

## Measurement Module for Cryogenic Temperature (RTD) and Resistance

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

#### 4 analog input channels

RTD sensors, resistance 6500 Ω and 20000 Ω, 2-, 3- or 4-wire

#### Low excitation current

7.5 μA effective, to minimize sensor self-heating errors

#### Individual linearization of the sensor characteristics

Sensor specific linearization by using 32 nodes and archive in a sensor data file. Import of manufacturers calibration data

#### High-accuracy digitalization

24-bit ADC, 10 Hz sample rate per channel

#### Signal conditioning

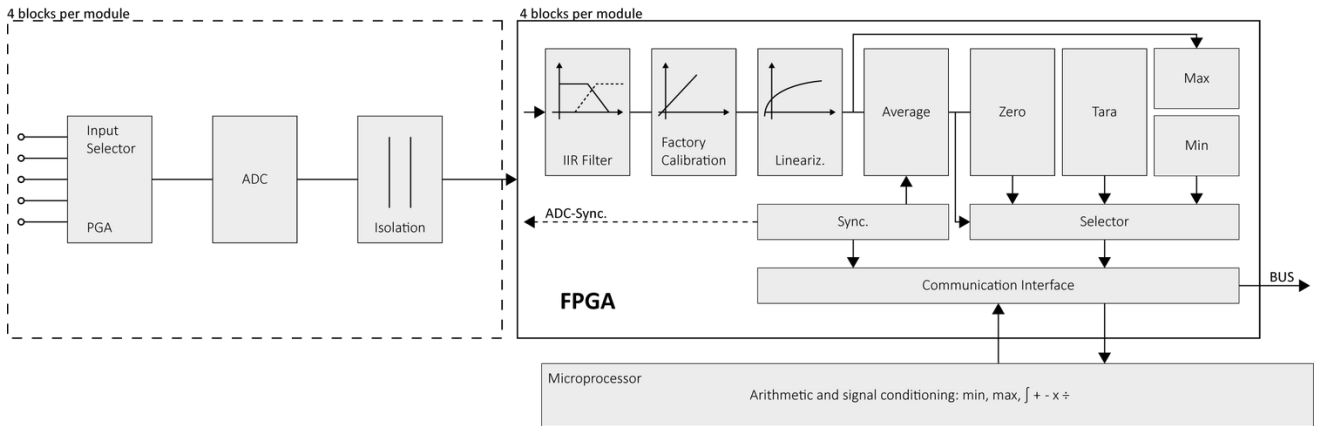
linearization, filtering, average, scaling, min/max storage, RMS, arithmetic, alarm

#### 3-Way galvanic isolation

500 VDC channel to channel, channel to power supply, and channel to bus



## Block diagram



## Technical Data

### Analog Input

Channels	4
Accuracy	0.01 % typical
	0.02 % 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)
Isolation voltage	500 VDC channel to channel to power supply channel to bus <sup>3</sup>
Sensor excitation	15 $\mu$ A max. 7.5 $\mu$ A effective

<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

### Measurement Mode Resistance (6500 $\Omega$ )

Accuracy (4-wire)	0.65 $\Omega$
Resolution	0.01 $\Omega$
Temperature drift	0.5 $\Omega$ /10 K
Long-term stability	0.3 $\Omega$ / 24 h   1 $\Omega$ / 8000 h

### Measurement Mode Resistance (20000 $\Omega$ )

Accuracy (4-wire)	2 $\Omega$
Resolution	0.03 $\Omega$
Temperature drift	2 $\Omega$ /10 K
Long-term stability	1 $\Omega$ / 24 h   3 $\Omega$ / 8000 h

## Measurement Module for Cryogenic Temperature (RTD) and Resistance

### Example Cernox CX1050

Range	0 Ω to 6500 Ω	0 Ω to 20000 Ω
Error at 293 K (approx.. 70Ω)	1 % of measurement value	3 % of measurement value
Error at 100 K (approx.. 150Ω)	0.5 % of measurement value	1.5 % of measurement value
Error at 5 K (approx.. 3500Ω)	0.02 % of measurement value	0.05 % of measurement value
Error at 2 K (approx.. 10000Ω)	-	0.02 % of measurement value

### Example TVO CCS A1

Range	0 Ω to 6500 Ω	0 Ω to 20000 Ω
Error at 293 K (approx.. 850Ω)	0.075 % of measurement value	0.25 % of measurement value
Error at 100 K (approx.. 1160Ω)	0.06 % of measurement value	0.2 % of measurement value
Error at 5 K (approx.. 3900Ω)	0.02 % of measurement value	0.06 % of measurement value
Error at 2 K (approx.. 11000Ω)	-	0.02 % of measurement value

### Analog to Digital-Conversion

Resolution	24-bit
Update rate	10 kHz, reduced by averaging to 10 Hz
Modulation method	Sigma-Delta
Anti-aliasing filter	500 Hz, 3rd order
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

### Power Supply

Input voltage	10 to 30 VDC, overvoltage and overcurrent protection
Power consumption	approx. 2.5 W
Input voltage influence	<0.001 % / V

### 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

### 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

# Q.bloxx XL A105 CR

Measurement Module for Cryogenic Temperature (RTD) and Resistance

## Mechanical information

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

## Ordering Information

Article number	614625
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### 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