



Q.bloxx A102

Measurement Module for Bridge Sensors



The Q.series has been designed for the demanding measurements found in today's industrial measuring and testing environments. Applications range from single, stand-alone solutions to networked, multi-channel systems in real-world areas such as component testing, engine testing, process performance testing, materials testing and structural monitoring.

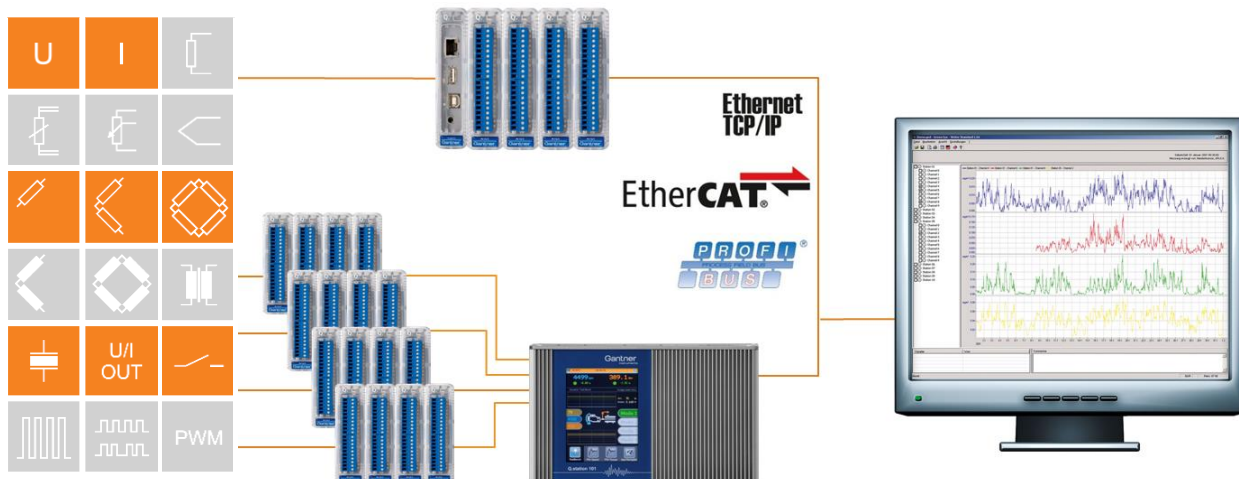
The range and flexibility of the modules allows for an optimized solution for each and every measurement and control point:

- Dynamic signal acquisition up to 100 kHz per channel
- inputs and outputs for all types of signals and sensors
- Galvanic isolation (up to 1200V) of inputs and outputs
- Multi-channel, High-density packaging
- Intelligent signal conditioning on every channel.

All modules connect to a Q.series test controller (Q.gate, Q.pac, or Q.station) for synchronization and buffering, and data exchange between the test controller and automation system is handled via Ethernet TCP/IP, EtherCAT, Profibus-DP, CANopen, or through additional industrial fieldbus standards.

Key Features:

- **1 analog input channel**
measuring half and full bridge, IEPE-sensor, voltage, current, quarter bridge with completion terminal
- **1 analog output**
voltage ± 10 V and current 0 to 25 mA selectable, 100 kHz
- **Fast high accuracy digitalization**
19 Bit ADC - SAR (without delay time), 100 kHz sample rate
- **4 digital inputs, 2 digital outputs**
input: state, tare, memory reset
output: state, alarm, threshold
- **Signal conditioning**
32 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
- **Additional RS 485 fieldbus interface**
to control an 8 or 16 or 24 channel multiplexer for multi-channel systems, 10Hz per channel
- **Galvanic isolation**
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)**

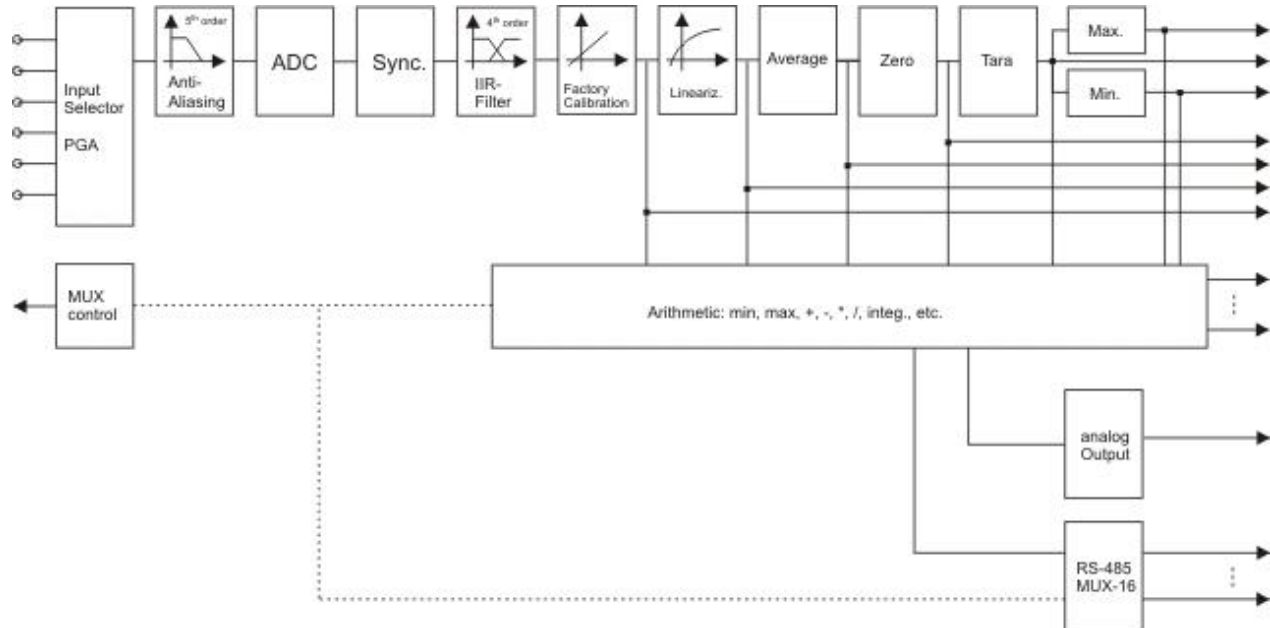




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Block Diagram



Analog Inputs			
Number	1		
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 analog input to power supply to interface ³		
Measurement Voltage	Range	max. Deviation	Resolution
	±10 V	±2,5 mV	40 µV
	±1 V	±0.2 mV	4 µV
	±100 mV	±20 µV	0.4 µV
Input resistance	>10 MΩ (range ±10 V = 1 MΩ)		
Long term drift	<10 µV / 24 h; <100 µV / 8000 h		
Temperature influence	on zero	on sensitivity	range ±1 V
	<50 µV / 10 K	<0.02 % / 10 K	
Signal-noise-ratio	>90 dB at 1 kHz	>120 dB at 1 Hz	

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 Current	Range	max. Deviation		Resolution
(internal shunt 50 Ω)	±25 mA	±6 µA		0.1 µA
Long term drift	<0,5 µA / 24 h; <5 µA / 8000 h			
Temperature influence	on zero		on sensitivity	
	<0.1 µA / 10 K		<0.02 % / 10 K	
Measuring Bridge				
Accuracy class	0.05			
Sensor type	full bridge, half bridge (5/6 wire), quarter bridge with completion terminal (3 wire)			
Supply	10.0 V	5.0 V	2.5 V	1.0 V
Permitted sensor resistance	>300 Ω	>100 Ω	>80 Ω	>50 Ω
Measurement range	±100 mV/V	±200 mV/V	±500 mV/V	±1000 mV/V
	±25 mV/V	±50 mV/V	±100 mV/V	±200 mV/V
	±2.5 mV/V	±5 mV/V	±10 mV/V	±20 mV/V
	±1 mV/V	±2.5 mV/V	±5 mV/V	±10 mV/V
Temperature influence	on zero (range 2.5 mV/V)		on sensitivity	
	<0.2 µV/V / 10 K		<0.025% / 10 K	
Measurement IEPE Sensor				
	Range	max. Deviation		Resolution
	±10 V	±10 mV		40 µV
Supply	constant current 4 mA			
Minimum input frequency	2 Hz			
Limit frequency	10 kHz			
Temperature influence	on zero		on sensitivity	
	<10 µV / 10 K		<0.05 %/10 K	
Analog/Digital-Conversion				
Resolution	19 bit			
Sample rate	100 kHz			
Conversion method	SAR (successive approximation)			
Anti-aliasing Filter	20 kHz, 3 rd order			
Digital filter	IIR, low pass, high pass, band pass, 4 th order, 1 Hz up to 10 kHz in steps 1, 2, 5			
Averaging	configurable or automated according the selected data rate			
Analog Output				
Accuracy	0.02 %			
Output type	configurable output: voltage or current			
DAC resolution	16 bit			
Sample rate	100 kHz			
Output voltage	±10 VDC			
Perm. load resistance	>2 kΩ			
Temperature influence	on zero		on sensitivity	
	<2 mV / 10 K		<0.05 % / 10 K	
Noise voltage	<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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Analog Output continued		
Output current	0 up to 25 mA	
Permitted burden	<400 Ω	
Burden influence	accuracy at 100 Ω	on sensitivity
	±4 μA	<0.25 μA / Ω
Temperature influence	on zero	on sensitivity
	4 μA / 10 K	0.05 % / 10 K
Noise current	<20 μA at 1 kHz	<4 μA at 10 Hz
Long term drift	<2 μA / 24h; <5 μA / 8000 h	
Digital In/Outputs		
Number	4 inputs, 2 outputs, 1 slave RS485 interface for controlling the M108	
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	
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 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	

Warm Up Time

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

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