Q.raxx XL A146 120

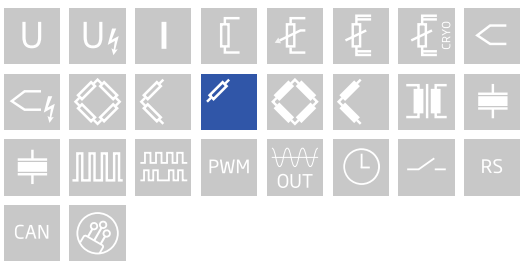
High Density Strain Gage Measurement Module

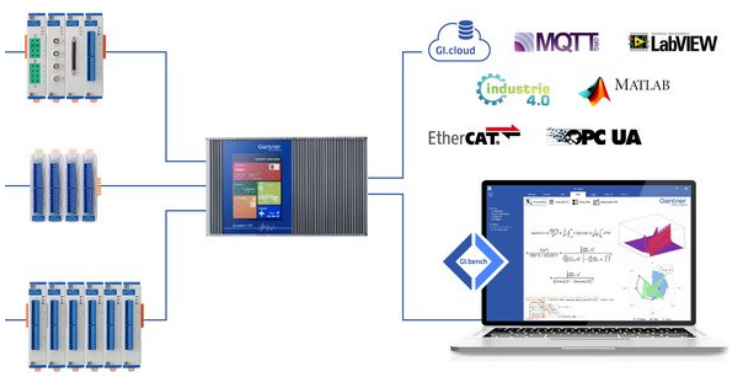
Q.raxx XL is a new addition to the Q.series product family - the ideal 19" rackmount DAQ solution for applications that require high channel density and custom sensor terminations. Q.raxx XL DAQ systems can utilize an integrated, high-performance controller for communication, control, and data logging 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

- High-accuracy digitization
  24-bit ADC, 10 kHz sample rate per channel
- 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
- Active lead wire resistance compensation
  online compensation signal (OCS) for continuous compensation of lead wire resistance changes
- Selectable input ranges for optimal signal-to-noise ratio
  2 or 20 mV/V (±4000 µm/m or ±40000 µm/m with k=2)

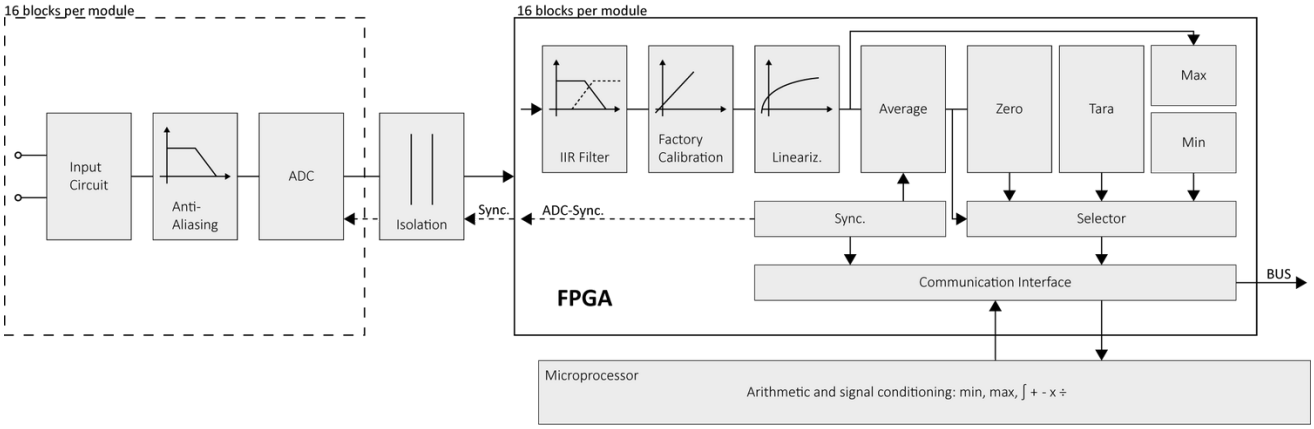




Q.raxx XL A146 120

High Density Strain Gage Measurement Module

Block diagram



Technical Data

Analog Input

Channels	16
Accuracy	0.02 % typical
	0.05 % in controlled environment [1]
	0.1 % in industrial area [2]
Linearity error	0.01 % typical full-scale
Input impedance	<10 MΩ
Isolation voltage	500 VDC channel to input voltage to interface [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

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 2 kHz
Averaging	configurable or automatic according to the user-defined data rate

Q.raxx XL A146 120

High Density Strain Gage Measurement Module

Strain Gage Measurement

Bridge configuration(s)	resistance quarter-bridge (3-wire, with lead wire resistance compensation)	
Accuracy class	0.05	
Bridge completion resistor	120 Ω (others upon request)	
Temp. Coefficient of Resistance (TCR)	0.05 ppm/K	
Input range	selectable ±2 mV/V or ±20 mV/V per channel (±4000 µm/m or ±40000 µm/m with k=2)	
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)	

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

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	624525

Q.raxx XL A146 120

High Density Strain Gage Measurement Module

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