

Q.bloxx A146 350

High Density Strain Gage Measurement Module

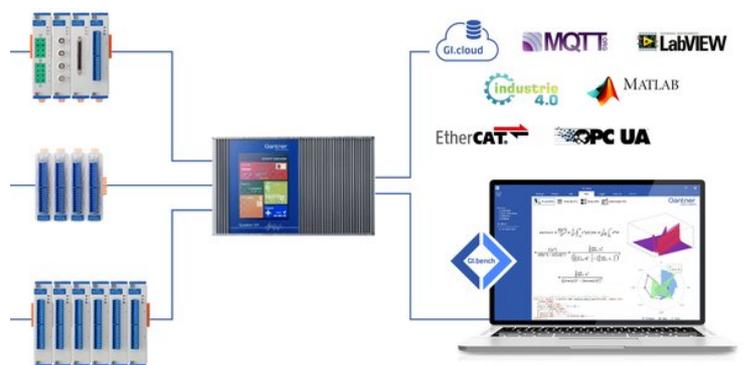
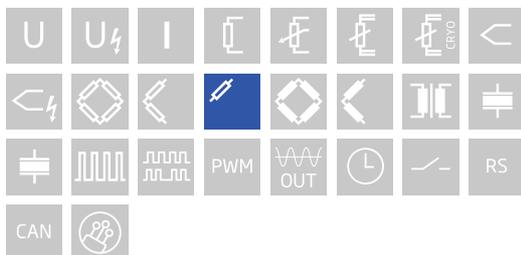
Q.bloxx is the ideal DAQ solution for widely distributed installations, electrical panels, and environmental enclosures. Q.bloxx measurement modules provide integrated signal conditioning and arithmetic functions, packaged in modular, DIN Rail mountable enclosures that easily snap together for quick 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

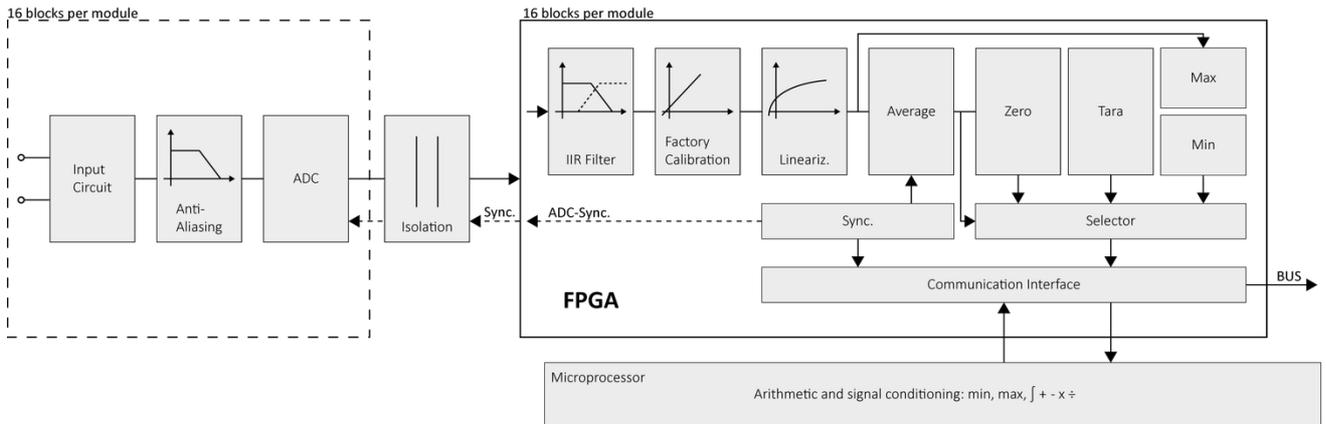
- 16 analog input channels for strain gages quarter-bridge configuration
- High-accuracy digitization
24-bit ADC, 10 kHz sample rate per channel
- Selectable input ranges for optimal signal-to-noise ratio
2 or 20 mV/V ($\pm 4000 \mu\text{m/m}$ or $\pm 40000 \mu\text{m/m}$ with $k=2$)
- Active lead wire resistance compensation
online compensation signal (OCS) for continuous compensation of lead wire resistance changes
- Build-in shunt resistor
Shunt verification of the complete measurement chain.
- Galvanic isolation
channel to supply to interface
- Electromagnetic compatibility (EMC)
according to IEC 61000-4 and EN 55011



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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 M Ω |
| 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 |

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Strain Gage Measurement

| | | |
|---------------------------------------|--|----------------------------------|
| Bridge configuration(s) | resistance quarter-bridge (3-wire, with lead wire resistance compensation) | |
| Accuracy class | 0.05 | |
| Bridge completion resistor | 350 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 $\mu\text{m/m}$ or ± 40000 $\mu\text{m/m}$ with $k=2$) | |
| Shunt resistor | 100 k Ω internal resistor | |
| Bridge excitation | 2 VDC per channel | |
| Maximum sensor cable length | 150 m | |
| Long-term stability | < 0.2 $\mu\text{V/V}$ / 24 hrs | < 2 $\mu\text{V/V}$ / 8000 hrs |
| Temperature drift | < 0.5 $\mu\text{V/V}$ / 10 K Offset drift | 0.05 % / 10 K Gain drift |
| Noise | < 0.3 $\mu\text{V/V}$ (at 10 Hz) | |

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 | BE1 | |
| 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 and ABS |
| Measurements (W x H x D) | 27 x 120 x 105 mm |
| Weight | approx. 200 g |

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Ordering Information

| | |
|----------------|--------|
| Article number | 498736 |
|----------------|--------|

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