

Q.bloxx XL A105 CR

Measurement Module for Cryogenic Temperature (RTD) and Resistance

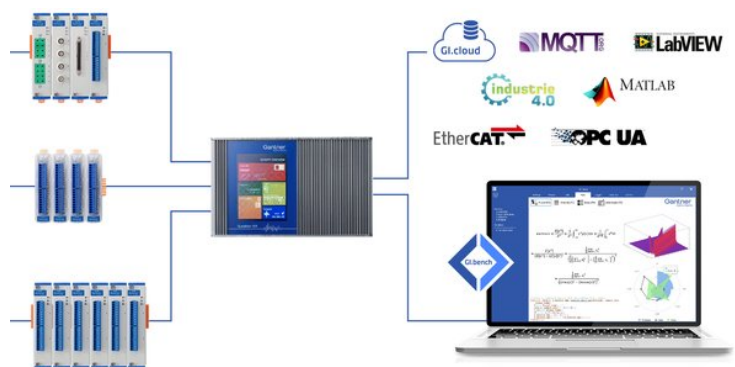
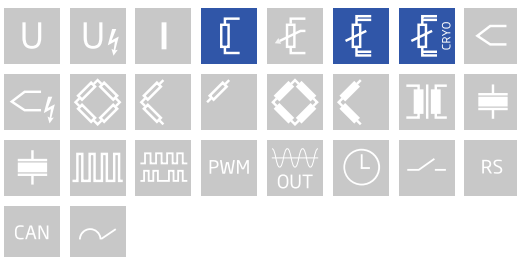
Q.bloxx XL is a new addition to the Q.series product family - the ideal DAQ solution for widely distributed installations that require higher performance and custom sensor terminations. Q.bloxx XL products are packaged in modular, DIN Rail mountable enclosures that easily snap together for system expansion. 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

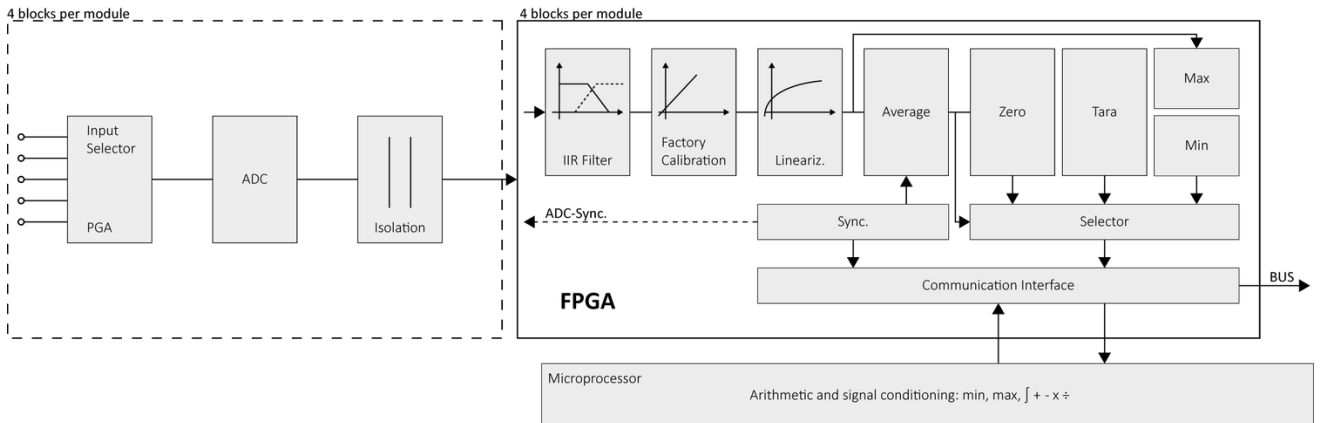
- 4 analog input channels
RTD sensors, resistance 6500 Ω and 20000 Ω, 2-, 3- or 4-wire
- Low excitation current
7.5 μA effective, to minimize sensor self-heating errors
- Individual linearization of the sensor characteristics
Sensor specific linearization by using 64 nodes and archive in a sensor data 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
Channel to channel, channel to power supply, and channel to bus



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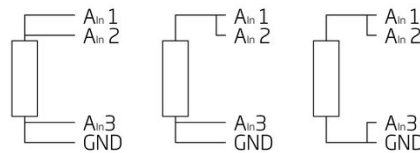
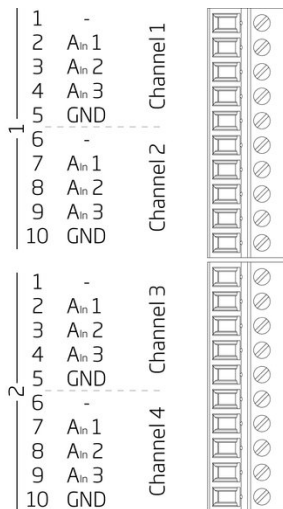
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Block diagram



Technical Data

Terminal assignment 10pole screw



Analog Input

Channels	4
Isolation voltage	500 VDC channel to channel to power supply channel to bus ¹
Sensor excitation	15 μ A max. 7.5 μ A effective

¹ noise pulses up to 1000 VDC, continuous up to 250 VDC

Measurement Mode Resistance (6500 Ω)

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

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Measurement Module for Cryogenic Temperature (RTD) and Resistance

Measurement Mode Resistance (20000 Ω)

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

Example Cernox CX1050

Range	0 Ω to 6500 Ω	0 Ω to 20000 Ω
Error at 293 K (approx.. 70 Ω)	1 % of measurement value	3 % of measurement value
Error at 100 K (approx.. 150 Ω)	0.5 % of measurement value	1.5 % of measurement value
Error at 5 K (approx.. 3500 Ω)	0.02 % of measurement value	0.05 % of measurement value
Error at 2 K (approx.. 10000 Ω)	-	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.. 850 Ω)	0.075 % of measurement value	0.25 % of measurement value
Error at 100 K (approx.. 1160 Ω)	0.06 % of measurement value	0.2 % of measurement value
Error at 5 K (approx.. 3900 Ω)	0.02 % of measurement value	0.06 % of measurement value
Error at 2 K (approx.. 11000 Ω)	-	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

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Environmental

Electromagnetic compatibility (EMC)	according to IEC 61000-4 and EN 55011
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 environment¹

With configuration: Low-pass 10Hz²

Specifications subject to change without notice

¹ according to IEC 61326-1:2020

² 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

Ordering Information

Article number	614625
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