



Q.bloxx A106

Universal Measurement Module for Bridges



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.

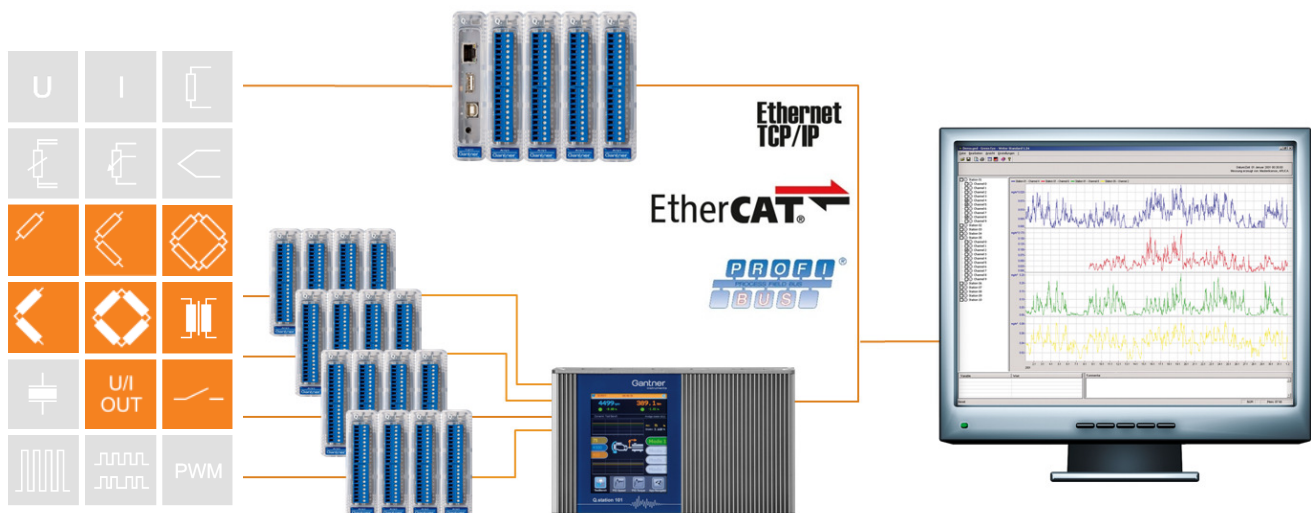
The range and flexibility of the modules allows an optimized solution for each single task:

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:

- **2 analog input channels**
strain gauge and inductive bridges (full, half, quarter), LVDT, RVDT
- **DC and carrier frequency principle selectable**
DC bridge excitation,
CF 600 Hz bridge excitation,
CF 4800 Hz bridge excitation
- **2 analog outputs**
voltage ± 10 V, 10 kHz
- **Fast high accuracy digitalization**
24 bit ADU, 20 kHz sample rate per channel
- **4 digital I/Os**
input: state, tare, memory reset
output: state alarm, thresh hold
- **Signal conditioning**
16 virtual channels, linearization, 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
- **Galvanic isolation**
of analog I/O-signals, power supply and interface
Isolation voltage 500 VDC
- **Electromagnetic Compatibility**
according EN 61000-4 and EN 55011
- **Power supply 10...30 VDC**
- **DIN rail mounting (EN 60715)**

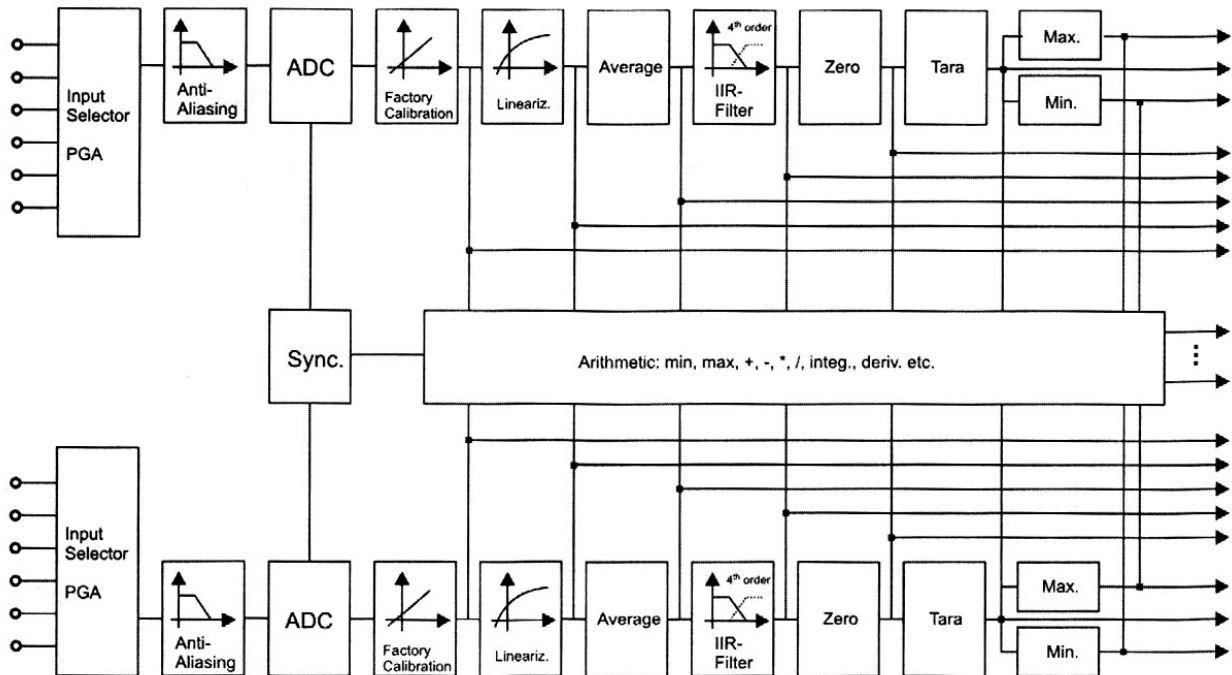




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Block Diagram



Analog Inputs			
Number	2		
Accuracy	0.02 % typical		
	0.05 % in controlled environment ¹		
	0.1 % in industrial area ²		
Repeatability	0.01 % typical (within 24 h)		
Input resistance	>10 MΩ		
Isolation voltage	500 VDC channel to channel to power supply to interface ³		
	DC Mode	600 Hz Carrier Mode (AC)	4.8 kHz Carrier Mode (AC)
Sensor type	resistive full and half bridge (5/6 wire), quarter bridge with completion terminal (3 wire)	resistive full and half bridge (5/6 wire), quarter bridge with completion terminal (3 wire)	resistive full and half bridge (5/6 wire), quarter bridge with completion terminal (3 wire) inductive full and half bridges, LVDT and RVDT sensors
Permitted sensor cable length	<300 m	<300 m	<100 m
Sensor connection	with or without sense leads for compensation of cable influences full bridge 4 or 6 wire half bridge 3 or 5 wire quarter bridge 3 wire in combination with completion terminal 120 Ω or 350 Ω		

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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Sensor excitation (selectable)	DC: 5 VDC	CF: 5 Veff	DC: 2.5 VDC	CF: 2.5 Veff
Permitted sensor resistance	>300 Ω	>300 Ω	>100 Ω	>100 Ω
Measuring range	±1.25 mV/V	±1.25 mV/V	±2.5 mV/V	±2.5 mV/V
	±2.5 mV/V	±2.5 mV/V	±5 mV/V	±5 mV/V
	±25 mV/V	±25 mV/V	±50 mV/V	±50 mV/V
	±50 mV/V	±50 mV/V	±100 mV/V	±100 mV/V
	±100 mV/V	±100 mV/V	±200 mV/V	±200 mV/V
	±250 mV/V	±250 mV/V	±500 mV/V	±500 mV/V
	±500 mV/V	±500 mV/V	±1000 mV/V	±1000 mV/V
Temperature influence on zero (range 2.5 mV/V)	<0.2 μV / 10 K	<0.2 μV / 10 K	<0.2 μV / 10 K	<0.2 μV / 10 K
Temperature influence on sensitivity (measuring value)	<0.05 % / 10 K	<0.05 % / 10 K	<0.05 % / 10 K	<0.05 % / 10 K
Long term drift	<0.2 μV/V / 24 h	<0.1 μV/V / 24 h	<0.2 μV/V / 24 h	<0.1 μV/V / 24 h
	<2 μV / V/8000h	<1 μV / V / 8000 h	<2 μV / V/8000h	<1 μV / V / 8000 h
Linearity Error	<0.02 % f.s.			
Noise voltage at 10 Hz	<0.3 μV/V			
Noise voltage at 100 Hz	<1 μV/V			

Analog Digital Conversion

Resolution	24 bit		
Sample rate	20 kHz		
Conversion method	Sigma-Delta (group delay time 600 μs)		
Anti-aliasing Filter	DC: 5 kHz 3 rd order	4.8 kHz CF: 1 kHz 3 rd order	600 Hz CF: 100 Hz 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		

Analog Outputs

Number	2 voltage outputs	
Accuracy	0.02 %	
DAU resolution	16 bit	
Sample rate	10 kHz	
Output voltage	±10 VDC	
Perm. load resistance	>2 kΩ	
Temperature influence	on zero	on sensitivity
	<1 mV / 10 K	<0.05 % / 10 K
Noise voltage in the range of	<10 mV at 1 kHz	<2 mV at 10 Hz
Long term drift	<1 mV / 24h; <2.5 mV / 8000 h	



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Digital In/Outputs	
Number	4 configurable I/Os
Input	state, tare, reset
Input voltage	max. 30 VDC
Input current	max. 0.5 mA
Upper threshold	>10 V (high)
Lower threshold	<2.0 V (low)
Output	state, alarm, limit switch
Contact	open drain p-channel MOSFET
Load	30 VDC/100 mA (ohmic load)
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
Connectable devices	max. 32
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 March 2012. Specification subject to change without notice
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