

Q.bloxx XL A136 350

Measurement Module for Strain Gage

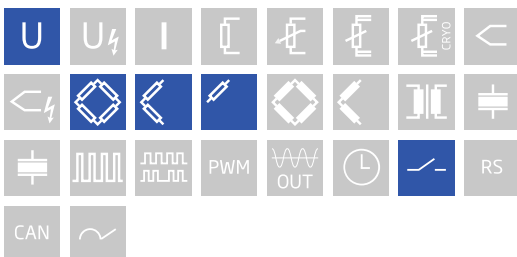
Q.bloxx XL is a new addition to the Q.series product family - the ideal DAQ solution for widely distributed installations that require higher performance and custom sensor terminations. Q.bloxx XL products are packaged in modular, DIN Rail mountable enclosures that easily snap together for system expansion. 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

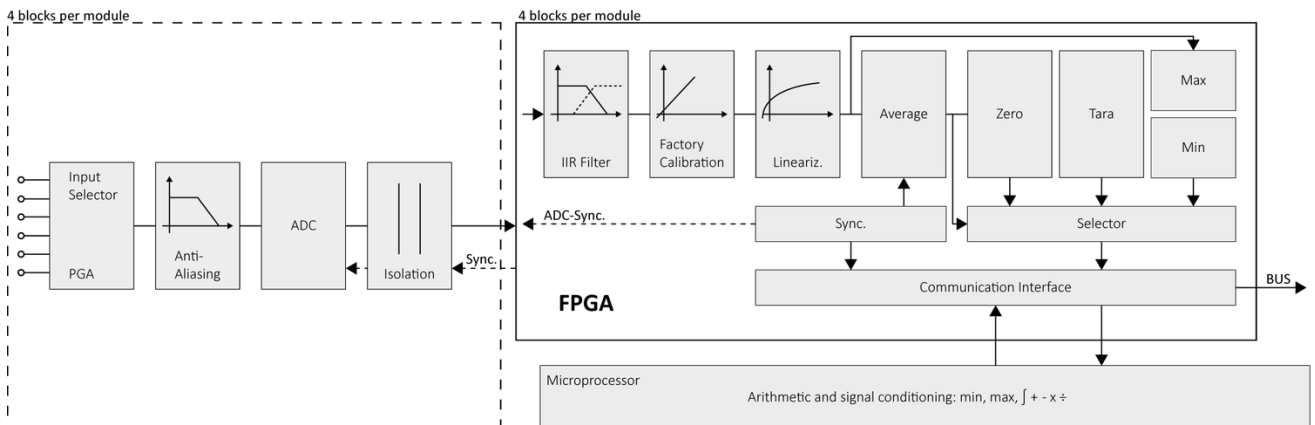
- 4 galvanically isolated analog inputs channels
strain gage full bridges, half and quarter bridge, voltage
- Configurable excitation voltages
10 V, 5 V, 2.5 V and 1 V
- 4 digital inputs
- High-accuracy digitization
24-bit ADC, 20 kHz sample rate per channel
- Signal conditioning
linearization, filtering, average, scaling, min/max, RMS, arithmetic, alarm
- 3-Way galvanic isolation
Channel to channel, channel to power supply, and channel to bus



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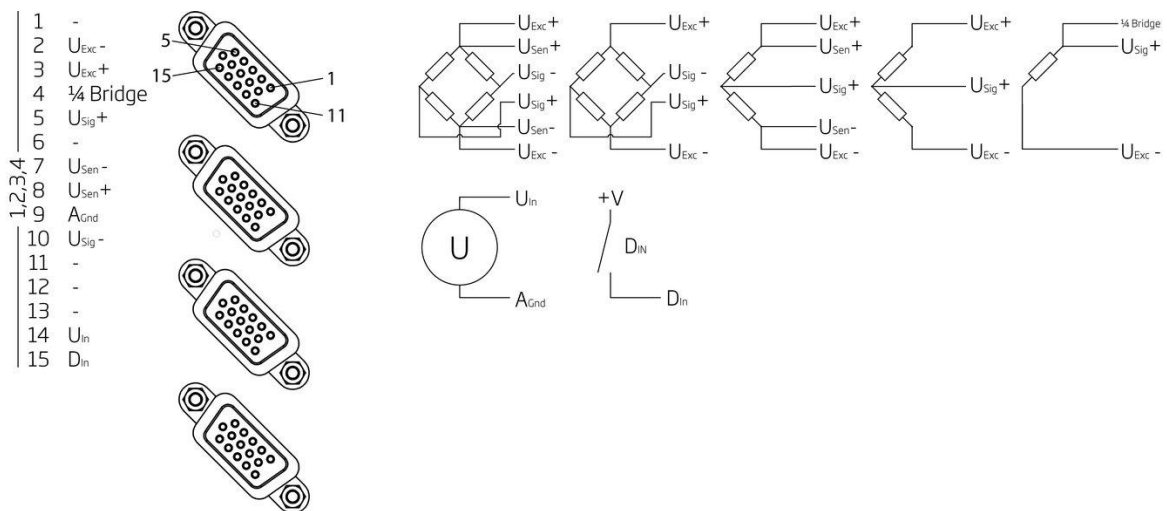
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Block diagram



Technical Data

Terminal assignment - DSUB 15 - female



Analog Input

Channels	4
Accuracy	0.02 % typical
	0.05 % in controlled environment ¹
	0.1 % in industrial area ²
Linearity error	0.02 % typical full-scale
Repeatability	0.01 % typical (within 24 hrs)
Input impedance	>10 M Ω
Isolation voltage	500 VDC channel to channel, to power supply, channel to bus

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

Strain Gage Measurement

Bridge configuration(s)	resistive full-bridge (4/6-wire) resistive half-bridge (3/5-wire) resistive quarter-bridge 350Ω			
Allowable sensor cable length	< 30 m			
Shunt resistor	100 kΩ internal resistor			
Bridge excitation	10 V, 5 V, 2.5 V, 1 V			
Bridge excitation stability	< 0.01% / 24 hrs			
Bridge excitation drift	< 0.02% / 10 K			
Bridge excitation	10 V	5 V	2.5 V	1 V
Allowable sensor resistance	> 300 Ω	> 100 Ω	> 100 Ω	> 100 Ω
Input range	±1 mV/V	±1 mV/V	±1 mV/V	±1 mV/V
	±2.5 mV/V	±2.5 mV/V	±2.5 mV/V	±2.5 mV/V
	±10 mV/V	±10 mV/V	±10 mV/V	±10 mV/V
	±100 mV/V	±100 mV/V	±100 mV/V	±100 mV/V
Signal-to-noise ratio	> 90 dB at 1 kHz		> 120 dB at 1 Hz	
Input impedance	> 1 MΩ			
Overvoltage protection	±30 V			

Voltage Measurement

Range and error	Input range	Max error	Resolution
	0-10 V	±2 mV	1.2 μV
	0-5 V	±1 mV	0.6 μV
	0-1 V	±200 μV	120 nV
Long-term stability	Input range	24 h	8000 h
	0-10 V	< 200 μV	< 2000 μV
	0-5 V	< 100 μV	< 1000 μV
	0-1 V	< 20 μV	< 200 μV
Temperature drift	Input range	Offset drift	Gain drift
	0-10 V	< 500 μV / 10K	< 0.01 % / 10K
	0-5 V	< 250 μV / 10K	< 0.01 % / 10K
	0-1 V	< 50 μV / 10 K	< 0.01 % / 10K
Signal-to-noise ratio	> 90 dB at 1 kHz		> 120 dB at 1 Hz
Input impedance	> 1 MΩ		
Overvoltage protection	±30 V		

Measurement Mode PT1000

Sensor excitation	1 mA		
Input range	-50°C to +100°C		
Margin of error	0.5°C		
Long-term stability	< 0.5°C / 24 hrs	< 0.4°C / 8000 hrs	
Temperature drift	0.1°C / 10K		

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Measurement Module for Strain Gage

Digital Inputs

Channels	4
Mode(s) of operation	status
Logic levels	< 2 VDC (Low) < 10 VDH (High)
Input kind	PNP (current sinking)
Input voltage	30 VDC max.

Analog to Digital Conversion

Resolution	24-bit
Sample rate	20 kHz per channel
Modulation method	sigma-delta
Anti-aliasing filter	4 kHz, 3rd order
Digital filters	Infinite impulse response (IIR), low-pass, high-pass, band-pass, band-stop, to 8th order Butterworth or Bessel, frequency range 0.1 Hz to 1 kHz in steps of 0.1 (adjustable via software)
Averaging	configurable or automatic according to the user-defined data rate

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

Power Supply

Input voltage	10 to 30 VDC, overvoltage and overcurrent protection
Power consumption	7 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

are subject to a warm-up period of at least 45 minutes

Specifications subject to change without notice

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Measurement Module for Strain Gage

Mechanical information

Material	Aluminum and ABS
Measurements (W x H x D)	30x 145 x 135mm
Weight	approx. 500 g
Protection class	IP20

Ordering Information

Article number	779536
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