

Q.bloxx A146

High Density Strain Gage Measurement Module

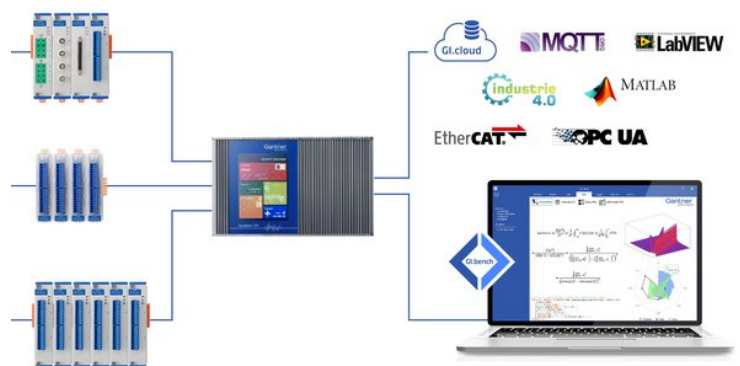
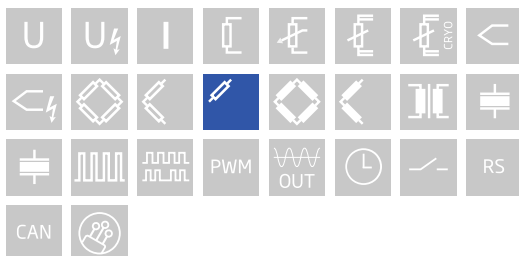
Q.bloxx is the ideal DAQ solution for widely distributed installations, electrical panels, and environmental enclosures. Q.bloxx measurement modules provide integrated signal conditioning and arithmetic functions, packaged in modular, DIN Rail mountable enclosures that easily snap together for quick system expansion. Flexibility in distribution allows for highly synchronized data that is less prone to noise due to shorter sensor cable runs to the actual point of measurement.

- RS 485 fieldbus interface up to 24 Mbps: LocalBus up to 115.2 kbps: Modbus-RTU, ASCII
- Electromagnetic Compatibility according to EN61000-4 and EN55011
- Connectable to any Controller, e.g. Q.station, Q.gate or Q.pac
- Power supply 10 ... 30 VDC
- DIN rail mounting (EN60715)



Key Features

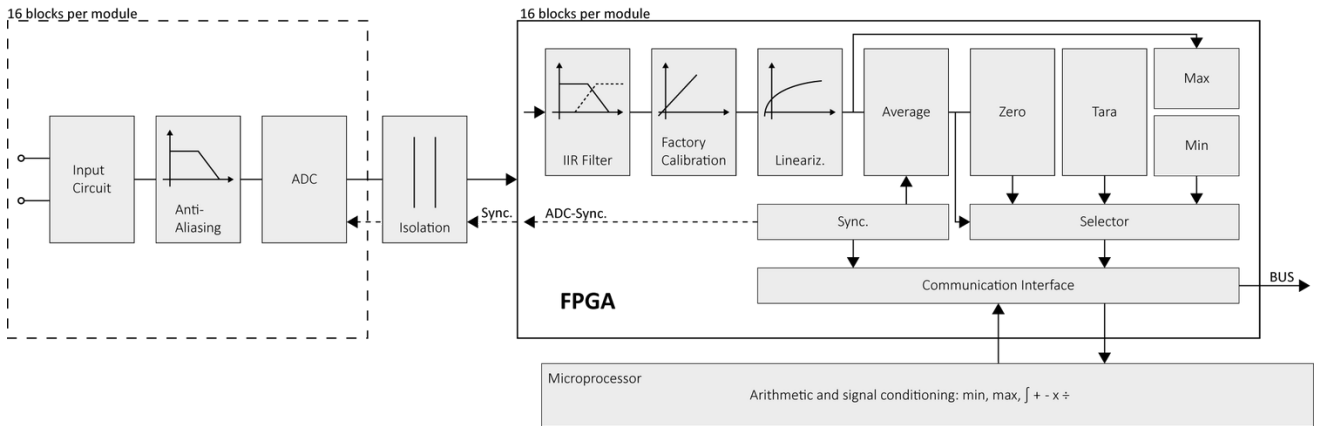
- 16 analog input channels for strain gages quarter-bridge configuration
- High-accuracy digitization
24-bit ADC, 10 kHz sample rate per channel
- Selectable input ranges for optimal signal-to-noise ratio
2 or 20 mV/V ($\pm 4000 \mu\text{m/m}$ or $\pm 40000 \mu\text{m/m}$ with $k=2$)
- Active lead wire resistance compensation
online compensation signal (OCS) for continuous compensation of lead wire resistance changes
- Build-in shunt resistor
Shunt verification of the complete measurement chain.
- Electromagnetic compatibility (EMC)
according to IEC 61000-4 and EN 55011



Q.bloxx A146

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Block diagram



Technical Data

Analog Input

Channels	16
Accuracy	0.02 % typical 0.05 % in controlled environment ¹ 0.1 % in industrial area ²
Linearity error	0.01 % typical full-scale
Input impedance	<10 MΩ

¹ according to EN 61326 2006: appendix B

² according to EN 61326 2006: appendix A

Analog-to-Digital Conversion

Resolution	24-bit
Sample rate	10 kHz per channel
Modulation method	sigma-delta (group delay time 600 μs)
Anti-aliasing filter	1 kHz, 3rd order
Digital filters	Infinite Impulse Response (IIR), low-pass, high-pass, band-pass, band-stop, Butterworth or Bessel (2nd, 4th, 6th or 8th order), frequency range 0.1 Hz to 2 kHz
Averaging	configurable or automatic according to the user-defined data rate

Q.bloxx A146

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Strain Gage Measurement

Bridge configuration(s)	resistance quarter-bridge (3-wire, with lead wire resistance compensation)	
Accuracy class	0.05	
Bridge completion resistor	350 Ω (others upon request)	
Temp. Coefficient of Resistance (TCR)	0.05 ppm/K	
Input range	selectable ± 2 mV/V or ± 20 mV/V per channel (± 4000 $\mu\text{m/m}$ or ± 40000 $\mu\text{m/m}$ with $k=2$)	
Shunt resistor	100 k Ω internal resistor	
Bridge excitation	2 VDC per channel	
Maximum sensor cable length	150 m	
Long term stability	< 0.2 $\mu\text{V/V}$ / 24 hrs	< 2 $\mu\text{V/V}$ / 8000 hrs
Temperature drift	< 0.5 $\mu\text{V/V}$ / 10 K Offset drift	0.05 % / 10 K Gain drift
Noise	< 0.3 $\mu\text{V/V}$ (at 10 Hz)	

Communications Interface

Protocols	proprietary Localbus (115200 bps to 24 Mbps, latency < 100 ns) ASCII (19200 bps to 115200 bps) Modbus RTU Profibus-DP (19200 bps to 12 Mbps) (special Firmware required)	
Data format	BE1	
Electrical standard	ANSI/TIA/EIA-485-A, 2-wire	

Input Power

Input voltage	10 to 30 VDC, overvoltage and overcurrent protection
Power consumption	2 W (approx.)
Input voltage influence	< 0.001 % / V

Environmental Specifications

Electromagnetic compatibility (EMC)	according to IEC 61000-4 and EN 55011
Operating temperature	-20°C to +60°C
Storage temperature	-40°C to +85°C
Relative humidity	5 - 95 % at 50°C (non-condensing)

Remarks

Validity of all listed specifications are subject to a warm-up period of at least 45 minutes

Specifications subject to change without notice

Mechanical information

Material	Aluminum and ABS
Measurements (W x H x D)	27 x 120 x 105 mm
Weight	approx. 200 g

Q.bloxx A146

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Ordering Information

Article number	498736
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