

# Q.bloxx XL A104 TCx

## Thermocouple Measurement Module

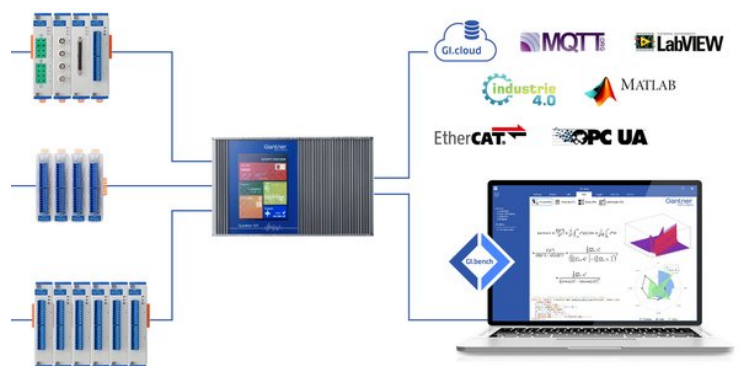
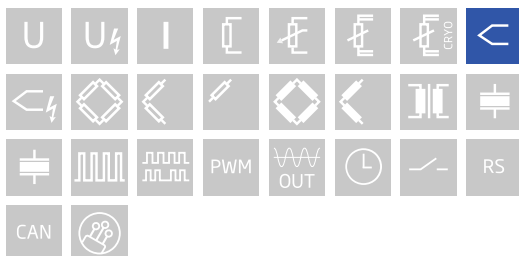
Q.bloxx XL is a new addition to the Q.series product family - the ideal DAQ solution for widely distributed installations that require higher performance and custom sensor terminations. Q.bloxx XL products are packaged in modular, DIN Rail mountable enclosures that easily snap together for system expansion. 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
- Connectable to Controller Q.station X
- Electromagnetic Compatibility according to EN61000-4 and EN55011
- Power supply 10 ... 30 VDC
- DIN rail mounting (EN60715)



### Key Features

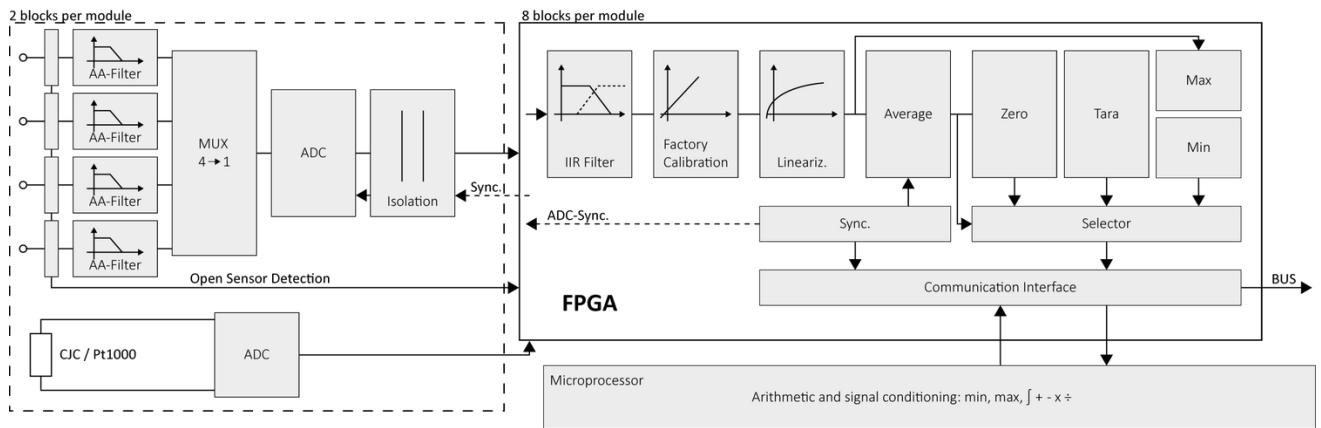
- 8 analog input channels  
thermocouple (type B / E / J / K / L / N / R / S / T / U), voltage ( $\pm 80$  mV)
- High-accuracy digitization  
24-bit ADC, 100 Hz sample rate per channel, 50/60 Hz mains rejection
- Automatic linearization correction  
optimal position of the interpolation points adjusted to the input range
- Open thermocouple detection  
detect broken wire, loose connection or thermocouple burnout
- 3-Way galvanic isolation  
100 VDC channel to channel, 500 VDC channel to power supply and bank
- Electromagnetic compatibility (EMC)  
according to IEC 61000-4 and EN 55011



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### Block diagram



### Technical Data

#### Analog Input

Channels	8
Accuracy	0.01 % typical
	0.025 % in controlled environment <sup>1</sup>
	0.05 % in industrial area <sup>2</sup>
Linearity error	0.01 % typical full-scale
Repeatability	0.003 % typical (within 24 h)
Input impedance	>10 MΩ
Isolation voltage	500 VDC channels to power supply channel to bus <sup>3</sup>
	100 VDC continuous, channel to channel

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

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

<sup>3</sup> noise pulses up to 1000 VDC, continuous up to 250 VDC

#### Thermocouple Measurement

	Type	Range	Not adjusted, with CJC terminal
Deviation in the relevant Temperature range  The specifications are valid with enabled mains frequency rejection 50 Hz resp. 60 Hz	Type B	400°C to 1820°C	< ±2.5°C
	Type E, J, K	-100°C to 1000°C	< ±1.5°C
	Type E	-270°C to 1000°C	< ±1.5°C
	Type K	-270°C to 1372°C	< ±1.5°C
	Type L	-200°C to 900°C	< ±1.5°C
	Type N	-100°C to 1000°C	< ±1.5°C
	Type N	-270°C to 1300°C	< ±1.5°C
	Type R, S	-50°C to 1768°C	< ±1.5°C
	Type T, U	-100°C to 400°C	< ±1.5°C
	Type T	-270°C to 400°C	< ±1.5°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		

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## Thermocouple Measurement Module

### 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

### 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

### 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

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	643829
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