

# Q.bloxx XL A101

## Universal Measurement Module

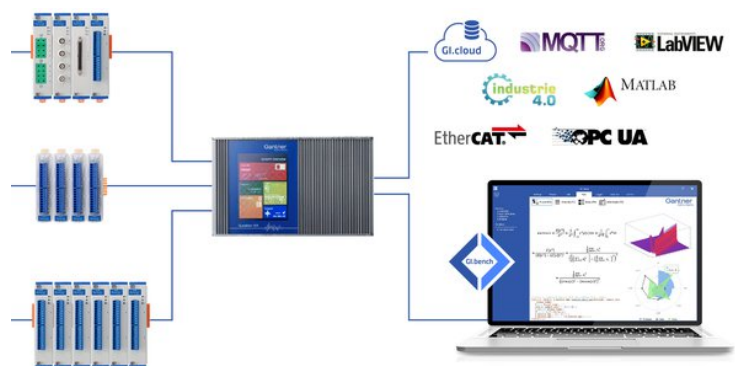
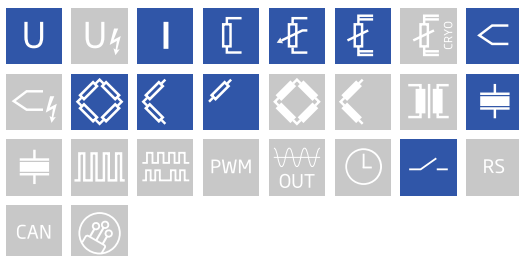
Q.bloxx XL is a new addition to the Q.series product family - the ideal DAQ solution for widely distributed installations that require higher performance and custom sensor terminations. Q.bloxx XL products are packaged in modular, DIN Rail mountable enclosures that easily snap together for system expansion.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

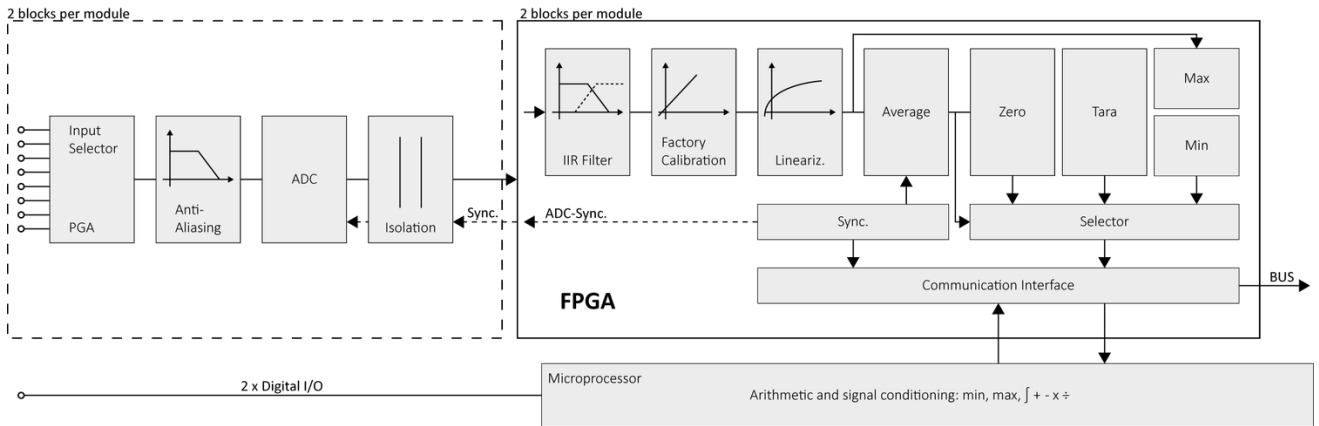


### Key Features

- **2 Universal analog input channels**  
Voltage, current, resistance, potentiometer, RTD, thermocouple, strain gage (full-, half-, and quarter-bridge configuration), IEPE
- **High-accuracy digitization**  
24-bit ADC, 100 kHz sample rate per channel
- **2 Digital inputs or outputs**  
Status, trigger, tare, alarm, command
- **Signal conditioning**  
16 virtual channels, linearization, digital filter, average, scaling, min/max storage, RMS, arithmetic, alarm
- **3-Way galvanic isolation**  
500 VDC channel to channel, channel to power supply, and bank



### Block diagram



### Technical Data

#### Analog Input

Channels	2
Accuracy	0.01 % typical
	0.025 % in controlled environment <sup>1</sup>
	0.05 % in industrial area <sup>2</sup>
Linearity error	0.01 % typical full-scale
Repeatability	0.003 % typical (within 24 h)
Isolation voltage	500 VDC channel to channel to power supply channel to bus <sup>3</sup>

<sup>1</sup> according to EN 61326 2006: appendix B

<sup>2</sup> according to EN 61326 2006: appendix A

<sup>3</sup> noise pulses up to 1000 VDC, continuous up to 250 VDC

#### Measurement Mode Voltage

	Range	max. Error	Resolution
	±60 V	±15 mV	7.2 µV
	±10 V	±2 mV	1.2 µV
	±1 V	±200 µV	120 nV
	±100 mV	±20 µV	12 nV
Input impedance > 10 MΩ	Range ±10 V	Range ±60 V	
	> 1 MΩ	> 3 MΩ	
Long term drift at input range ± 1 V	< 20 µV / 24 h	< 200 µV / 8000 h	
Temperature influence at input range ± 1 V	Offset drift	Gain drift	
	< 50 µV / 10 K	< 0.01 % / 10 K	
Signal-to-noise ratio	> 90 dB at 1 kHz	> 120 dB at 1 Hz	

### Measurement Mode Current

Error	Range	max. Error	Resolution
Internal shunt resistor 50 Ω	±25 mA	±5 μA	3.0 nA
Long term drift	< 0.5 μA / 24 h	< 5 μA / 8000 h	
Temperature influence	Offset drift	Gain drift	
	< 1 μA / 10 K	< 0.025 % / 10 K	

### Measurement Mode Resistance / RTD

Error	Range	max. Error	Resolution
Resistance, 2-wire	100 kΩ	±100 Ω	12 mΩ
Resistance, 2- and 4-wire	4 kΩ	±1 Ω	0.5 mΩ
Resistance, 2- and 4-wire	400 Ω	±0.1 Ω	48 μΩ
Pt100, 2- and 4-wire	-200 to +850°C	±0.25°C	0.2 m°C
Pt1000, 2- and 4-wire	-200 to +850°C	±1°C	0.2 m°C
Long term drift	< 0.01°C / 24 h	< 0.1°C / 8000 h	
Temperature influence	Offset drift (range 400 Ω)	Gain drift	
	< 10 mΩ / 10 K	< 0.025 % / 10 K	

### Measurement Mode Potentiometer, Relative Measurement

Allowable potentiometer resistance	1 kΩ to 10 kΩ		
Long term drift	< 0.01 % / 24 h	< 0.1 % / 8000 h	
Temperature influence	Offset drift (Range 1)	Gain drift	
	< 0.0001 / 10 K	< 0.02 % / 10 K	

### Measurement Mode Bridge

Bridge configuration(s)	half- and full-bridge, (5-/6-wire), quarter-bridge with completion terminal, (3-wire)		
Accuracy class	0.05		
Bridge resistance	> 100 Ω		
Bridge excitation	2.5 VDC, nominal		
Measurement range	±2.4 mV/V	±20 mV/V	±500 mV/V
Long term drift	< 0.12 μV/V / 24 h	< 1.2 μV/V / 8000 h	
Temperature influence	Offset drift (Range 2.4 mV/V)	Gain drift	
	< 0.2 μV/V / 10 K	< 0.05 % / 10 K	

### Measurement Mode Thermocouple

	Type	Range	Adjusted with cold junction compensation	Not adjusted, with CJC terminal
Deviation in the relevant Temperature range	Type B	400°C to 1820°C	< ±1.5 °C	< ±2.5°C
	Type E, J, K	-100 to 1000°C	< ±0.7°C	< ±1.2°C
	Type E	-270°C to 1000°C	< ±1°C	< ±1.2°C
	Type K	-270°C to 1372°C	< ±1°C	< ±1.2°C
	Type L	-200°C to 900°C	< ±0.7°C	< ±1.2°C
	Type N	-100°C to 1000°C	< ±0.7°C	< ±1.2°C
	Type N	-270°C to 1300°C	< ±1°C	< ±1.2°C
	Type R, S	-50°C to 1768°C	< ±1.2°C	< ±1.5°C
	Type T, U	-100°C to 400°C	< ±0.7°C	< ±1.2°C
	Type T	-270°C to 400°C	< ±1°C	< ±1.2°C
	Input impedance	> 10 MΩ		
Long term drift	< 0.1°C / 24 h		< 0.2°C / 8000 h	
Temperature influence	Offset drift		Gain drift	
	< 0.1°C / 10 K		< 0.02% / 10 K	
Uncertainty CJC	< 0.3°C			

### Measurement Mode IEPE Sensor

	Range	max. Error	Resolution
Error	±10 V	±10 mV	1.2 μV
	±1 V	±1 mV	120 nV
Supply	constant current 4 mA		
Input frequency range	0.5 Hz to 10 kHz		
Temperature influence	Offset drift (range 10 V)		Gain drift
	< 10 μV / 10 K		< 0.025 % / 10 K

### Analog to Digital Conversion

Resolution	24-bit
Update rate	100 kHz (measurement thermocouple 8 Hz)
Modulation method	Sigma-Delta (group delay time 380 μs)
Anti-aliasing filter	20 kHz, 3rd order
Digital filters	Infinite impulse response (IIR), low-pass, high-pass, band-pass, Butterworth or Bessel (2nd, 4th, 6th or 8th order), frequency range 0.1 Hz to 10 kHz (adjustable via software)
Averaging	configurable or automatic according to the selected data rate

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### Digital In-/Outputs

Channels	2 (1 digital I/O per channel)
Response time	0.2 ms
Input	status, tare, reset
Input voltage / input current	max. 30 VDC / max. 0,5 mA
Lower / upper threshold	<2.0 V (low) / >10 V (high)
Output	status, alarm
Contact	open drain p-channel MOSFET
Load capacity	30 VDC / 100 mA (ohmic load)

### Communication Interface

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	approx.. 2 W
Input voltage influence	<0.001 %/V

### Environmental

Operating temperature	-20°C to +60°C
Storage temperature	-40°C to +85°C
Relative humidity	5 % to 95 % at 50°C, non-condensing

### Remarks

Warm-up time	Validity of all listed specifications are subject to a warm-up period of at least 45 minutes Specifications subject to change without notice
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### Mechanical information

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

### Ordering Information

Article number	495026
Accessories	Terminal B4/120-A101, article number 897895
	Terminal B4/350-A101, article number 897996
	Terminal CJC-A101, article number 890787



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Gantner Instruments

Austria | Germany | France | Sweden | India | USA | China | Singapore  
Montafonerstraße 4 · A-6780 Schruns · T +43 55 56 · 77 463-0

office@gantner-instruments.com  
www.gantner-instruments.com