Q.brixx XL D101

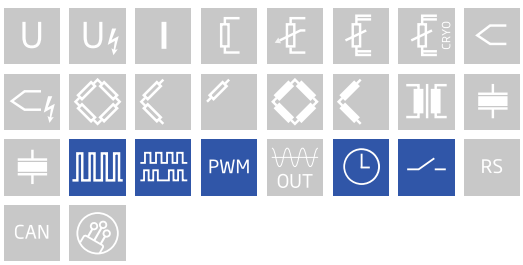
Digital Measurement Module

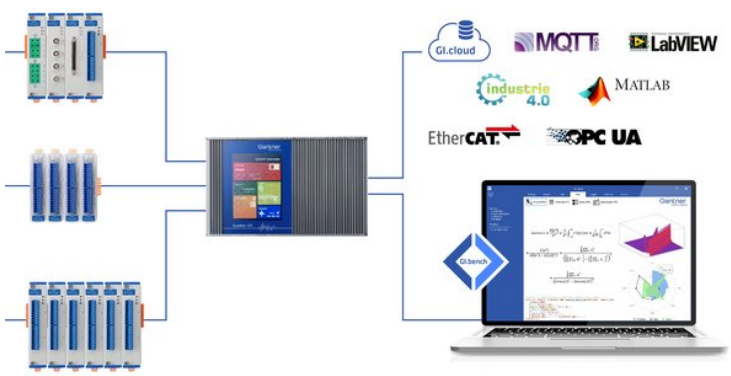
Q.brixx XL is a new addition to the Q.series product family - the ideal DAQ solution for on-the-go applications requiring higher performance in potentially harsh environments. Q.brixx XL DAQ systems consist of up to 16 measurement modules and an integrated, high-performance controller for communication, control, and data logging purposes, all within a robust aluminum housing capable of withstanding severe shock and vibration without sacrificing performance.

- High density and flexibility with16 modules in one system in any constellation
- Connectable to Controller Q.station
- Electromagnetic Compatibility according to EN61000-4 and EN55011
- Power supply 10 ... 30 VDC

Key Features

- **8 digital inputs and 8 digital outputs**
  configurable as counter, frequency and PWM
  only 4 inputs can be used for frequency
- **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
  Isolation voltage 500 VDC





Technical Data

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

Function Digital Inputs

Status	
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
Pulse counting	
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	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
PWM measurement (duty cycle)	
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

With a D101 - 2 x 4 terminals for digital inputs are available. Those will accept all mentioned signals as it required. The following combinations are possible.

Connector 1				Connector 2			
Terminal 1.6	Terminal 1.7	Terminal 1.8	Terminal 1.9	Terminal 2.6	Terminal 2.7	Terminal 2.8	Terminal 2.9
Status	Status	Status	Status	Status	Status	Status	Status
1 ch. signal	Status	1 ch. signal	Status	1 ch. signal	Status	1 ch. signal	Status
Status	Status	Status	Status	Status	Status	2 channel signal [1]	
Status	Status	Status	Status	2 channel signal [1]		2 channel signal [1]	
Status	Status	Status	Status	4 channel signal [2]			
Status	Status	2 channel signal [1]		2 channel signal [1]		2 channel signal [1]	
Status	Status	2 channel signal [1]		4 channel signal [2]			
2 channel signal [1]		2 channel signal [1]		4 channel signal [2]			
2 channel signal [1]		2 channel signal [1]		2 channel signal [1]		2 channel signal [1]	
4 channel signal [2]				4 channel signal [2]			

[1] All digital functionalities except status and quadrature counter with zero reference and reset/enable

[2] Quadrature counter with zero reference and reset/enable

Time measurement	
Function	Measuring of time between two edges, measuring of high time, low time and high/low relation

Time range	1 µs to 32 s
Resolution	21 ns

Digital Outputs

Channels	8
Output voltage	12 V to30 VDC
Load capacity	30 VDC / 500 mA (ohmic load)
Contact	open drain p-channel MOSFET

Function Digital Outputs

Status			
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.		
Frequency output			
Frequency range	0.1 Hz to 1 kHz / 10 kHz depending on load capacity		
Accuracy	0.1 %		
Resolution	1 µs		
PWM output			
Frequency range	0.1 Hz to 1 kHz / 10 kHz depending on load capacity		
Accuracy	0.1 %		
Resolution	1 µs		

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

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Digital Measurement Module

Remarks

Warm-up time	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
Measurements (W x H x D)	30x 137 x 135mm
Weight	approx. 500 g

Ordering Information

Article number	526526

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