



## Q.bloxx A105CR

## Measurement Module for Cryogenic Application RTD



The Q.series has been designed for demanding measurements found in today's most industrial measuring and testing environments. The range of applications starts from single stand-alone solutions up to networked multi-channel applications in the field of component testing, engine testing, process performance testing and structural monitoring.

The range and flexibility of the modules allows an optimized solution for each single task:

Dynamic signal acquisition up to 100 kHz, inputs and outputs for all types of signals, galvanic isolation of inputs and outputs, multi-channel solutions, high density packaging and intelligent signal conditioning.

Data exchange between Test Controller and automation level is communicated via Ethernet TCP/IP or fieldbus systems like EtherCAT or Profibus-DP and additional Ethernet-based industrial standards.

### Most important features:

- **4 galvanic isolated input channels for cryogenic sensors**  
e.g. Type Cernox, Type TVO,  
input range selectable 6500  $\Omega$  and 20000  $\Omega$
- **Sensor excitation 7.5  $\mu\text{A}_{\text{eff}}$  only**  
Avoids self-heating of the sensor
- **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, digital filter, average, scaling, min/max storage, arithmetic, alarm
- **RS485 fieldbus interface**  
up to 24 Mbps: LocalBus  
up to 115.2 kbps: Modbus-RTU, ASCII
- **Connectable to any Test Controller**  
e.g. Q.station, Q.gate or Q.pac
- **Galvanic isolation**  
channel to channel to power supply and to interface  
Isolation voltage 500 VDC
- **Electromagnetic Compatibility**  
according EN 61000-4 and EN 55011
- **Power supply 10...30 VDC**
- **DIN rail mounting (EN 60715)**

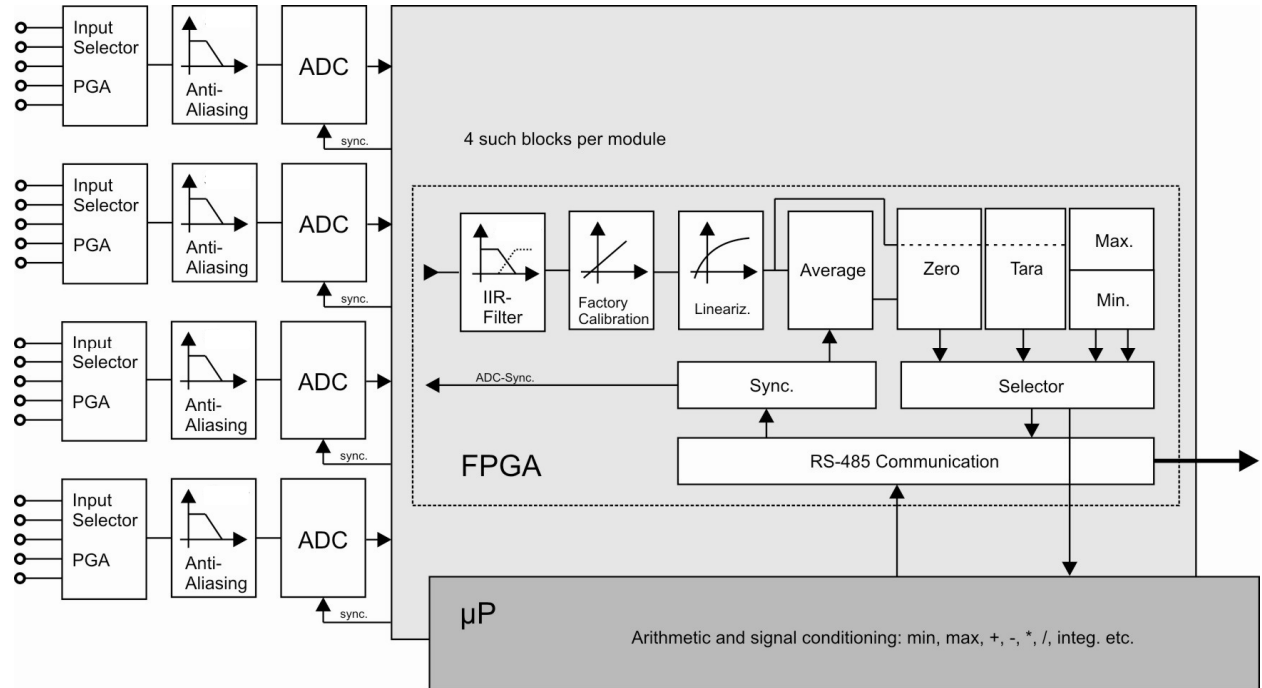




# Q.bloxx A105CR

Measurement Module for Cryogen Application RTD

## Block Diagram



Analog Inputs	
Number	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 % of the final value typical
Repeatability	0.003 % typical (within 24 h)
Isolation voltage	500 VDC channel to channel to power supply to interface <sup>3</sup>
Sensor excitation	15 µA max., 7,5 µA effektiv

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

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

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



## Q.bloxx A105CR

Measurement Module for Cryogen Application RTD

<b>Measurement Resistance up to 6500 Ω</b>		
Accuracy (4-wire)	0.65 Ω	
Resolution	0.01 Ω	
Temperature influence	0.5 Ω/10 K	
Long term drift	0.3 Ω/24 h, 1 Ω/8000 h	
<b>Measurement Resistance up to 20000 Ω</b>		
Accuracy (4-wire)	2 Ω	
Resolution	0.03 Ω	
Temperature influence	2 Ω/10 K	
Long term drift	1 Ω/24 h, 3 Ω/8000 h	
<b>Example Cernox CX1050</b>		
Range	0 Ω to 6500 Ω	0 Ω to 20000 Ω
Deviation at 293 K (approx. 70 Ω)	1 % of actual value	3 % of actual value
Deviation at 100 K (approx. 150 Ω)	0.5 % of actual value	1.5 % of actual value
Deviation at 5 K (approx. 3.500 Ω)	0.02 % of actual value	0.05 % of actual value
Deviation at 2 K (approx. 10.000 Ω)	-	0.02 % of actual value
<b>Example TVO CCS A1</b>		
Range	0 Ω to 6500 Ω	0 Ω to 20000 Ω
Deviation at 293 K (approx. 850 Ω)	0.075 % of actual value	0.25 % of actual value
Deviation at 100 K (approx. 1160 Ω)	0.06 % of actual value	0.2 % of actual value
Deviation at 5 K (approx. 3.900 Ω)	0.02 % of actual value	0.06 % of actual value
Deviation at 2 K (approx. 11.000 Ω)	-	0.02 % of actual value



## Q.bloxx A105CR

Measurement Module for Cryogen Application RTD

<b>Analog/Digital-Conversion</b>	
Resolution	24 bit
Sample rate	5000 Hz, reduced by averaging to 10 Hz
Conversion method	Sigma Delta
Anti-aliasing filter	500 Hz, 3 <sup>rd</sup> order
Digital filter	IIR, low pass 1 <sup>st</sup> order, 1 Hz, 2 HZ, 5 Hz
Averaging	configurable or automated according the selected data rate
<b>Power Supply</b>	
Power supply	10 up to 30 VDC, overvoltage and overload protection
Power consumption	approx. 2.5 W
Influence of the voltage	<0.001 %/V
<b>Communication Interface</b>	
Standard	RS-485, 2-wire
Data format	8e1
Protocols	Local-Bus: 115200 bps up to 24 Mbps
	Modbus-RTU, ASCII: 19200 bps up to 115200 bps
<b>Environmental</b>	
Operating temperature	-20°C up to +60°C
Storage temperature	-40°C up to +85°C
Relative humidity	5 % up to 95 % at 50°C, non-condensing
<b>Mechanical</b>	
Case	Aluminum and ABS
Dimensions (W x H x D)	(27 x 120 x 105) mm
Weight	approx. 200 g
Mounting	DIN EN-rail

### Warm Up Time

All declarations are valid after a warm up time of 45 minutes.

Valid from July 2015. Specification subject to change without notice  
DB\_Q.bloxx\_A105CR\_E\_22.docx