

# Q.bloxx A104

## Thermocouple and Low Voltage Measurement Module

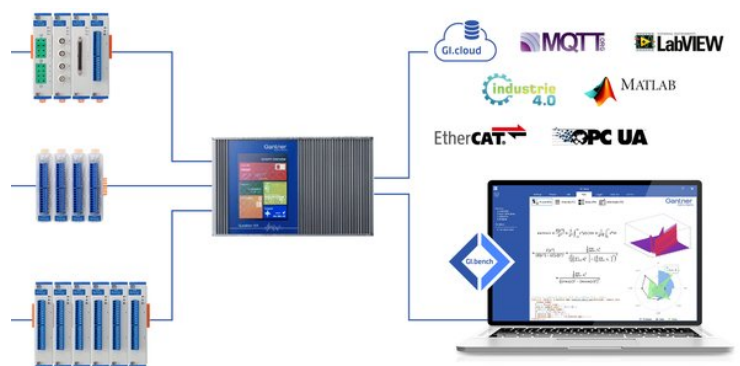
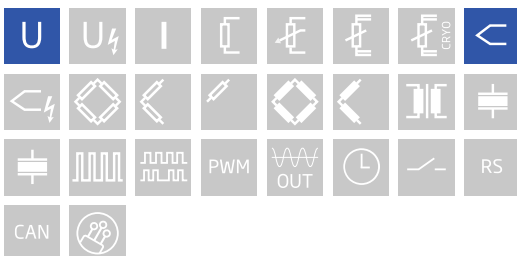
Q.bloxx is the ideal DAQ solution for widely distributed installations, electrical panels, and environmental enclosures. Q.bloxx measurement modules provide integrated signal conditioning and arithmetic functions, packaged in modular, DIN Rail mountable enclosures that easily snap together for quick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

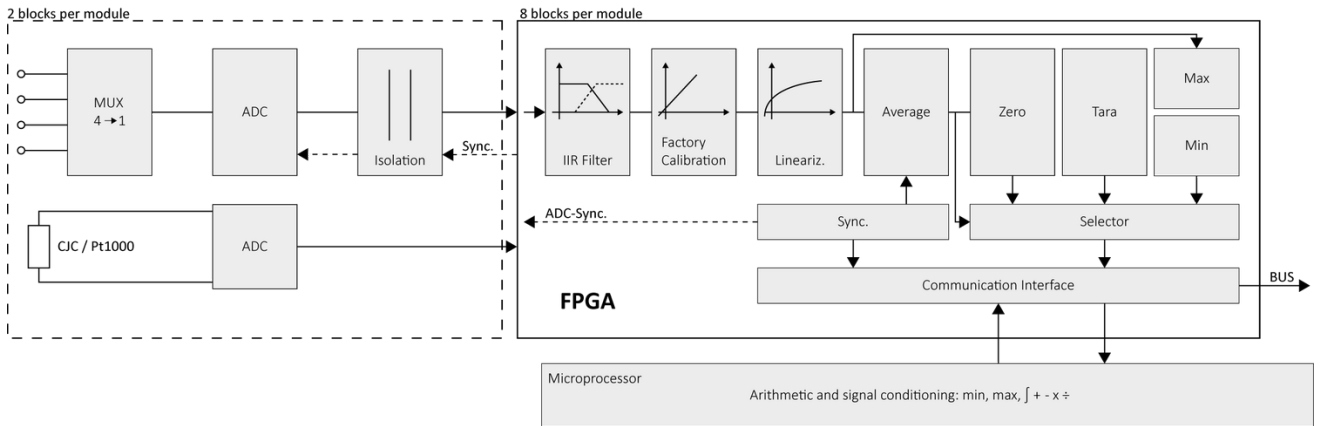


### Key Features

- **8 analog input channels**  
thermocouple (type B / E / J / K / L / N / R / S / T / U), voltage ( $\pm 80$  mV)
- **High-accuracy digitization**  
24-bit ADC, 100 Hz sample rate per channel, 50/60 Hz mains rejection
- **Automatic linearization correction**  
optimal position of the interpolation points adjusted to the input range
- **Open thermocouple detection**  
detect broken wire, loose connection or thermocouple burnout
- **3-Way galvanic isolation**  
100 VDC channel to channel, 500 VDC channel to power supply and bank
- **Electromagnetic compatibility (EMC)**  
according to IEC 61000-4 and EN 55011



### Block diagram



### Technical Data

#### Analog Input

Channels	8
Accuracy	0.01 % typical
	0.025 % in controlled environment <sup>1</sup>
	0.05 % in industrial area <sup>2</sup>
Linearity error	0.01 % typical full-scale
Repeatability	0.003 % typical (within 24 h)
Input impedance	>10 MΩ
Isolation voltage	500 VDC channels to power supply channel to bus <sup>3</sup>
	100 VDC continuous, channel to channel

<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

#### Voltage Measurement

Input range	±80 mV	
Margin of error	±10 μV	
Resolution	10 nV	
Long-term stability	<1 μV / 24 hrs	<10 μV / 8000 hrs
Temperature drift	<2 μV / 10 K Offset drift	<0.02 % / 10 K Gain drift
Signal-to-noise ratio	>100 dB at 100 Hz	

### Thermocouple Measurement

	Type	Range	Adjusted with cold junction compensation	Not adjusted, with CJC terminal
Deviation in the relevant Temperature range  The specifications are valid with enabled mains frequency rejection 50 Hz resp. 60 Hz	Type B	400°C to 1820°C	< ±1.5 °C	< ±2.5°C
	Type E, J, K	-100°C to 1000°C	< ±0.5°C	< ±1°C
	Type E	-270°C to 1000°C	< ±0.8°C	< ±1°C
	Type K	-270°C to 1372°C	< ±0,8°C	< ±1°C
	Type L	-200°C to 900°C	< ±0.5°C	< ±1°C
	Type N	-100°C to 1000°C	< ±0.5°C	< ±1°C
	Type N	-270°C to 1300°C	< ±0.8°C	< ±1°C
	Type R, S	-50°C to 1768°C	< ±1°C	< ±1.5°C
	Type T, U	-100°C to 400°C	< ±0.5°C	< ±1°C
	Type T	-270°C to 400°C	< ±0.8°C	< ±1°C
Long-term drift	< 0.025°C / 24 h		< 0.05°C / 8000 h	
Temperature influence	Offset drift		Gain drift	
	< 0.05°C / 10 K		< 0.02% / 10 K	
Uncertainty CJC	< 0.3°C			

### Analog-to-Digital Conversion

Resolution	24-bit
Sample rate	100 Hz per channel fast mode 10 Hz per channel with 60 Hz mains frequency rejection 6 Hz per channel with 50 Hz mains frequency rejection
Modulation method	sigma-delta
Digital filters	Infinite impulse response (IIR), low-pass, Butterworth or Bessel (2nd, 4th, 6th or 8th order), frequency range 0.1 Hz to 10 Hz (adjustable via software)
Averaging	configurable or automatic according to the user-defined data rate

### Communication 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 W (approx.)
Input voltage influence	< 0.001 % / V

### 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)

# Q.bloxx A104

## Thermocouple and Low Voltage Measurement Module

### 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	761784
Accessories	Terminal CJC-A104, article number 791080

### 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