Q.bloxx XL A146 DB 350

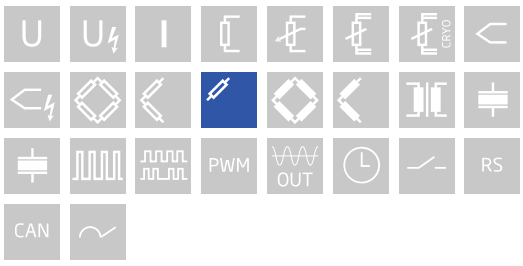
High Density Strain Gage Measurement Module

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
- Connectable to Controller Q.station X
- Electromagnetic Compatibility according to EN61000-4 and EN55011
- Power supply 10 ... 30 VDC
- DIN rail mounting (EN60715)

Key Features

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



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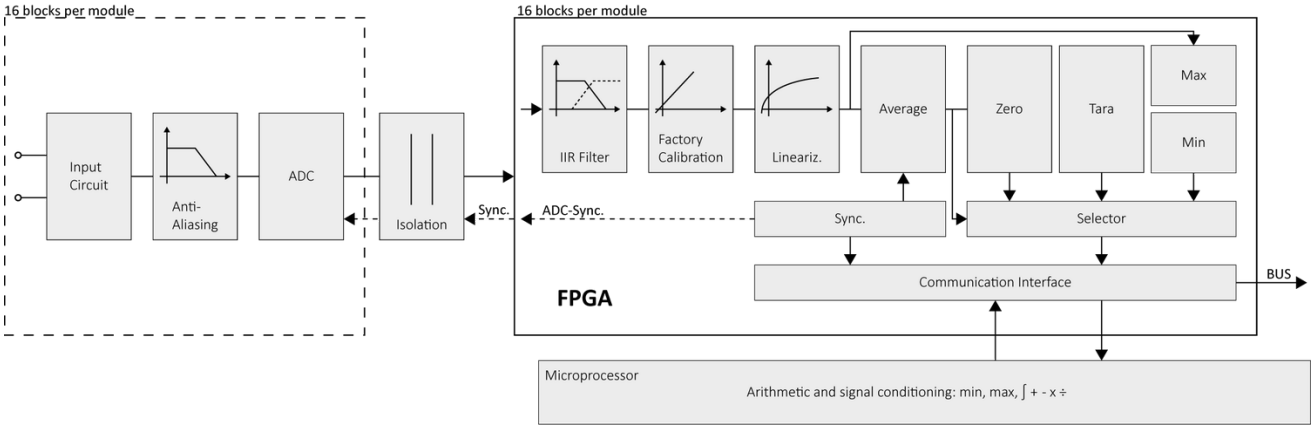
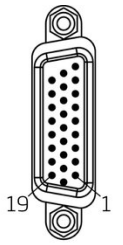
Block diagram

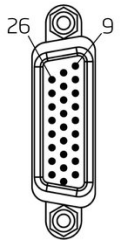


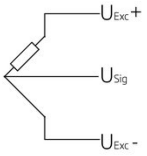
Technical Data

Terminal assignment DB26HD

A_{in} 1	U_{Sig}	17	A_{in} 5	U_{Sig}	13	A_{in} 9	U_{Sig}	17	A_{in} 13	U_{Sig}	13
	U_{Exc}+	8		U_{Exc}+	4		U_{Exc}+	8		U_{Exc}+	4
	U_{Exc} -	26		U_{Exc} -	22		U_{Exc} -	26		U_{Exc} -	22
A_{in} 2	U_{Sig}	16	A_{in} 6	U_{Sig}	12	A_{in} 10	U_{Sig}	16	A_{in} 14	U_{Sig}	12
	U_{Exc}+	7		U_{Exc}+	3		U_{Exc}+	7		U_{Exc}+	3
	U_{Exc} -	25		U_{Exc} -	21		U_{Exc} -	25		U_{Exc} -	21
A_{in} 3	U_{Sig}	15	A_{in} 7	U_{Sig}	11	A_{in} 11	U_{Sig}	15	A_{in} 15	U_{Sig}	11
	U_{Exc}+	6		U_{Exc}+	2		U_{Exc}+	6		U_{Exc}+	2
	U_{Exc} -	24		U_{Exc} -	20		U_{Exc} -	24		U_{Exc} -	20
A_{in} 4	U_{Sig}	14	A_{in} 8	U_{Sig}	10	A_{in} 12	U_{Sig}	14	A_{in} 16	U_{Sig}	10
	U_{Exc}+	5		U_{Exc}+	1		U_{Exc}+	5		U_{Exc}+	1
	U_{Exc} -	23		U_{Exc} -	19		U_{Exc} -	23		U_{Exc} -	19







Analog Input

Channels	16
Input impedance	<10 MΩ
Isolation voltage	500 VDC channel to input voltage to interface [1]

[1] noise pulses up to 1000 VDC, continuous up to 250 VDC

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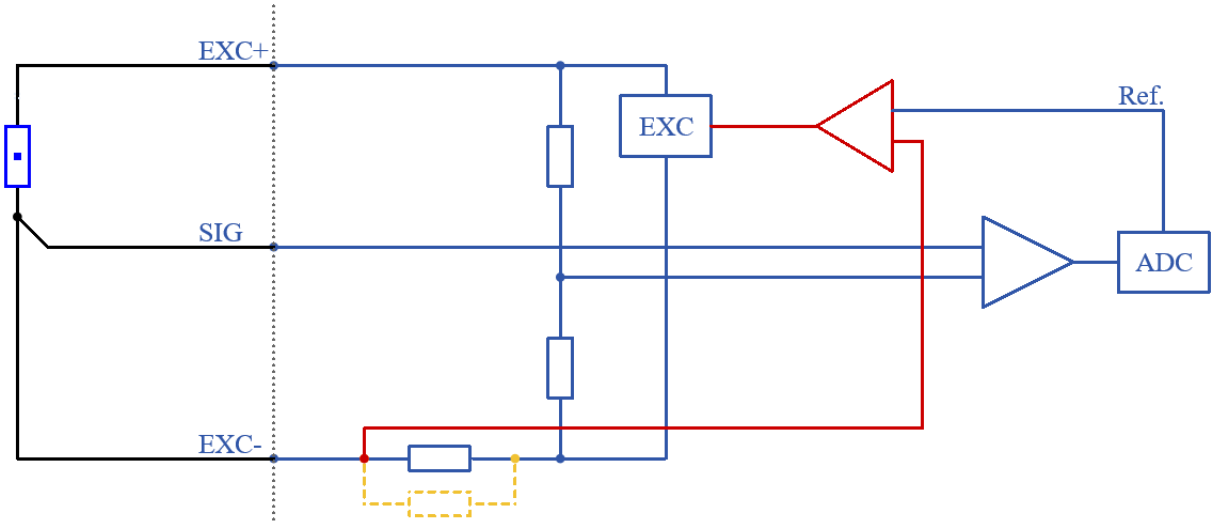
Strain Gage Wiring Diagram



- EXC+ and EXC– must be installed as a twisted pair.
- SIG may be installed either as a single conductor or as a twisted pair with an unused conductor.

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	±20 mV/V
Accuracy	0.25 %	0.1 %
Shunt resistor	100 kΩ internal resistor	
Bridge excitation	2 VDC per channel	
Maximum sensor cable length	150 m	
Long-term stability	<0.2 µV/V / 24 hrs	<2 µV/V / 8000 hrs
Temperature drift	<0.5 µV/V / 10 K offset drift	0.05 % / 10 K gain drift
Noise	<0.3 µV/V (at 10 Hz)	

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 1 kHz
Averaging	Configurable or automatic according to the user-defined data rate

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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 °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
In a controlled electromagnetic environment[1]
With configuration: Low-pass 10Hz[2]
Specifications subject to change without notice

[1] according to IEC 61326-1:2020

[2] unless otherwise stated

Mechanical information

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

Ordering Information

Article number	777635
Accessories	Connection Terminal A146 DB, article number 724324

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