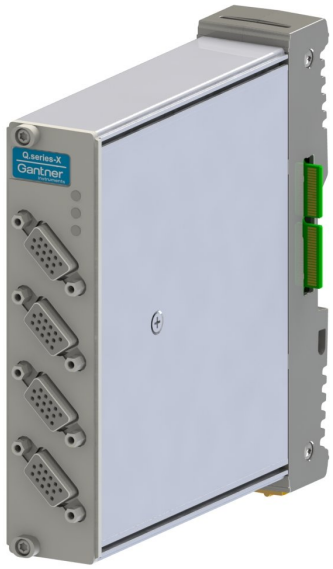
Q.bloxx XL A156 DB15HD

Measurement Module for Strain Gage and LVDT/RVDT

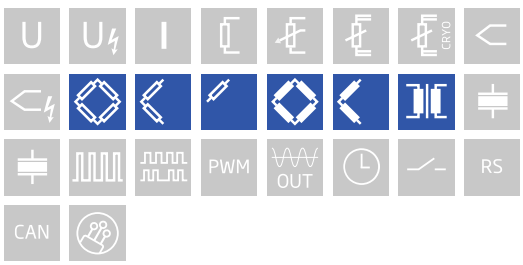
Q.bloxx XL is a new addition to the Q.series product family - the ideal DAQ solution for widely distributed installations that require higher performance and custom sensor terminations. Q.bloxx XL products are packaged in modular, DIN Rail mountable enclosures that easily snap together for system expansion.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

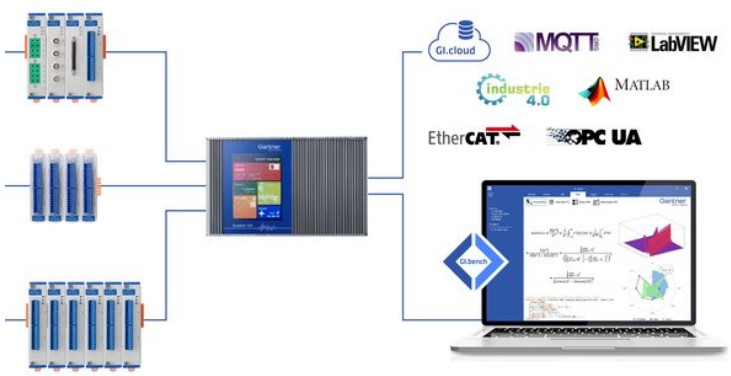
- RS485 fieldbus interface up to 48 Mbps: LocalBus, up to 115.2 kbps: Modbus-RTU, ASCII
- Connectable to Controller Q.station X
- Electromagnetic Compatibility according to EN61000-4 and EN55011
- Power supply 10 ... 30 VDC
- DIN rail mounting (EN60715)



Key Features

- **4 galvanically isolated analog inputs channels**
  strain gage and inductive half and full bridges, LVDT, RVDT
  quarter bridge with completion terminal.
  Completion terminal is currently not available.
- **Carrier frequency (CF) principle**
  4.8 kHz carrier frequency
- **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**
  500 VDC channel to channel, channel to power supply, and channel to bus





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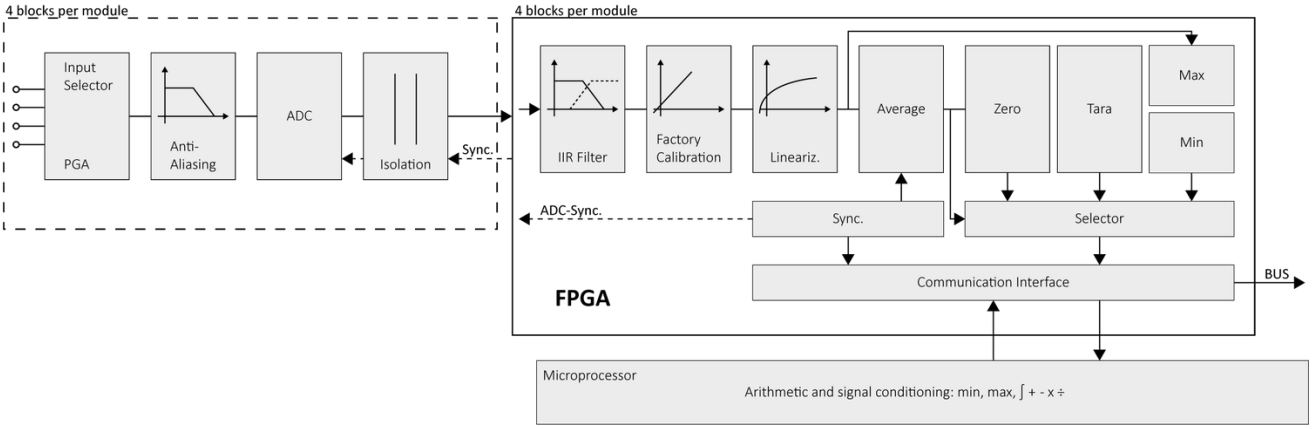
Block diagram

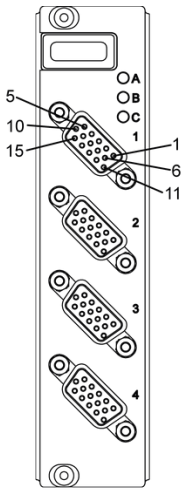


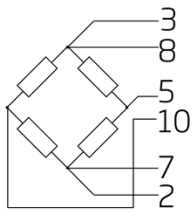
Technical Data

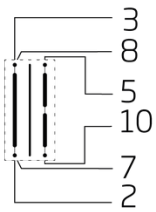
Terminal assignments DSUB 15HD female

1. 2. 3. 4

1	n.c.
2	EXC -
3	EXC +
4	n.c.
5	SIG +
6	n.c.
7	Sen -
8	Sen +
9	n.c.
10	Sig -
11	n.c.
12	n.c.
13	n.c.
14	n.c.
15	n.c.







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 MΩ
Isolation voltage	500 VDC channel to channel, to power supply, channel to bus [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

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Strain Gage Measurement

Bridge configuration(s)	resistive full-bridge (4/6-wire) resistive half-bridge (3/5-wire)	
Allowable sensor cable length	<30 m	
Shunt resistor	100 kΩ internal resistor	
Bridge excitation	2.5 or 5 Veff, 4.8 kHz AC excitation	
Bridge excitation stability	<0.01% / 24 hrs	
Bridge excitation drift	<0.02% / 10 K	
	5 Veff	**2.5 Veff**
Allowable sensor resistance	>300 Ω	>100 Ω
Input range	±1.25 mV/V	±2.5 mV/V
	±2.5 mV/V	±5 mV/V
	±25 mV/V	±50 mV/V
	±50 mV/V	±100 mV/V
	±100 mV/V	±200 mV/V
	±200 mV/V	±400 mV/V
	±500 mV/V	±1000 mV/V
Long-term stability	<0.1 µV/V / 24 hrs	<1 µV/V / 8000 hrs
Temperature drift (range 2.5 mV/V)	<0.2 µV/V / 10 K Offset drift	<0.05 % / 10 K Gain drift
Signal-to-noise ratio	<0.3 µV/V at 10 Hz	<1 µV/V at 100 Hz

LVDT/RVDT Measurement

Sensor connection	4- / 6-wire	
Sensor excitation (selectable)	**5 Veff**	**2.5 Veff**
Allowable sensor resistance	>300 Ω	>100 Ω
Input range	±1.25 mV/V	±2.5 mV/V
	±2.5 mV/V	±5 mV/V
	±25 mV/V	±50 mV/V
	±50 mV/V	±100 mV/V
	±100 mV/V	±200 mV/V
	±200 mV/V	±400 mV/V
	±250 mV/V	±500 mV/V
	±500 mV/V	±1000 mV/V
Allowable sensor cable length	<100 m[1]	
Long-term stability	<0.1 µV/V / 24 hrs	<1 µV/V / 8000 hrs
Temperature drift (range 2.5 mV/V)	<0.2 µV/V / 10 K Offset drift	<0.05 % / 10 K Gain drift
Signal-to-noise ratio	<0.3 µV/V at 10 Hz	<1 µV/V at 100 Hz

[1] low capacity sensor cable is strongly recommended

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Analog-to-Digital Conversion

Resolution	24-bit
Sample rate	20 kHz per channel
Modulation method	sigma-delta
Anti-aliasing filter	1 kHz, 3th order (4.8 kHz CF excitation)
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 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	2.5 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)	30x 145 x 135mm
Weight	approx. 500 g

Ordering Information

Article number	667330

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