

Q.bloxx XL D101

Digital Measurement Module

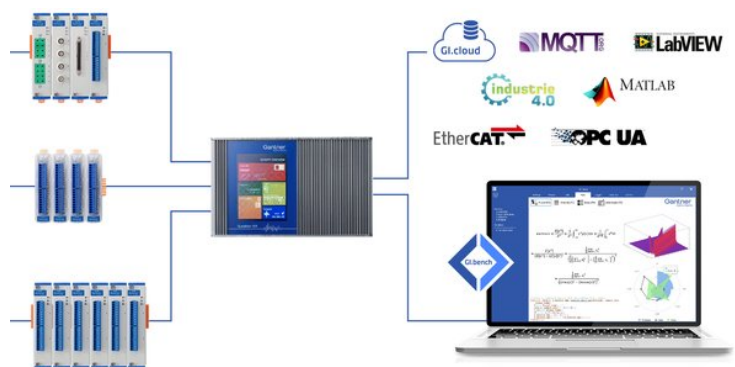
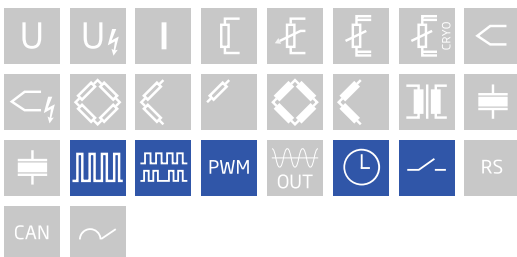
Q.bloxx XL is a new addition to the Q.series product family - the ideal DAQ solution for widely distributed installations that require higher performance and custom sensor terminations. Q.bloxx XL products are packaged in modular, DIN Rail mountable enclosures that easily snap together for system expansion. Flexibility in distribution allows for highly synchronized data that is less prone to noise due to shorter sensor cable runs to the subject.

- RS485 fieldbus interface up to 48 Mbps: LocalBus, up to 115.2 kbps: Modbus-RTU, ASCII
- Electromagnetic Compatibility according to EN61000-4 and EN55011
- Connectable to Controller Q.station X
- Power supply 10 ... 30 VDC
- DIN rail mounting (EN60715)



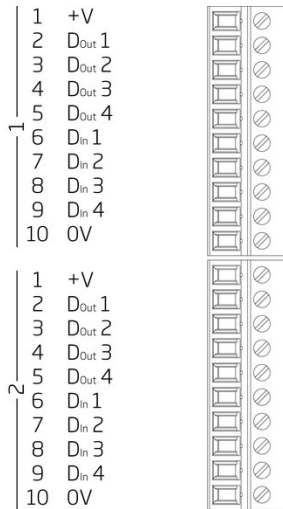
Key Features

- 8 digital inputs and 8 digital outputs configurable as counter, frequency and PWM
- State in and output process- and host controlled
- Frequency in and output frequency measurement up to 1 MHz (Chronos method), frequency output up to 10 kHz
- Counter for/backward counter, quadrature counter with reference zero recognition and missing teeth detection, up to 1 MHz
- PWM in and output measurement of duty cycle and frequency, output with variable frequency and/or duty cycle
- Time measurement
- Galvanic isolation I/O-signals (4 x 4 I/Os) to power supply and to interface



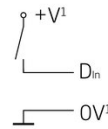
Technical Data

Terminal assignment 10pole screw



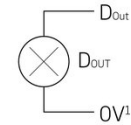
Din: State, Time, Set:

¹ +V and 0V refer to an external power supply



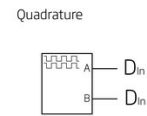
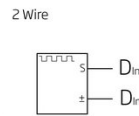
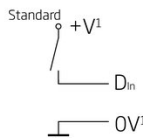
Dout: State, Set, PWM, Process, Frequency

¹ 0V refers to an external power supply



Din: Frequency:

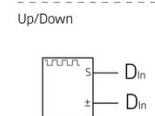
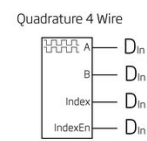
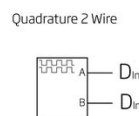
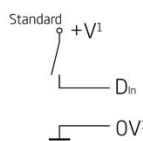
¹ +V and 0V refer to an external power supply



With a D101 - 2 x 4 terminals for digital inputs are available. Those will accept all mentioned signals as it required. To see the possible combinations check the „Combination table“ in the datasheet.

Din: Counter:

¹ +V and 0V refer to an external power supply



TTL and HTL-Logic voltages can be switched in the module settings via software

Digital Inputs

Channels	8
Logic levels	TTL or 24 VDC according to IEC 61131-2, Type 1
TTL logic voltage	< 0.8 VDC (Low) > 3 VDC (High)
24 VDC logic voltage	-3 to 5 VDC (Low) 11 to 30 VDC (High)
Input voltage	30 VDC max.
Input current	2 mA max.
Isolation voltage	500 VDC, group to group, group to power supply, channel to bus ¹

¹ noise pulses up to 1000 VDC, continuous up to 250 VDC

State Inputs

Response time	10 μs
8-fold bit set	specification such as simple state-input, but the binary coded information of 8 inputs can be transmitted as a single variable. This functionality covers all 8 inputs even if they are already used by other functionalities such as counter or frequency measurement. in case of a conflict the Bit-Set is lower prior.

Frequency measurement

Method	Chronos optimized by combination of the time measurement and pulse counting, recognition of direction of rotation (0 deg./90 deg.)
Frequency range	0.1 Hz to 1 MHz
Time base	0.001 s to 10 s
Reference frequency	48 MHz
Accuracy	0.01% at timebase > 1ms (-20°C to +60°C)
Frequency measurement with recognition of direction of rotation	specification like frequency measurement, for the recognition of the rotation direction the phasing of both inputs is being used

Counter

Counter depth	32-bit (±31-bit)
Counter frequency	max. 1 Mhz
Forward and reverse counting	with an additional input for the direction of counting
Quadrature counter	single ended with an additional input for the direction recognition for phasing the inputs
Quadrature counter with zero reference and reset/enable	like quadrature counter but with two additional inputs for the 0-reference recognition and enabling the 0-reference recognition

Time measurement

Input frequency	0.1 Hz to 1 MHz
Accuracy	0.01 % Freq < 2 kHz, 0.1 % 2 kHz to 20 kHz, 3 % > 20 kHz (-20 °C to +60 °C)
Resolution	21 ns
Function	Measuring of time between two edges, measuring of high time, low time and high/low relation (PWM)
Time range	1 µs to 32 s
Resolution	21 ns

Digital Outputs

Channels	8
Output voltage	12 V to 30 VDC
Load capacity	30 VDC / 500 mA (ohmic load)
Contact	open drain p-channel MOSFET

State Outputs

Response time (depending on load capacity)	> 0.5 A	> 0.1 A	< 0.1 A
	10 µs	100 µs	1000 µs
8-fold bit set	specification such as simple state-output, but the binary coded information of 8 outputs can be transmitted as a single variable. This functionality covers all 8 outputs even if they are already used by other functionalities such as counter or frequency measurement. in case of a conflict the Bit-Set is lower prior.		

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Digital Measurement Module

Frequency output

Frequency range	0.1 Hz to 1 kHz / 10 kHz depending on load capacity
Accuracy	0.1 %
Resolution	1 μ s

PWM Output

Frequency range	0.1 Hz to 1 kHz / 10 kHz depending on load capacity
Accuracy	0.1 %
Resolution	1 μ s

Communication Interface Localbus

Protocols	proprietary LocalBus (115200 bps to 48 Mbps, latency <100 ns) ASCII (19200 bps to 115200 bps) Modbus RTU
Data format	8E1
Electrical standard	ANSI/TIA/EIA-485-A, 2-wire

Power Supply

Input voltage	10 to 30 VDC, overvoltage and overcurrent protection
Power consumption	Approx. 2 W
Input voltage influence	< 0.001 % / V

Environmental

Operating temperature	-20 °C to +60 °C
Storage temperature	-40 °C to +85 °C
Relative humidity	5 % to 95 % at 50 °C, non-condensing

Remarks

Are subject to a warm-up period of at least 45 minutes

In a controlled electromagnetic environment¹

With configuration: Low-pass 10Hz²

Specifications subject to change without notice

¹ according to IEC 61326-1:2020

² unless otherwise stated

Mechanical information

Material	Aluminium and ABS
Measurements (W x H x D)	30 x 145 x 135mm
Weight	approx. 500 g
Protection class	IP20



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Ordering Information

Article number	495935
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