

Q.raxx XL A102

Universal Measurement Module with Analog Output

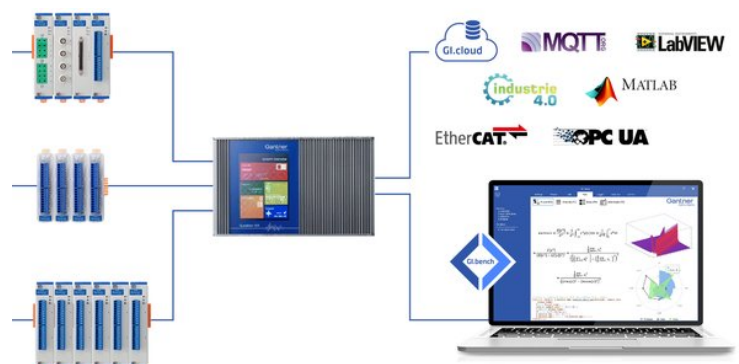
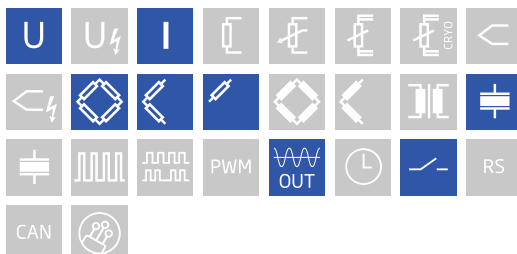
Q.raxx XL is a new addition to the Q.series product family - the ideal 19" rackmount DAQ solution for applications that require high channel density and custom sensor terminations. Q.raxx XL DAQ systems can utilize an integrated, high-performance controller for communication, control, and data logging purposes. With a controller, multiple Q.raxx XL systems can be synchronized to each other allowing for efficient DAQ distribution with low jitter and gradual expansion up to thousands of channels.

- High Density
up to 13 I/O modules per Q.raxx 3U chassis with up to 16 channels per I/O module
- User Friendly
front panel indicators for module status, power, and input range error
- Fully Customizable
multiple front panel termination options available
- Maximum Flexibility
parallel communication available in TCP/IP, CAN, PROFIBUS, Modbus, and EtherCAT
- Gantner's Quality Standard
integrated filtering, galvanic isolation & signal/sensor conditioning per channel

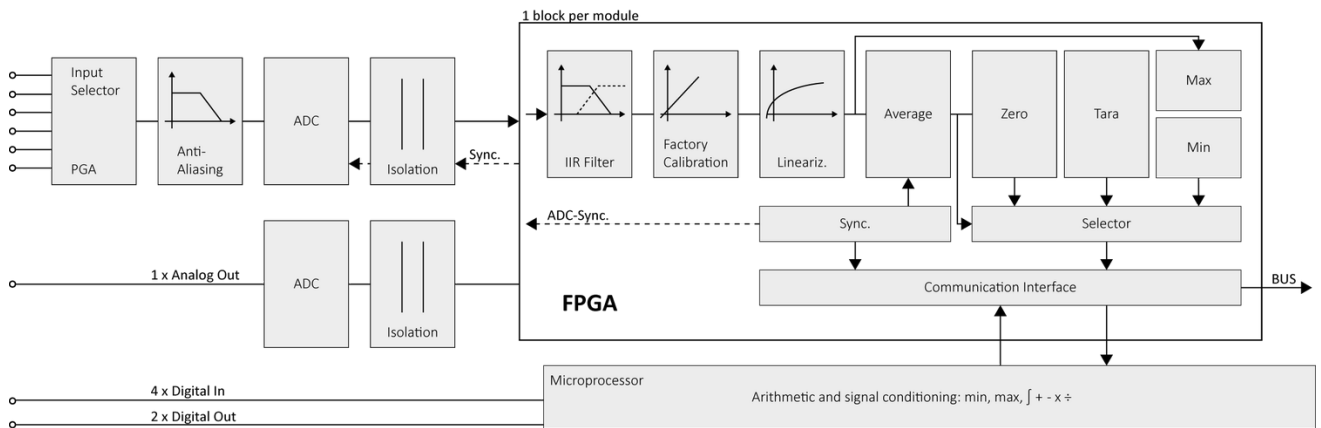


Key Features

- 1 Analog input channel
measuring half and full bridge, IEPE-sensor, voltage, current, quarter bridge with completion terminal
- 1 Analog output channel
voltage (± 10 V) or current (0 - 20 mA), 100 kHz update rate
- High-accuracy digitization
19-bit SAR ADC, 100 kHz sample rate
- 4 Digital inputs and 2 digital outputs
status, trigger, tare, alarm, command
- Signal conditioning
32 virtual channels, linearization, digital filter, average, scaling, min/max storage, RMS, arithmetic, alarm
- Additional RS 485 fieldbus interface
to control an 8 or 16 or 24 channel multiplexer for multi channel systems, 10Hz per channel
- 3-Way galvanic isolation
500 VDC channel to channel, channel to power supply, and bank



Block diagram



Technical Data

Analog Input

Channels	1
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

Voltage Measurement

Error	Range	max. Error	Resolution
	±10 V	±2 mV	40 µV
	±1 V	±200 µV	4 µV
	±100 mV	±20 µV	0.4 µV
Input impedance	> 10 MΩ (Range ±10 V = 1 MΩ)		
Long-term drift at input range ±1 V	<10 µV / 24 h	<100 µV / 8000 h	
Temperature influence at input range ±1 V	Offset drift	Gain drift	
	<50 µV / 10 K	<0.02 % / 10 K	
Signal-to-noise ratio	>90 dB at 1 kHz	>120 dB at 1 Hz	

Current Measurement

Error (Internal shunt resistor 50 Ω)	range	max. error	resolution
	±25 mA	±6 µA	100 nA
Long-term drift	<0.5 µA / 24 h	<5 µA / 8000 h	
Temperature influence	Offset drift	Gain drift	
	<1 µA / 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			
Internal shunt resistor resistance	100 kΩ			
Bridge excitation (nominal)	10.0 VDC	5.0 VDC	2.5 VDC	1.0 VDC
Allowable bridge resistance	>300 Ω	>100 Ω	>80 Ω	>50 Ω
Measurement range	±100 mV/V	±200 mV/V	±500 mV/V	±1000 mV/V
	±25 mV/V	±50 mV/V	±100 mV/V	±200 mV/V
	±2.5 mV/V	±5 mV/V	±10 mV/V	±20 mV/V
	±1 mV/V	±2.5 mV/V	±5 mV/V	±10 mV/V
Temperature influence	Offset drift (range 2.5 mV/V)		Gain drift	
	<0.2 μV/V / 10 K		<0.05 % / 10 K	

Measurement Mode IEPE Sensor

Error	Range	max. Error	Resolution
	±10 V	±10 mV	40 μV
Supply	constant current 4 mA		
Input frequency	2 Hz		
Limit frequency	10 kHz		
Temperature influence	Offset drift	Gain drift	
	<10 μV / 10 K	<0.025 % / 10 K	

Analog to Digital Conversion

Resolution	19-bit
Update rate	100 kHz
Modulation method	SAR (successive approximation)
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 user-defined data rate

Analog Output

Accuracy	0.02 %	
Output type	configurable: voltage or current	
DAC resolution	16-bit	
Update rate	100 kHz	
Voltage output	±10 VDC	
Allowable load resistance	> 2 kΩ	
Temperature influence	Offset drift	Gain drift
	< 2 mV / 10 K	< 0.05 % / 10 K
Noise voltage	< 10 mV at 1 kHz	< 2 mV / 10 Hz
Long-term drift	< 1 mV / 24 h	< 2,5 mV / 8000 h
Current output	0 to 20 mA	
Allowable load burden	< 400 Ω	
Burden influence	Accuracy at 100 Ω	Gain drift
	± 4 μA	< 0.25 μA / Ω
Temperature influence	Offset drift	Gain drift
	4 μA / 10 K	0.05 % / 10 K
Noise current	< 20 μA at 1 kHz	< 4 μA / 10 Hz
Long-term drift	< 2 μA / 24 h	< 5 μA / 8000 h

Digital In- / Outputs

Channels	4 inputs, 2 outputs
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 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	approx. 2 W
Input voltage influence	< 0.001 %/V

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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

Mechanical information

Material	Aluminum
Measurements (W x H x D)	30x 128 x 120mm
Weight	approx. 200 g

Ordering Information

Article number	528326
Accessories	Terminal B4/120-A102, article number 894185
	Terminal B4/350-A102, article number 894286

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