

# Q.bloxx XE A108 MEMS-2M3

I/O module for 2 tri-axis MEMS sensors

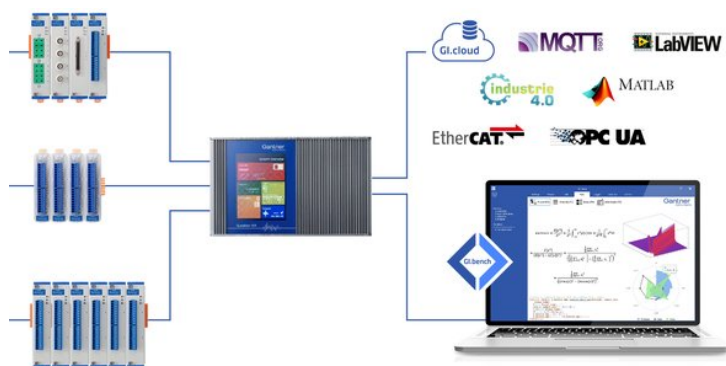
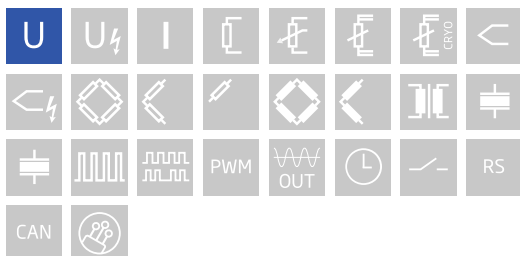
Q.bloxx XE is a new addition to the Q.series product family - the ideal EtherCAT DAQ solution for widely distributed installations that require higher performance and custom sensor terminations. Q.bloxx XE measurement modules possess integrated signal conditioning and arithmetic functions, packaged in modular, DIN Rail mountable enclosures that easily snap together for system expansion and are capable of measuring up to 100 kHz per channel with short cycle times and low jitter for accurate synchronization.

- RS-485, 2-wire, EtherCAT (LVDS)
- FoE (file access over EtherCAT, ETG.1000.5) and CoE (CAN over EtherCAT, ETG.50001.1)
- Configurable PDO mapping to optimize the data throughput
- Electromagnetic Compatibility according to EN61000-4 and EN55011
- Power supply 10 ... 30 VDC and DIN rail mounting (EN60715)



## Key Features

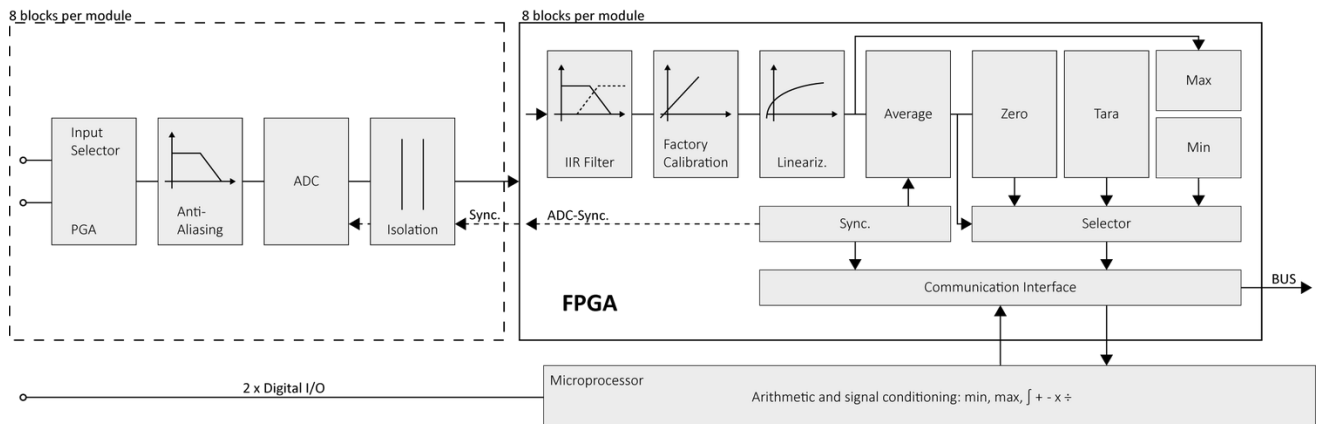
- I/O module for 2 tri-axis MEMS sensors  
2 DSUB9 input sockets  
Sensor supply galvanic isolated
- 6+2 Analog input channels  
AI1,AI2,AI3 differential /single-ended switchable in groups  
AI5,AI6,AI7 differential /single-ended switchable in groups  
AI4,AI8 single-ended (e.g. for temperature input/compensation)
- High-accuracy digitization  
24-bit ADC, 20 kHz sample rate per channel
- Signal conditioning  
linearization, filtering, average, scaling, min/max, RMS, arithmetic, alarm
- 3-Way galvanic isolation  
500 VDC channel to channel, channel to power supply, and channel to bus



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## Block diagram



## Technical Data

### Pin assignment DSUB 9

| Pin |  |              |
|-----|--|--------------|
| 1   |  | Power        |
| 2   |  | Return       |
| 3   |  | X +          |
| 4   |  | Y +          |
| 5   |  | Z +          |
| 6   |  | X -          |
| 7   |  | Y -          |
| 8   |  | Z -          |
| 9   |  | Temp         |
|     |  | Supply +15 V |
|     |  | Supply GND   |
|     |  | X-axis +     |
|     |  | Y-axis +     |
|     |  | Z-axis +     |
|     |  | X-axis -     |
|     |  | Y-axis -     |
|     |  | Z-axis -     |
|     |  | temperature  |

### Analog Input

|                   |  |
|-------------------|--|
| Channels          | 6 + 2<br>AI1, AI2, AI3 differential / single ended, switchable in groups<br>AI5, AI6, AI7 differential / single ended, switchable in groups<br>AI4, AI8 single ended (e.g. for temperature input/compensation) |
| Accuracy          | 0.01 % typical<br>0.025 % in controlled environment <sup>1</sup><br>0.05 % in industrial area <sup>2</sup>   |
| Linearity error   | 0.01 % typical full-scale  |
| Repeatability     | 0.003 % typical (within 24 hrs)  |
| Isolation voltage | 500 VDC channel to channel, to power supply, and channel to bus <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

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## Voltage Measurement

|                        |                                   |                             |
|------------------------|-----------------------------------|-----------------------------|
| Input range            | $\pm 10$ VDC                      |                             |
| Margin of error        | $\pm 2$ mV                        |                             |
| Resolution             | 1.5 $\mu$ V                       |                             |
| Long-term stability    | < 50 $\mu$ V / 24 hrs             | < 200 $\mu$ V / 8000 hrs    |
| Temperature drift      | < 200 $\mu$ V / 10 K Offset drift | < 100 ppm / 10 K Gain drift |
| Signal-to-noise ratio  | > 100 dB at 100 Hz                | > 120 dB at 1 Hz            |
| Input impedance        | > 1 M $\Omega$                    |                             |
| Overvoltage protection | $\pm 200$ V                       |                             |

## Analog-to-Digital Conversion

|                      |  |
|----------------------|--|
| Resolution           | 24-bit   |
| Sample rate          | 20 kHz per channel   |
| Modulation method    | sigma-delta  |
| Anti-aliasing filter | 2 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 1 kHz (adjustable via software) |
| Averaging            | configurable or automatic according to the user-defined data rate  |

## Sensor excitation

|                 |                                  |
|-----------------|----------------------------------|
| Channels        | 2                                |
| Voltage         | 15 V                             |
| Current         | max. 40 mA (short circuit proof) |
| Accuracy        | < 3 %                            |
| Load regulation | < 0.1 %                          |
| Noise           | 1.2 mV (RMS)                     |

## Communication Interface

|                     |   |
|---------------------|---|
| Protocols           | proprietary Localbus (115200 bps to 48 Mbps, latency < 100 ns)<br>ASCII (19200 bps to 115200 bps)<br>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       | 3.5 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)     |

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## 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) | 30x 145 x 135mm  |
| Weight                   | approx. 500 g    |

## Ordering Information

|                |        |
|----------------|--------|
| Article number | 586330 |
|----------------|--------|

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