Q.bloxx D101

Digital Measurement Module

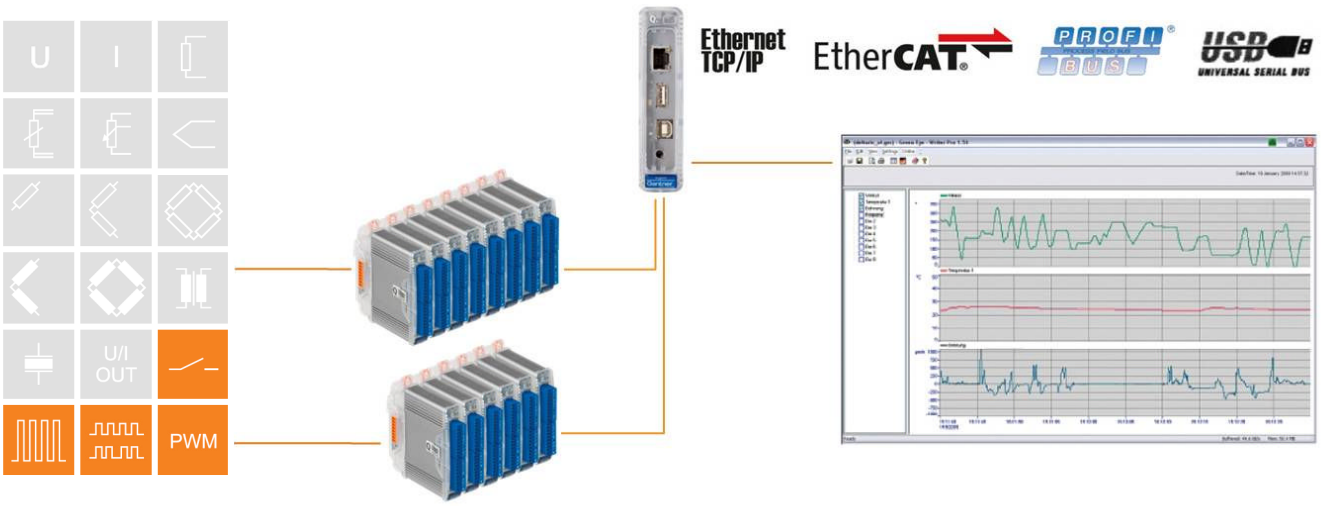
The Q.series has been designed for demanding measurements found in todays most industrial measuring and testing environments. The range of applications starts from single stand-alone solutions up to networked multi-channel applications in the field of component testing, engine testing, process performance testing and structural monitoring.

The range and flexibility of the modules allows an optimized solution for each single task:
Dynamic signal acquisition up to 100 kHz, inputs and outputs for all types of signals, galvanic isolation of inputs and outputs, multi-channel solutions, high density packaging and intelligent signal conditioning.

Data exchange between Test Controller and automation level is communicated via Ethernet TCP/IP or fieldbus systems like EtherCAT or Profibus-DP and additional Ethernet-based industrial standards.

Most important features:

- **8 digital inputs and 8 digital outputs**
  configurable as counter, frequency, PWM and time inputs, frequency or PWM output, state in or output
- **State in and outputs**
  process- and host controlled
- **Frequency in and outputs**
  frequency measurement up to 1 MHz (Chronos method), frequency output up to 10 kHz
- **Counter**
  for/backward counter, quadrature counter with reference zero recognition (reset/enable), up to 1 MHz
- **PWM in and outputs**
  measurement of duty cycle and frequency, output with variable frequency and/or duty cycle
- **Time measurement**
- **RS485 fieldbus-interface**
  up to 48 Mbps: LocalBus
  up to 115.2 kbps: Modbus-RTU, ASCII
- **Connectable to any Test Controller**
  e.g. Q.gate or Q.pac
- **Galvanic isolation**
  I/O-signals to power supply and to interface
  Isolation voltage 500 VDC
- **Electromagnetic Compatibility**
  according EN 61000-4 and EN 55011
- **Power supply 10…30 VDC**
- **DIN rail mounting (EN 50022)**



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Digital Inputs	
Number	8
Input voltage	max. 30 VDC
Input current	max. 2 mA
Threshold (programmable)	TTL or
Signal voltage „0“	-3… 5 VDC (EN61131-2, Type1)
Signal voltage „1“	11… 30 VDC (EN61131-2, Type1)
Isolation Voltage	500 VDC group/group and against power supply and interface[1]
Function	
State	
Reaction 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 time measurement and pulse counting Recognition of the direction of rotation (0°, 90°)
Frequency range	0.1 Hz up to 1 MHz
Time base	0.001 up to 10 s
Counter frequency (reference)	48 MHz
Resolution	0.002 %
Frequency measurement with recognition ot the direction of rotation	specification like frequency measurement. For the recognition of the direction of rotation the phasing of both inputs is being used.
PWM measurement	
Input frequency	0.1 Hz up to 1 MHz
Resolution	21 ns
Configuration of the measurement type	counter for duty cycle, frequency
Counter	
Counter	32 bit (±31 bit)
Counter frequency	1 MHz
Back/forward counter	specification like counter but with an additional input fort he direction of counting
Quadrature counter	specification like counter. For the recognition of the direction the phasing of both inputs is being used.
Quadrature counter with zero reference and reset/enable	specification like quadrature counter but with an additional input for the „0“ reference recognition and an additional input to activate the counter functionality individually.
Time measurement	
Function	Measuring of time between two edges, measuring of high time, low time and high/low relation
Time range	1 µs up to 32 s
Resolution	21 ns

[1] Noise pulses up to 1000 VDC, permanent up to 250 VDC

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With a Q.bloxx D101 2 x 4 connectors for digital inputs are available. Those will accept all mentioned signals as it is 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**
State	State	State	State	State	State	State	State
State	State	State	State	State	State	2 channel signal [1]	
State	State	State	State	2 channel signal [1]		2 channel signal [1]	
State	State	State	State	4 channel signal [2]			
State	State	2 channel signal [1]		2 channel signal [1]		2 channel signal [1]	
State	State	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 input functionalities except state and „quadrature counter with reference zero and reset/enable“				[2] Quadrature counter with reference zero and reset/enable			

Digital Outputs			
Number	8		
Contact	open drain p-channel MOSFET (short circuit proof)		
Load	30 VDC/500 mA (ohmic Load)		
Function			
State			
Reaction time (depending on load)	>0,5 A	>0,1 A	<0,1 A
	10 µs	100 µs	1000 µs
8-fold Bit-Set	Specification such as a simple state output but 8 outputs can be set with only one variable in binary coding. This functionality covers all 8 outputs even if they are used by other functionalities such as frequency or PWM output. In case of a conflict the Bit-Set is lower prior		
Frequency output			
Frequency range	0.1 Hz up to 1 kHz / 10 kHz depending on load		
Accuracy	0.1 %		
Resolution	1 µs		
PWM output			
Frequency range	0.1 Hz up to 1 kHz / 10 kHz depending on load		
Accuracy	0.1 %		
Resolution	1 µs		

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Power Supply	
Power supply	10 up to 30 VDC, overvoltage and overload protection
Power consumption	approx. 2 W
Influence of the voltage	<0.001 %/V
Environmental	
Operating temperature	-20°C up to +60°C
Storage temperature	-40°C up to +85°C
Relative humidity	5 % up to 95 % at 50°C, non condensing
Communication Interface	
Standard	RS-485, 2-wire
Data format	8e1
Protocols	Local-Bus: 115200 bps up to 48 Mbps
	Modbus-RTU, ASCII: 19200 bps up to 115200 bps
Connectable devices	max. 32
Mechanical	
Case	Aluminum and ABS
Dimensions (W x H x D)	(27 x 120 x 105) mm
Weight	approx. 200 g
Mounting	DIN EN-rail

Warm Up Time
All declarations are valid after a warm up time of 45 minutes.

Valid from January 2011. Specification subject to change without notice
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