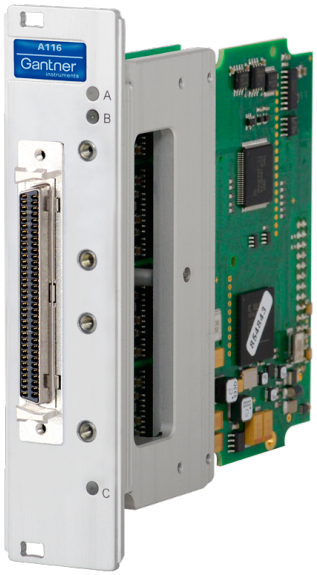
Q.raxx A116 Harting

Strain Gage Measurement Module

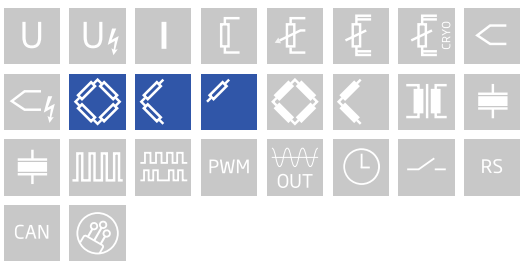
Q.raxx is the ideal 19" rackmount DAQ solution for applications that require high channel density. Q.raxx DAQ systems can utilize an integrated, high-performance controller for communication, control, and data logging purposes. With a controller, multiple Q.raxx systems can be synchronized to each other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

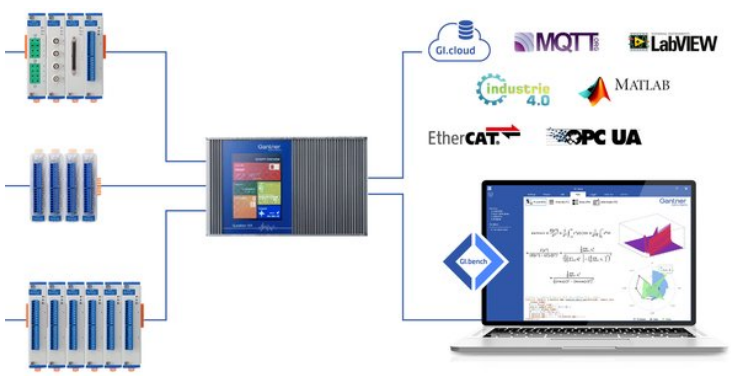
- High Density
  up to 13 I/O modules per Q.raxx 3U chassis with up to 16 channels per I/O module
- User Friendly
  front panel indicators for module status, power, and input range error
- Fully Customizable
  multiple front panel termination options available
- Maximum Flexibility
  parallel communication available in TCP/IP, CAN, PROFIBUS, Modbus, and EtherCAT



Key Features

- 8 analog input channels for strain gages
  full-, half-, and quarter-bridge configuration, configurable per channel
- Selectable input ranges for optimal signal-to-noise ratio
  2.5 or 10 mV/V for half- and full-bridge, 1 or 10 mV/V for quarter-bridge
- High-accuracy digitization
  24-bit ADC, 10 kHz sample rate per channel
- Active lead wire resistance compensation
  online compensation signal (OCS) for continuous compensation of lead wire resistance changes
- Shunt calibration per channel
- Build-in shunt resistor
  Shunt verification of the complete measurement chain.
- Galvanic Isolation
  channel to supply to interface





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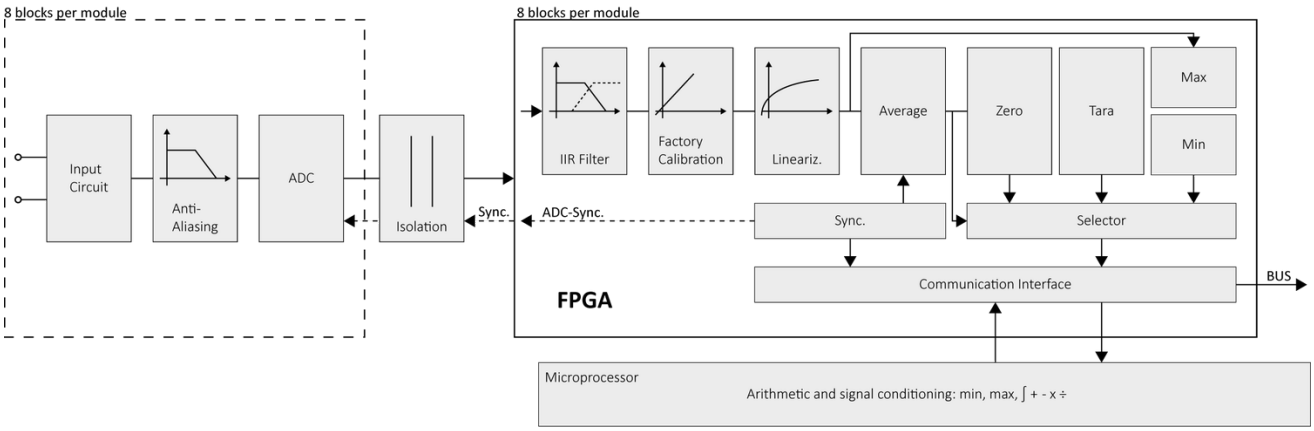
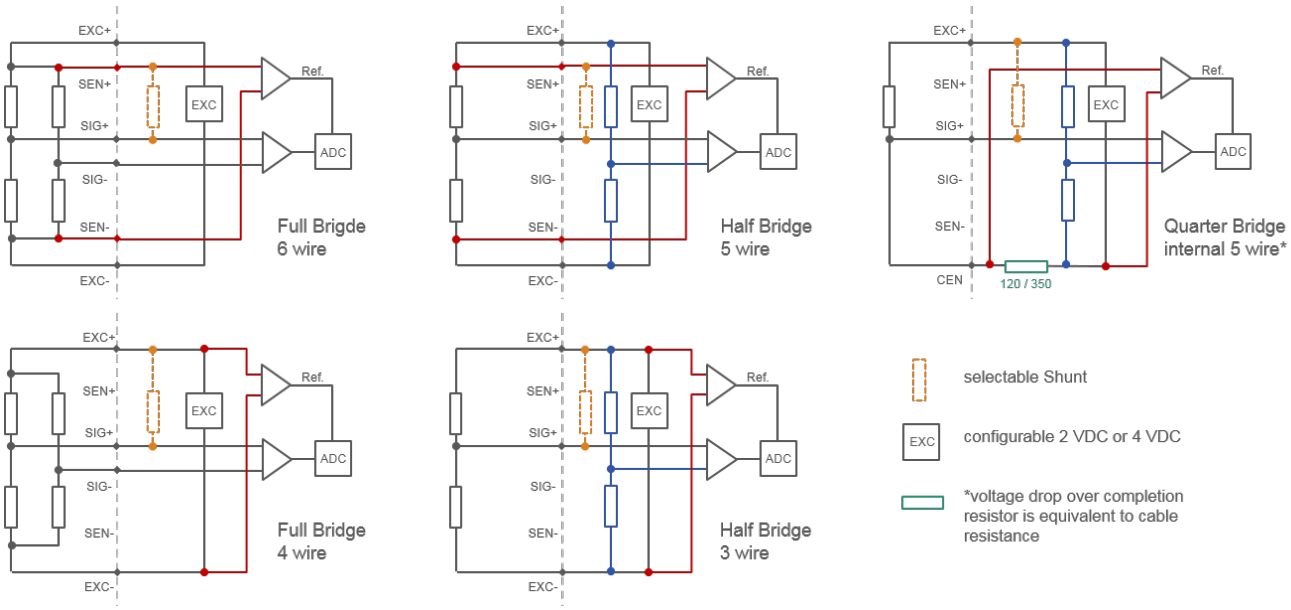
Block diagram



Technical Data

Strain Gage Wiring Diagram



Analog Input

Channels	8
Accuracy	0.02 % typical
	0.05 % in controlled environment [1]
	0.1 % in industrial area [2]
Linearity error	0.01 % typical (within 24 h)
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

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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

Strain Gage Measurement

Bridge configuration(s)	resistance full-bridge (4/6-wire) resistance half-bridge (3/5-wire) resistance quarter-bridge (3-wire, with lead wire resistance compensation)	
Accuracy class	0.05	
Bridge completion resistor	selectable 120 Ω or 350 Ω per channel (others upon request)	
Temp. Coefficient of Resistance (TCR)	0.05 ppm/K	
Input range	full-bridge ±2.5 mV/V or ±10 mV/V half-bridge ±2.5 mV/V or ±10 mV/V quarter-bridge ±1 mV/V or ±10 mV/V (±2000 µm/m or ±20000 µm/m with k=2) selectable per channel	
Shunt resistor	100 kΩ internal resistor	
Bridge excitation	selectable 2 VDC or 4 VDC per channel	
Allowable sensor resistance	>200 Ω at 4 VDC >100 Ω at 2 VDC	
Maximum sensor cable length	full-bridge 300 m half-bridge 300 m quarter-bridge 100 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)	
Linearity deviation	< 0.02 % f.s.	

Communications Interface

Protocols	proprietary Localbus (115200 bps to 24 Mbps, latency <100 ns) ASCII (19200 bps to 115200 bps) Modbus RTU Profibus-DP (19200 bps to 12 Mbps) (special Firmware required)
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	2.5 W (approx.)
Input voltage influence	<0.001 % / V

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Environmental Specifications

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)	30 x 128 x 118 mm
Weight	approx. 100 g

Ordering Information

Article number	696235
Accessories	Cable A116 CB, article number 451826
	Cable A116 Open, article number 470225
	Connection Board A116, article number 451725
	Connection Terminal A116, article number 600725

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