Q.bloxx A104

Multi Channel Module for Thermocouples and Voltages

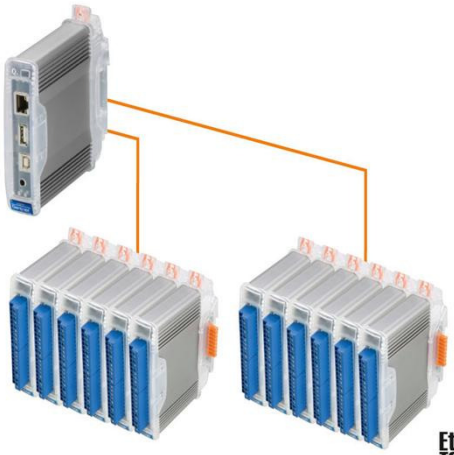
The Q.series has been designed for demanding measurements found in today's most industrial measuring and testing environments. The range of applications starts from single stand-alone solutions up to networked multi-channel applications in the field of component testing, engine testing, process performance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

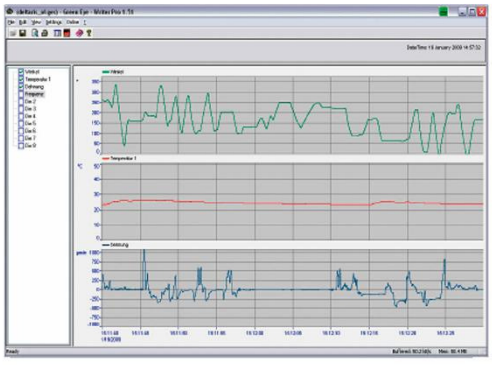
The range and flexibility of the modules allows an optimized solution for each single task:
Dynamic signal acquisition up to 100 kHz, inputs and outputs for all types of signals, galvanic isolation of inputs and outputs, multi-channel solutions, high density packaging and intelligent signal conditioning.

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:

- **8 galvanic isolated input channels**
  thermocouples and voltages in the range of ±80 mV
  Isolation voltage 100 VDC
- **Cold junction compensation**
  good thermal coupling by means of cold junction compensation per connector
- **Dynamic linearization**
  optimized positioning of the interpolation points within the selected range, type B, E, J, K, L N, R, S, T, U
- **High accuracy digitalization**
  24 bit ADC, 100 Hz sample rate per channel with 8 active channels, sum sample rate 800 Hz
- **Signal conditioning**
  digital filter, average, scaling, min/max storage, 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.gate or Q.pac
- **Galvanic isolation**
  of I/O-signals, power supply and interface
  Isolation voltage 500 VDC
- **Electromagnetic Compatibility**
  according EN 61000-4 and EN 55011
- **Accuracy class 0,01**
- **Power supply 10…30 VDC**
- **DIN rail mounting (EN 50022)**





Ethernet TCP/IP · EtherCAT · PROFIBUS · USB UNIVERSAL SERIAL BUS

Gantner Instruments Test & Measurement GmbH · www.gantner-instruments.com · office@gantner-instruments.com
Silvrettastrasse 11-13 · A-6780 Schruns/Austria · Tel. +43 (0) 5556 77463-0 · Fax +43 (0) 5556 77463-300
Industriestrasse 12 · D-64297 Darmstadt/Germany · Tel. +49 (0) 6151 95136-0 · Fax +49 (0) 6151 95136-26

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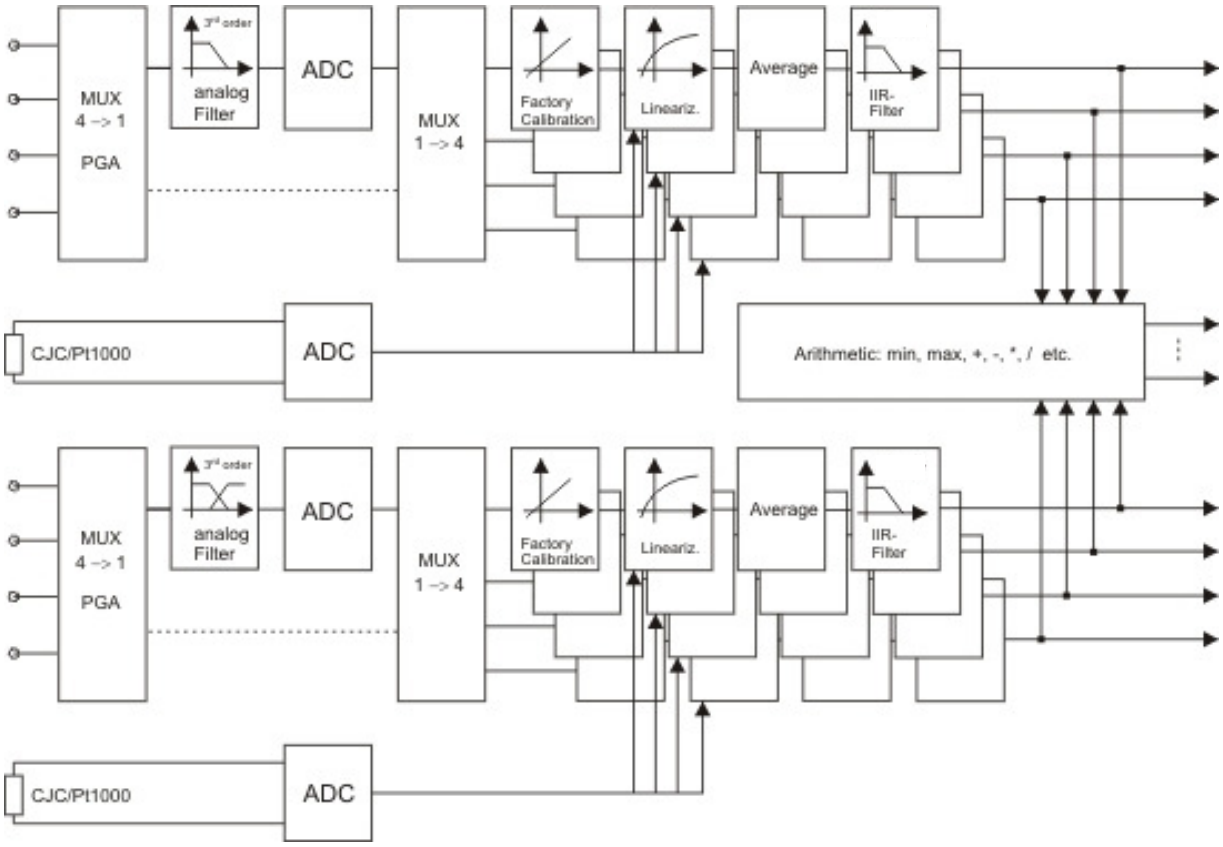
Block Diagram



Analog Inputs			
Number	8		
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)		
Input resistance	>10 MΩ		
Perm. common mode voltage	100 V permanent		
Measurement Voltage	**Range**	**max. Deviation**	**Resolution**
	±80 mV	±10 µV	320 nV
Long term drift	<1 µV/24 h		
Temperature influence	on zero	on sensitivity	
	<1 µV/10 K	<0.005 %/10 K	
Signal-noise-ratio	100 dB at 100 Hz		

[1] according EN 61326: 1997, appendix B
[2] according EN 61326: 1997, appendix A

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Multi Channel Module for Thermocouples and Voltages

Measurement Thermocouple	**Type**	**whole range incl. cold junction compens.**
	Type B	better than ±2.5 °C *)
	Type E, J, K, L, T, U	better than ±0.5 °C *)
	Type N	better than ±1 °C *)
	Type R, S	better than ±1.5 °C *)
Long term drift	<0.025 K/24 h	
Temperature influence (Type K)	on zero	on sensitivity
	<0.025 K/10 K	<0.005 %/10 K
Uncertainty cold junction compensation	0.3 K	
Analog/Digital-Conversion		
Resolution	24 bit	
Sample rate	100 Hz at 8 active channels	
Conversion method	Sigma-Delta	
Antialiasing filter	low pass 3rd order per channel (-3 dB at 20 Hz)	
Digital filter	variable digital low pass filter 1st order	
	sliding averaging for precision measurements (n = 10)	
	in addition optional filter for mains rejection 50 Hz/60 Hz	
Power Supply		
Power supply	10 up to 30 VDC, overvoltage and overload protection	
Power consumption	approx. 2 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	
Connectable devices	max. 32	

*) with activated mains rejection 50Hz resp. 60 Hz.

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Multi Channel Module for Thermocouples and Voltages

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 May 05th 2010. Specification subject to change without notice
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