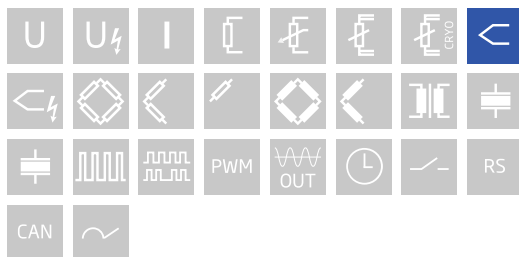
Q.bloxx XL is a new addition to the Q.series product family - the ideal DAQ solution for widely distributed installations that require higher performance and custom sensor terminations. Q.bloxx XL products are packaged in modular, DIN Rail mountable enclosures that easily snap together for system expansion. Flexibility in distribution allows for highly synchronized data that is less prone to noise due to shorter sensor cable runs to the subject.

- RS485 fieldbus interface up to 48 Mbps: LocalBus, up to 115.2 kbps: Modbus-RTU, ASCII
- Electromagnetic Compatibility according to EN61000-4 and EN55011
- Connectable to Controller Q.station X
- Power supply 10 ... 30 VDC
- DIN rail mounting (EN60715)



### Key Features

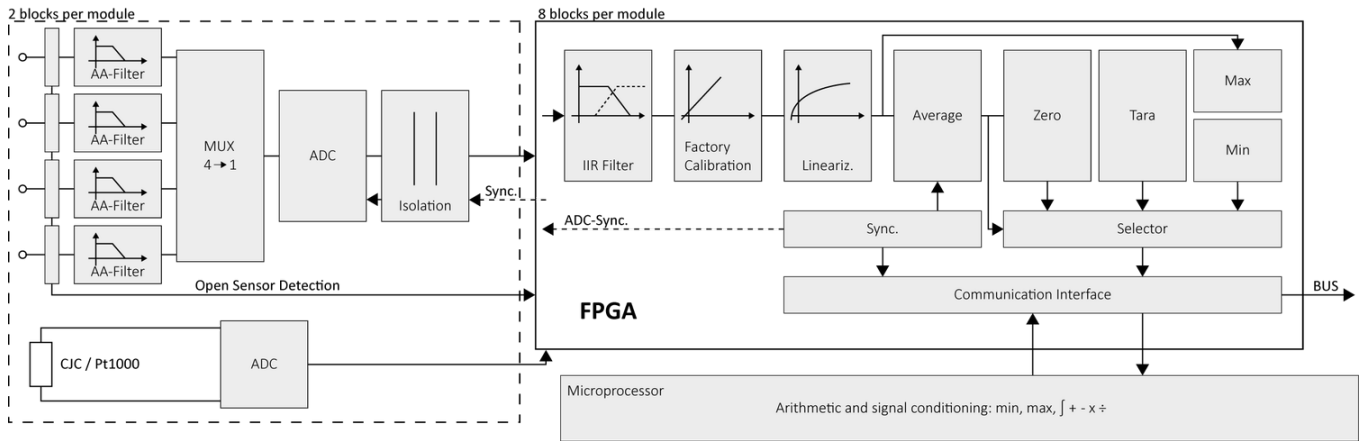
- 8 analog input channels thermocouple (type B / E / J / K / L / N / R / S / T / U), voltage ( $\pm 80$  mV)
- High-accuracy digitization 24-bit ADC, 100 Hz sample rate per channel, 50/60 Hz mains rejection
- Automatic linearization correction optimal position of the interpolation points adjusted to 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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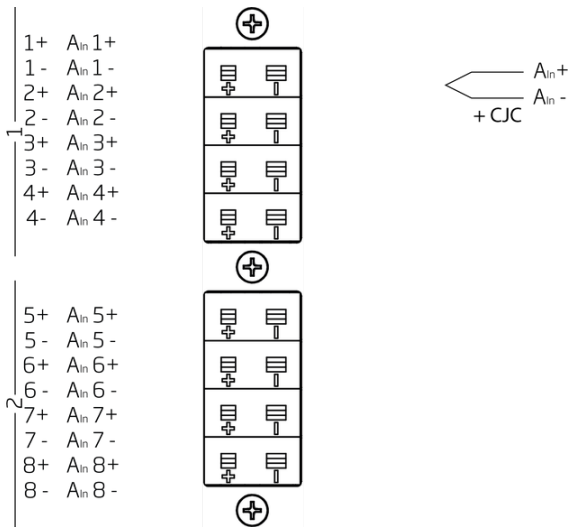
## Thermocouple Measurement Module

### Block diagram



### Technical Data

#### Terminal assignment thermocouple type



### Analog Input

Channels	8	
Input impedance	Standard	> 10 MΩ
	NBC <sup>1</sup>	> 10 GΩ
Isolation voltage	500 VDC channels to power supply channel to bus <sup>2</sup>	
	100 VDC continuous, channel to channel	

<sup>1</sup> no bias current - No sensor break detection

<sup>2</sup> noise pulses up to 1000 VDC, continuous up to 250 VDC

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## Thermocouple Measurement Module

### Measurement Mode Thermocouple

	Type	Range	Accuracy <sup>1</sup>	
	Type B	0 °C to 1820 °C	100 °C to 400 °C	< ±5.0 °C
			200 °C to 1820 °C	< ±2.5 °C
	Type C	0 °C to 2320 °C	0 °C to 1000 °C	< ±2.5 °C
			1000 °C to 1000 °C	< ±2.0 °C
	Type E	-270 °C to 1000 °C	-250 °C to -100 °C	< ±2.5 °C
			-100 °C to 1000 °C	< ±1.0 °C
		-200 °C to 1000 °C	-200 °C to -100 °C	< ±1.5 °C
			-100 °C to 1000 °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 K	-270 °C to 1372 °C	-250 °C to -100 °C	< ±2.0 °C
			-100 °C to 1372 °C	< ±1.0 °C
		-200 °C to 1200 °C	-200 °C to -100 °C	< ±1.5 °C
			-100 °C to 1200 °C	< ±0.8 °C
	Type L	-200 °C to 900 °C	-200 °C to 0 °C	< ±1.5 °C
			0 °C to 900 °C	< ±0.8 °C
	Type N	-270 °C to 1300 °C	-250 °C to -100 °C	< ±2.0 °C
			-100 °C to 1300 °C	< ±1.0 °C
		-200 °C to 1300 °C	-200 °C to -100 °C	< ±1.5 °C
			-100 °C to 1300 °C	< ±0.8 °C
	Type R	-50 °C to 1768 °C	-50 °C to 100 °C	< ±2.0 °C
			400 °C to 1768 °C	< ±1.5 °C
	Type S	-50 °C to 1768 °C	-50 °C to 400 °C	< ±2.0 °C
			400 °C to 1768 °C	< ±1.5 °C
	Type T	-270 °C to 400 °C	-250 °C to -100 °C	< ±2.0 °C
			-100 °C to 400 °C	< ±1.0 °C
		-200 °C to 400 °C	-200 °C to -100 °C	< ±1.5 °C
			-100 °C to 400 °C	< ±0.8 °C
	Type U	-200 °C to 600 °C	-200 °C to -100 °C	< ±2.0 °C
			-100 °C to 400 °C	< ±0.8 °C
Uncertainty CJC	< 0.3 °C			
Input impedance	Standard	> 10 MΩ		
	NBC	> 10 GΩ		
Temperature influence gain drift	< 0.02 % / 10 K			
long-term stability	< 0.1 °C / 24 h			
	< 0.2 °C / 8000 h			

<sup>1</sup> The specifications are valid with activated mains suppression 50 Hz or 60 Hz

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### 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 1 Hz to 10 kHz (adjustable via software)
Averaging	Configurable or automatic according to the user-defined data rate

### Communication Interface Localbus

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

### Power Supply

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 % to 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 IEC 61326-1:2020

<sup>2</sup> unless otherwise stated

### Mechanical information

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

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## Ordering Information

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Article number	643829
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