

# Q.bloxx A116

## Strain Gage Measurement Module

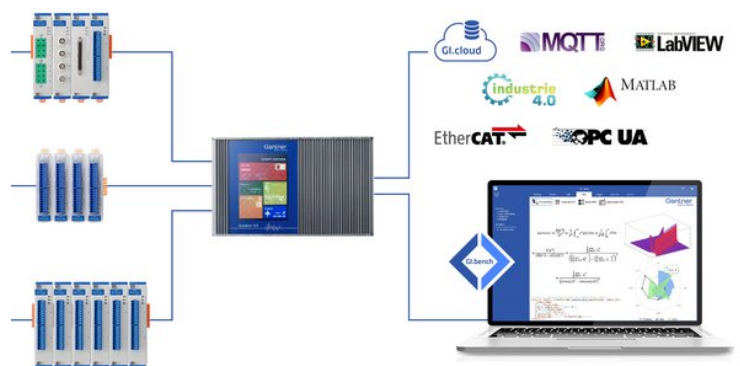
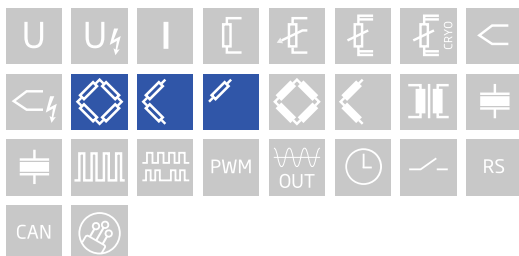
Q.bloxx is the ideal DAQ solution for widely distributed installations, electrical panels, and environmental enclosures. Q.bloxx measurement modules provide integrated signal conditioning and arithmetic functions, packaged in modular, DIN Rail mountable enclosures that easily snap together for quick system expansion. Flexibility in distribution allows for highly synchronized data that is less prone to noise due to shorter sensor cable runs to the actual point of measurement.

- RS 485 fieldbus interface up to 24 Mbps: LocalBus up to 115.2 kbps: Modbus-RTU, ASCII
- Electromagnetic Compatibility according to EN61000-4 and EN55011
- Connectable to any Controller, e.g. Q.station, Q.gate or Q.pac
- Power supply 10 ... 30 VDC
- DIN rail mounting (EN60715)



### Key Features

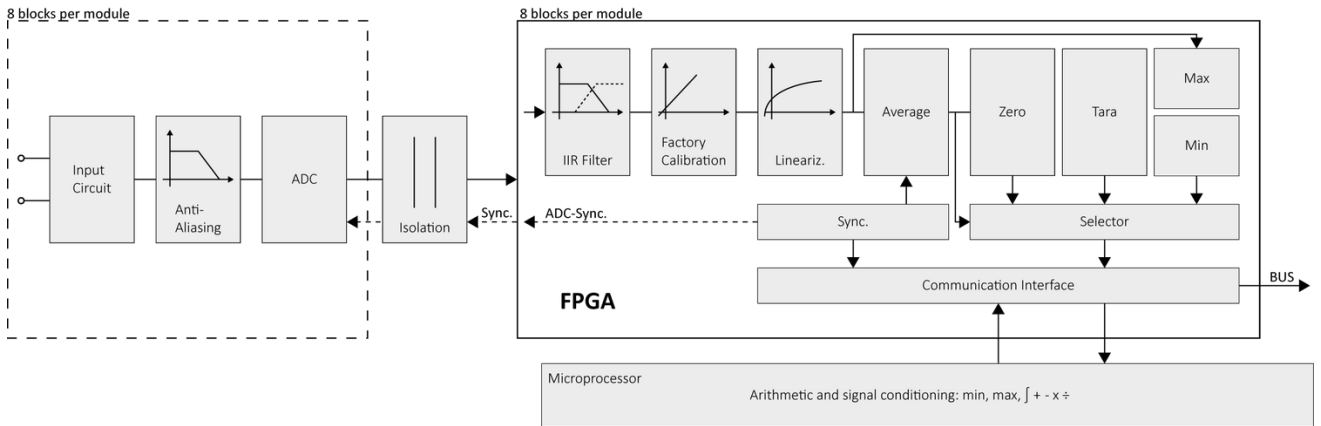
- 8 analog input channels for strain gages  
full-, half-, and quarter-bridge configuration, configurable per channel
- Selectable input ranges for optimal signal-to-noise ratio  
2.5 or 10 mV/V for half- and full-bridge, 1 or 10 mV/V for quarter-bridge
- High-accuracy digitization  
24-bit ADC, 10 kHz 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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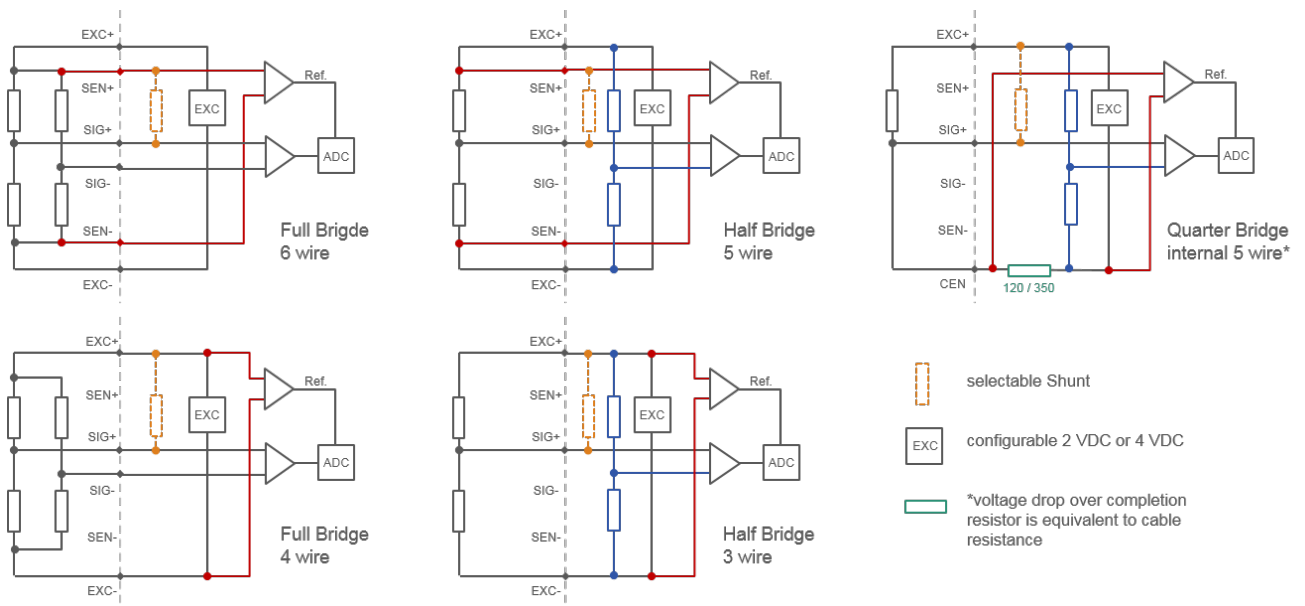
## Strain Gage Measurement Module

### Block diagram



### Technical Data

#### Strain Gage Wiring Diagram



### Analog Input

Channels	8
Accuracy	0.02 % typical
	0.05 % in controlled environment <sup>1</sup>
	0.1 % in industrial area <sup>2</sup>
Linearity error	0.01 % typical (within 24 h)
Input impedance	> 10 M $\Omega$
Isolation voltage	500 VDC channel to input voltage to interface <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

### Analog to Digital Conversion

Resolution	24-bit
Sample rate	10 kHz per channel
Modulation method	sigma-delta (group delay time 600 $\mu$ s)
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 $\Omega$ or 350 $\Omega$ per channel (others upon request)	
Temp. Coefficient of Resistance (TCR)	0.05 ppm/K	
Input range	full-bridge $\pm 2.5$ mV/V or $\pm 10$ mV/V half-bridge $\pm 2.5$ mV/V or $\pm 10$ mV/V quarter-bridge $\pm 1$ mV/V or $\pm 10$ mV/V ( $\pm 2000$ $\mu$ m/m or $\pm 20000$ $\mu$ m/m with k=2) selectable per channel	
Shunt resistor	100 k $\Omega$ internal resistor	
Bridge excitation	selectable 2 VDC or 4 VDC per channel	
Allowable sensor resistance	< 200 $\Omega$ at 4 VDC < 100 $\Omega$ at 2 VDC	
Maximum sensor cable length	full-bridge 300 m half-bridge 300 m quarter-bridge 100 m	
Long term stability	< 0.2 $\mu$ V/V / 24 hrs	< 2 $\mu$ V/V / 8000 hrs
Temperature drift	< 0.5 $\mu$ V/V / 10 K Offset drift	0.05 % / 10 K Gain drift
Noise	< 0.3 $\mu$ V/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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## Strain Gage Measurement Module

### 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 and ABS
Measurements (W x H x D)	27 x 120 x 105 mm
Weight	approx. 200 g

### Ordering Information

Article number	407326
Accessories	Connection Terminal A116, article number 600725

### Gantner Instruments

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