

# Q.brixx XL A105 CR

Measurement Module for Cryogenic Temperature (RTD) and Resistance

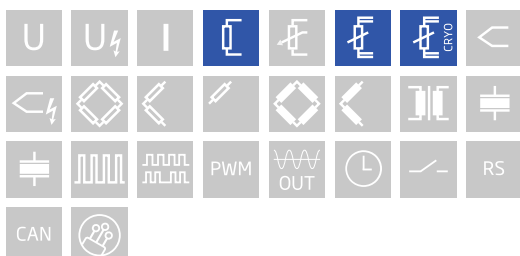
Q.brixx XL is a new addition to the Q.series product family - the ideal DAQ solution for on-the-go applications requiring higher performance in potentially harsh environments. Q.brixx XL DAQ systems consist of up to 16 measurement modules and an integrated, high-performance controller for communication, control, and data logging purposes, all within a robust aluminum housing capable of withstanding severe shock and vibration without sacrificing performance.

- High density and flexibility with 16 modules in one system in any constellation
- Electromagnetic Compatibility according to EN61000-4 and EN55011
- Connectable to Controller Q.station
- Power supply 10 ... 30 VDC

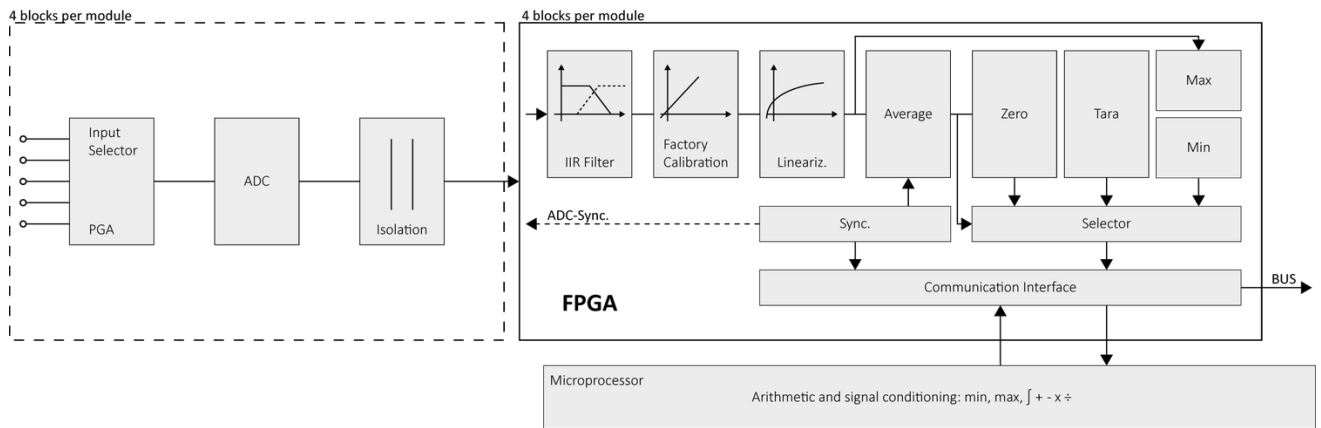


## Key Features

- 4 analog input channels  
RTD sensors, resistance 6500  $\Omega$  and 20000  $\Omega$ , 2-, 3- or 4-wire
- Low excitation current  
7.5  $\mu$ A 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 µA max. 7.5 µA 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 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

#### 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

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## 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

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## Mechanical information

Material	Aluminum
Measurements (W x H x D)	30x 137 x 135mm
Weight	approx. 500 g

## Ordering Information

Article number	614726
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