Q.bloxx A105

Measurement Module for RTD (Pt100, Pt1000) and Resistance

The Q.series has been designed for demanding measurements found in todays 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 input channels**
  Pt100, Pt1000, or resistance in 3- or 4- wire technique
- **High accuracy**
  Deviation max. 0.05°C, Temperature influence 0.02/10K
- **Sensor excitation**
  Pt100: 1 mA, Pt1000: 100 µA
- **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)**

Gantner Instruments GmbH ■ **www.gantner-instruments.com** ■ **office@gantner-instruments.com**

Montafonerstraße 4 — 6780 Schruns / Austria — T +43 (0) 5556 77463-0 — F +43 (0) 5556 77463-300
Heidelberger Landstraße 74 — 64297 Darmstadt / Germany — T +49 (0) 6151 95136-0 — F +49 (0) 6151 95136-26

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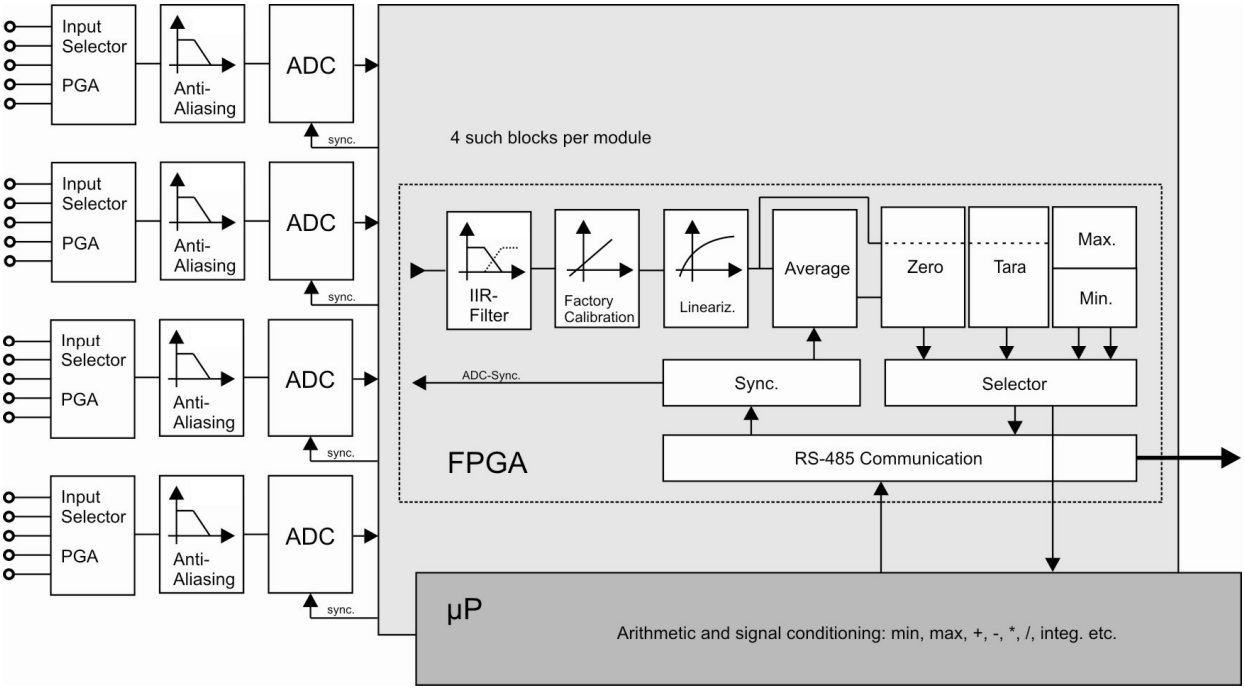
Block Diagram



Analog Inputs	
Number	4
Accuracy	0.01 % typical
	0.02 % in controlled environment[1]
	0.05 % in industrial area[2]
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[3]
Sensor excitation	Pt100: 1 mA (500 µA effective), Pt1000: 100 µA (50 µA effective)
Input resistance	470 kΩ

[1] according EN 61326: 2006, appendix B
[2] according EN 61326: 2006, appendix A
[3] noise pulses up to 1000 VDC, permanent up to 250 VDC

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Measurement Pt100	
Range	-200°C bis +350°C
Accuracy (4-wire)	0.05°C
Resolution	0.0001°C
Temperature influence	0.02°C/10 K
Long term drift	0.01°C/24 h, 0.05°C/8000 h
Range	-200°C bis +850°C
Accuracy (4-wire)	0.08°C
Resolution	0.0001°C
Temperature influence	0.04°C/10 K
Long term drift	0.02°C/24 h, 0.1°C/8000 h
Measurement P1000	
Range	-200°C bis +850°C
Accuracy (4-wire)	0.1°C
Resolution	0.0005°C
Temperature influence	0.1°C/10 K
Long term drift	0.05°C/24 h, 0.4°C/8000 h
Measurement Resistance up to 400 Ω	
Range	0 Ω bis 400 Ω
Accuracy (4-wire)	0.015 Ω
Resolution	0,0002 Ω
Temperature influence	0.01 Ω/10K
Long term drift	10 mΩ/24 h, 20 mΩ/8000 h
Measurement Resistance up to 4000 Ω	
Range	0 Ω bis 4000 Ω
Accuracy (4-wire)	0.4 Ω
Resolution	0.002 Ω
Temperature influence	0.4 Ω/10K
Long term stability	100 mΩ/24 h, 1500 mΩ/8000 h

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Analog/Digital-Conversion	
Resolution	24 bit
Sample rate	10 kHz, reduced by averaging to 10 Hz
Conversion method	Sigma Delta
Anti-aliasing filter	500 Hz, 3rd order
Digital filter	IIR, low pass 1st order, 0.1 Hz, 1 Hz, 2 HZ, 5 Hz
Averaging	configurable or automated according the selected data rate
Communication Interface	
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
Power Supply	
Power supply	10 up to 30 VDC, overvoltage and overload protection
Power consumption	approx. 2.5 W
Influence of the voltage	<0.001 %/V
Environmental	
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
Mechanical	
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
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