

Q.bloxx XL A146 350

High Density Strain Gage Measurement Module

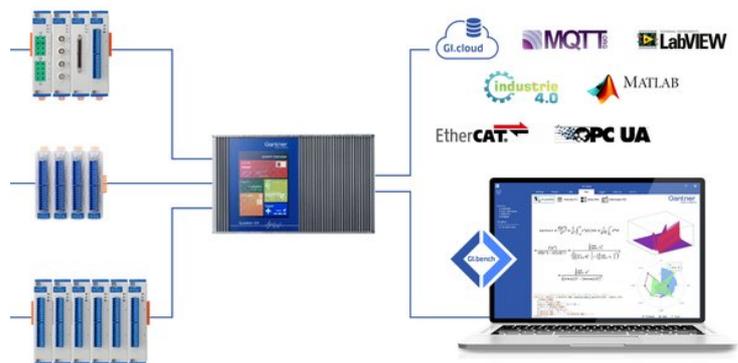
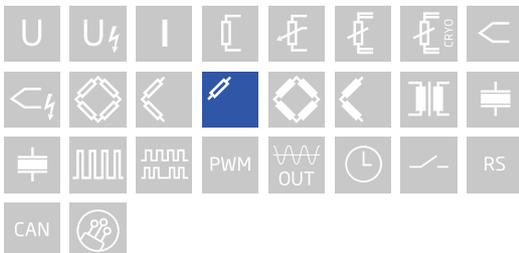
Q.bloxx XL is a new addition to the Q.series product family - the ideal DAQ solution for widely distributed installations that require higher performance and custom sensor terminations. Q.bloxx XL products are packaged in modular, DIN Rail mountable enclosures that easily snap together for system expansion. Flexibility in distribution allows for highly synchronized data that is less prone to noise due to shorter sensor cable runs to the subject.

- RS485 fieldbus interface up to 48 Mbps: LocalBus, up to 115.2 kbps: Modbus-RTU, ASCII
- Electromagnetic Compatibility according to EN61000-4 and EN55011
- Connectable to Controller Q.station X
- Power supply 10 ... 30 VDC
- DIN rail mounting (EN60715)



Key Features

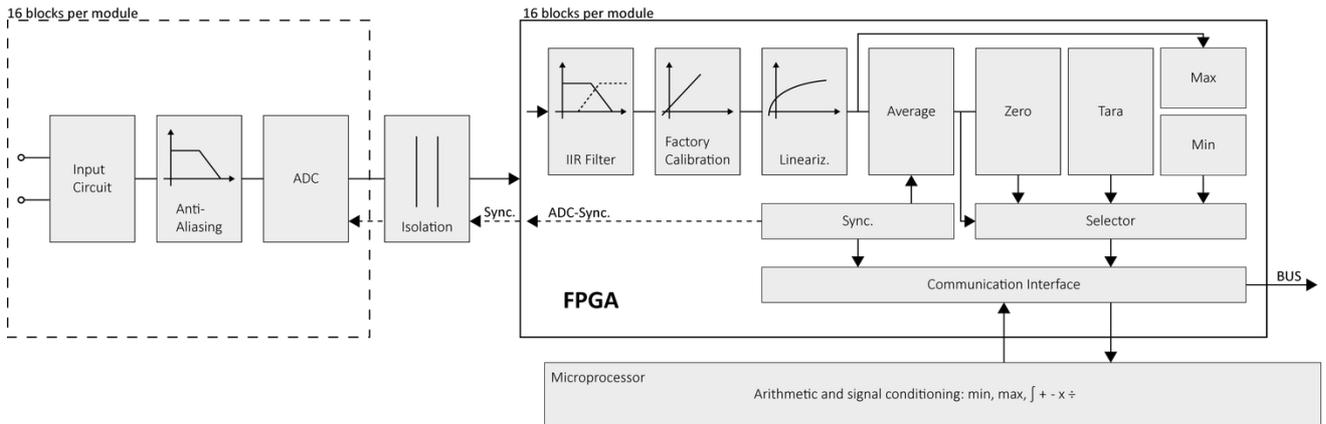
- 16 analog input channels for strain gages quarter-bridge configuration
- High-accuracy digitization
24-bit ADC, 10 kHz sample rate per channel
- Selectable input ranges for optimal signal-to-noise ratio
2 or 20 mV/V ($\pm 4000 \mu\text{m/m}$ or $\pm 40000 \mu\text{m/m}$ with $k=2$)
- Active lead wire 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.
- Galvanic isolation
channel to supply to interface
- Electromagnetic compatibility (EMC)
according to IEC 61000-4 and EN 55011



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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
Isolation voltage	500 VDC channel to input voltage to interface ³

¹ according to EN 61326 2006: appendix B

² according to EN 61326 2006: appendix A

³ noise pulses up to 1000 VDC, continuous up to 250 VDC

Analog-to-Digital Conversion

Resolution	24-bit
Sample rate	10 kHz per channel
Modulation method	sigma-delta
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

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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)	

Communication Interface Localbus

Protocols	proprietary Localbus (115200 bps to 48 Mbps, latency < 100 ns) ASCII (19200 bps to 115200 bps) Modbus RTU	
Data format	8E1	
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 $+60^{\circ}\text{C}$
Storage temperature	-40°C to $+85^{\circ}\text{C}$
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)	30x 145 x 135mm
Weight	approx. 500 g

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Ordering Information

Article number	541624
Accessories	Connection Terminal A146, article number 536224

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