Q.bloxx XL A104 TCK

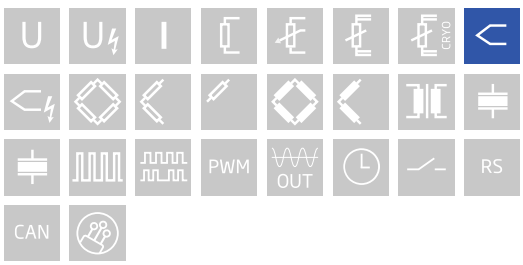
Thermocouple and Low Voltage Measurement Module

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

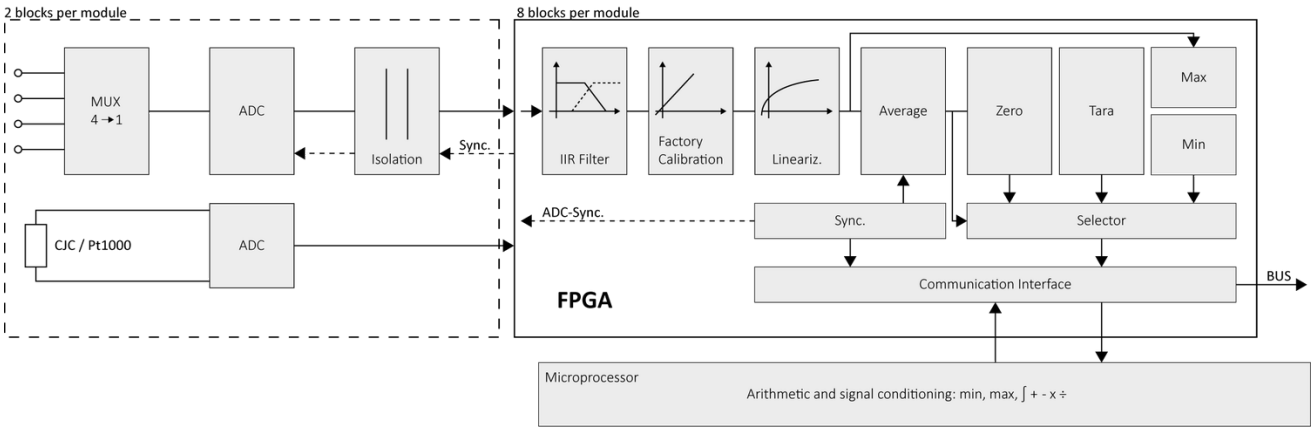
- **8 analog input channels**
  thermocouple (type B / E / J / K / L / N / R / S / T / U), voltage (±80 mV)
- **High-accuracy digitization**
  24-bit ADC, 100 Hz sample rate per channel, 50/60 Hz mains rejection
- **Automatic linearization correction**
  optimal position of the interpolation points adjusted 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**
  100 VDC channel to channel, 500 VDC channel to power supply and bank
- **Electromagnetic compatibility (EMC)**
  according to IEC 61000-4 and EN 55011



Q.bloxx XL A104 TCK

Thermocouple and Low Voltage Measurement Module

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 hrs)
Input impedance	>10 MΩ
Isolation voltage	100 VDC channel to channel 500 VDC to power supply, 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

Voltage Measurement

Input range	±80 mV	
Margin of error	±10 µV	
Resolution	10 nV	
Long-term stability	<1 µV / 24 hrs	<10 µV / 8000 hrs
Temperature drift	<20 µV / 10 K Offset drift	<0.02 % / 10 K Gain drift
Signal-to-noise ratio	>100 dB at 100 Hz	

Q.bloxx XL A104 TCK

Thermocouple and Low Voltage Measurement Module

Thermocouple Measurement

Deviation in the relevant Temperature range The specifications are valid with enabled mains frequency rejection 50 Hz resp. 60 Hz	Type	Range	Adjusted with cold junction compensation
	Type B	400°C to 1820°C	< ±1.5 °C
	Type E, J, K	-100 to 1000°C	< ±0.5°C
	Type E	-270°C to 1000°C	< ±0.8°C
	Type K	-270°C to 1372°C	< ±0,8°C
	Type L	-200°C to 900°C	< ±0.5°C
	Type N	-100°C to 1000°C	< ±0.5°C
	Type N	-270°C to 1300°C	< ±0.8°C
	Type R, S	-50°C to 1768°C	< ±1°C
	Type T, U	-100°C to 400°C	< ±0.5°C
	Type T	-270°C to 400°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

Comminication 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)

Q.bloxx XL A104 TCK

Thermocouple and Low Voltage Measurement Module

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	506827

Gantner Instruments

Austria | Germany | France | Sweden | India | USA | China | Singapore

Montafonerstraße 4 · A-6780 Schruns · T +43 55 56 · 77 463-0

office@gantner-instruments.com

www.gantner-instruments.com