

Q.brixx XL A101

Universal Measurement Module

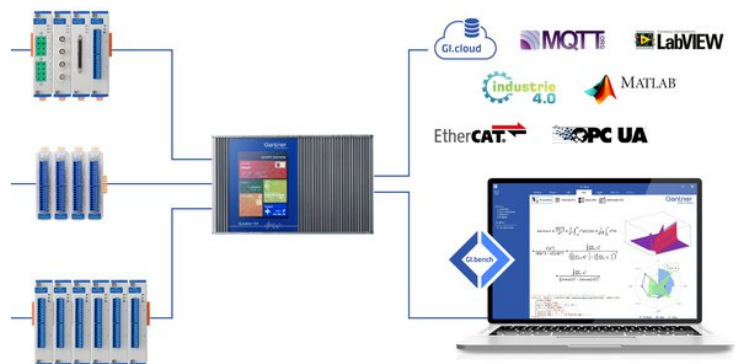
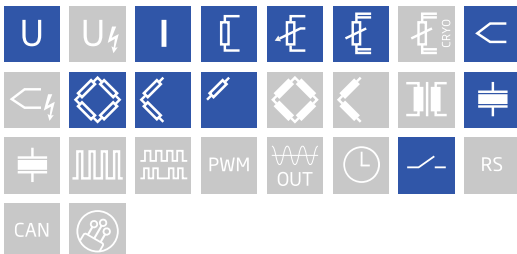
Q.brixx XL is a new addition to the Q.series product family - the ideal DAQ solution for on-the-go applications requiring higher performance in potentially harsh environments. Q.brixx XL DAQ systems consist of up to 16 measurement modules and an integrated, high-performance controller for communication, control, and data logging purposes, all within a robust aluminum housing capable of withstanding severe shock and vibration without sacrificing performance.

- High density and flexibility with 16 modules in one system in any constellation
- Electromagnetic Compatibility according to EN61000-4 and EN55011
- Connectable to Controller Q.station
- Power supply 10 ... 30 VDC

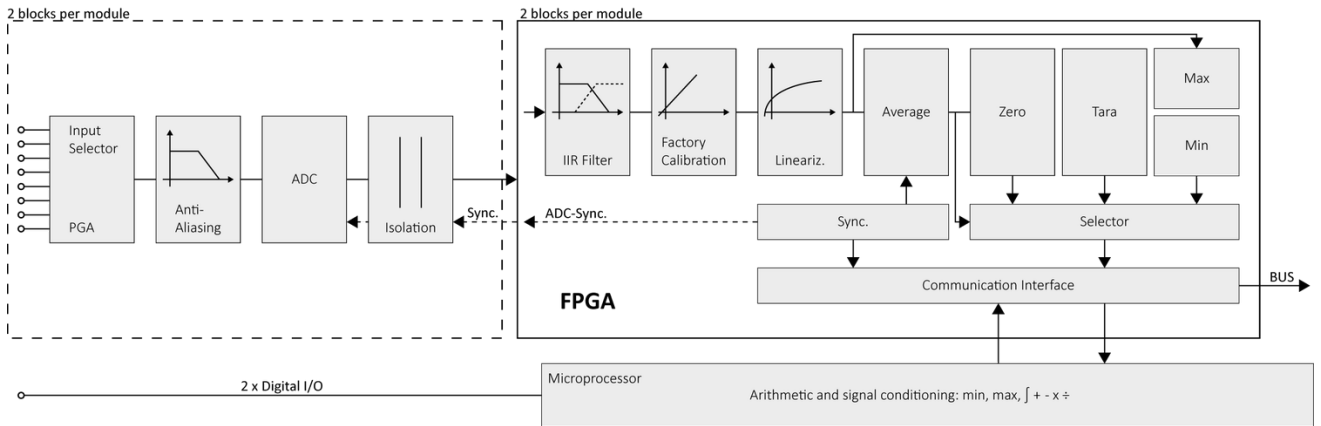


Key Features

- **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 ¹
	0.05 % in industrial area ²
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 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

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 μ A	3.0 nA
Long term drift	< 0.5 μ A / 24 h	< 5 μ A / 8000 h	
Temperature influence	Offset drift	Gain drift	
	< 1 μ A / 10 K	< 0.025 % / 10 K	

Measurement Mode Resistance / RTD

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

Measurement Mode Potentiometer, Relative Measurement

Allowable potentiometer resistance	1 k Ω to 10 k Ω		
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 μ V/V / 24 h	< 1.2 μ V/V / 8000 h	
Temperature influence	Offset drift (Range 2.4 mV/V)	Gain drift	
	< 0.2 μ V/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
Measurements (W x H x D)	30x 145 x 135mm
Weight	approx. 500 g

Ordering Information

Article number	521319
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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