



Q.bloxx A107

Universal Measurement Module



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 universal analog input channels**
voltage, current, resistance, potentiometer, Pt100, Pt1000, thermocouples, measuring bridges
- **Fast high accuracy digitalization**
24 bit ADC, 10 kHz sample rate per channel
- **Signal conditioning**
16 virtual channels, linearization, digital filter, average, scaling, min/max storage, RMS, arithmetic, alarm
- **RS485 fieldbus interface**
up to 48 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)**

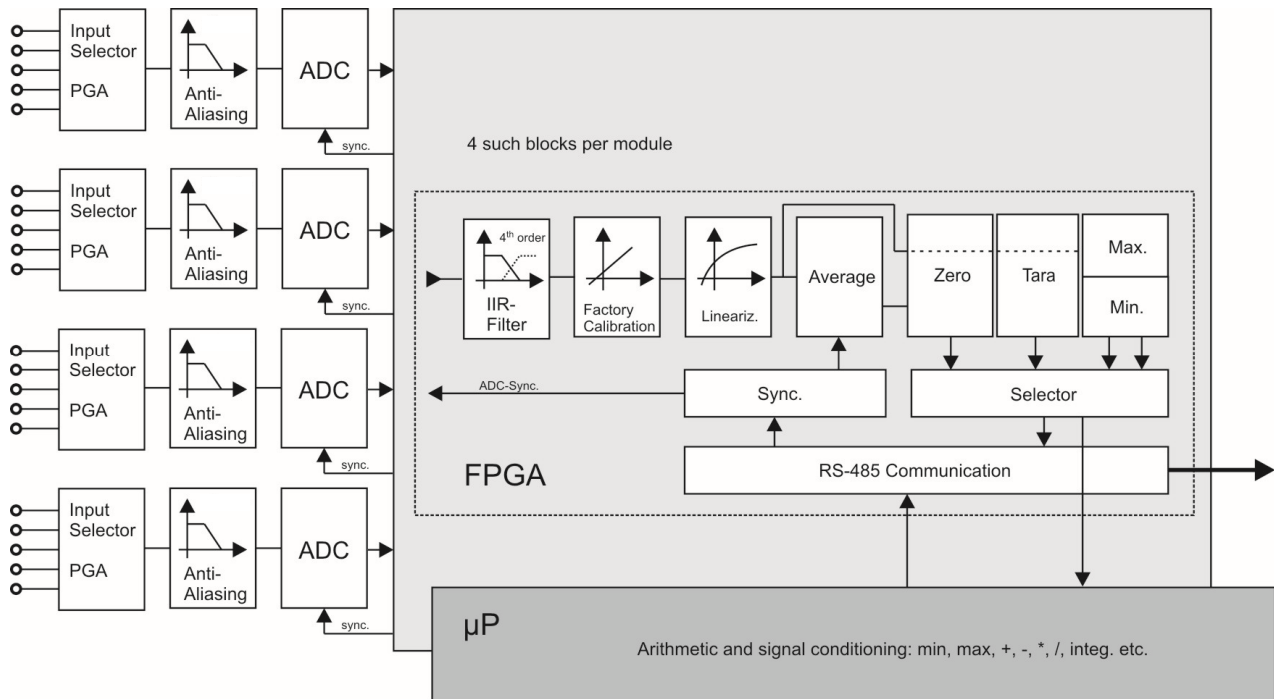




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Block Diagram



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		
Measurement Voltage	Range	max. Deviation	Resolution
	±10 V	±2 mV	1.2 µV
	±1 V	±0.2 mV	120 nV
	±100 mV	±20 µV	12 nV
Input resistance	>100 MΩ		
Temperature influence	Range	on zero	on sensitivity
	±10 V	<500 µV / 10K	<0,01 % / 10 K
	±1 V	<50 µV / 10K	<0,01 % / 10 K
	±100 mV	<5 µV / 10K	<0,01 % / 10 K
Long term drift	Range	24 h	8000 h
	±10 V	<200 µV	<2 mV
	±1 V	<20 µV	<200 µV
	±100 mV	<2 µV	<20 µV
Signal-noise-ratio	>90 dB at 1 kHz	>120 dB at 1 Hz	



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Measurement Current	Range	max. Deviation	Resolution
(internal shunt 50 Ω)	±25 mA	±5 μA	3.0 nA
Temperature influence	on zero	on sensitivity	
	<1 μA / 10 K	<0.03 % / 10 K	
Long term drift	<0.5 μA / 24 h; 5 μA / 8000 h		
Measurement Resistance / RTD	Range	max. Deviation	Resolution
Resistance, 2-wire	100 kΩ	±100 Ω	12 mΩ
Resistance, 2- and 4-wire	4 kΩ	±1 Ω	0.5 mΩ
Resistance, 2- and 4-wire	400 Ω	±0.1 Ω	48 μΩ
Pt100, 2- and 4-wire	-200 up to +850°C	±0.25°C	0.2 m°C
Pt1000, 2- and 4-wire	-200 up to +850°C	±1°C	0.2 m°C
Temperature influence	on zero (range 400 Ω)	on sensitivity	
	10 mΩ / 10 K ≅ 0.05°C / 10 K	0.03 % / 10 K	
Long term drift	<10 mΩ / 24 h; <100 mΩ / 8000 h (range 400 Ω)		
Measurement Potentiometer	Relative measurement		
Permitted potentiometer resistance	1 kΩ to 10 kΩ		
Temperature influence	on zero (range 1)	on sensitivity	
	<0.0001 / 10 K	<0.03 % / 10 K	
Long term drift	<0.02 % / 24 h, <0.2 % / 8000 h		
Measurement Bridge			
Accuracy class	0.05		
Bridge Type	full bridge, 4-wire connection, half and quarter bridge with completion terminal		
Sensor resistance	>100 Ω		
Supply	2.5 V nominal		
Measurement range	±2.5 mV/V	±50 mV/V	±500 mV/V
Temperature influence	on zero (range 2.5 mV/V)	on sensitivity	
	<0.2 μV/V / 10 K	<0.05 % / 10 K	
Long term drift	<0.12 μV/V / 24h; <1.25 μV/V / 8000 h (range 2.5 mV/V)		
Measurement Thermocouple	Whole range	-100°C...upper limit	
Type B	better than ±5°C	better than ±2.5°C	
Type E, J, K, L, T, U	better than ±1°C	better than ±0.5°C	
Type N	better than ±2°C	better than ±1°C	
Type R, S	better than ±3°C	better than ±1.5°C	
Input resistance	100 MΩ		
Temperature influence	on zero	on sensitivity	
	<0.2°C / 10 K	<0.025% / 10 K	
Long term drift	<0.02 °C/24 h; 0.2 °C/8000 h		
Uncertainty cold junction compens.	<0.3°C		

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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Analog/Digital-Conversion	
Resolution	24 bit
Sample rate	10 kHz, (measurement thermocouple 10 Hz)
Conversion method	Sigma-Delta (group delay time 600 µs)
Anti-aliasing filter	2 kHz, 3 rd order
Digital filter	IIR, low pass, high pass, band pass, 4 th order, 1 Hz up to 1 kHz in steps 1, 2, 5
Averaging	configurable or automated according the selected data rate
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
Communication Interface	
Standard	RS-485, 2-wire
Data format	8e1
Protocols	Local-Bus: 115200 bps up to 48 Mbps
	Modbus-RTU, ASCII: 19200 bps up to 115200 bps
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
Accessories	
Cold Junction Compensation	Connection terminal for 2 thermocouples, thermal embedded Pt1000 temperature sensor 2 terminals each module required (4 thermocouples)
Bridge Completion	Connection terminal for ½- and ½- bridge connection 120 Ω or 350 Ω



Warm Up Time

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

Valid from Mar. 2016. Specification subject to change without notice
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