

Q.bloxx D107

Digital Measurement Module



The Q.series has been designed for the demanding measurements found in today's industrial measuring and testing environments. Applications range from single, stand-alone solutions to networked, multi-channel systems in real-world areas such as component testing, engine testing, process performance testing, materials testing and structural monitoring.

The range and flexibility of the modules allows for an optimized solution for each and every measurement and control point:

- Dynamic signal acquisition up to 100 kHz per channel
- inputs and outputs for all types of signals and sensors
- Galvanic isolation (up to 1200V) of inputs and outputs
- Multi-channel, High-density packaging
- Intelligent signal conditioning on every channel.

All modules connect to a Q.series test controller (Q.gate, Q.pac, or Q.station) for synchronization and buffering, and data exchange between the test controller and automation system is handled via Ethernet TCP/IP, EtherCAT, Profibus-DP, CANopen, or through additional industrial fieldbus standards.

Key Features:

- **6 configurable digital input channels**
2 x 3 differential or single ended counter, frequency, PWM and time
- **Adjustable thresholds 256 steps**
differential inputs in the range of -20 V up to + 20 V,
single-ended inputs in the range of 0 V up to +26 V
- **Frequency input**
frequency measurement up to 1 MHz (Chronos method),
direction detection
- **Counter input**
up/down counter, quadrature counter with reference zero recognition,
up to 1 MHz
- **PWM input**
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.station, Q.gate or Q.pac
- **Galvanic isolation**
function group 1 to function group 2 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 60715)**



Digital Inputs		
Number	6, in 2 groups of 3 inputs, configurable as differential or single-ended	
Input voltage	max. 30 VDC	
Input resistance	differenzial	single-ended
	20 kΩ	10 kΩ
Threshold, adjustable in 256 steps	-20 V up to +20 V	0 to +26 V
Isolation voltage	500 VDC, function group 1 to function group 2 to power supply and to interface	
Function		
State		
Reaction time	10 μs	
Frequency measurement		
Method	Chronos optimization through combination of time measurement and impulse counting Direction recognition (0°, 90°)	
Frequency range	0.1 Hz up to 1 MHz	
Time base	0.001 up to 10 s	
Counter frequency (reference)	288 MHz	
Resolution	0.002 %	
Frequency measurement with recognition of 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	4 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 for the 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	specification like quadrature counter but with an additional input for the „0“ reference recognition	
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	4 ns	

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

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Connectable signals for each terminal										
Terminal contact each terminal	1	2	3	4	5	6	7	8	9	10
3 x single ¹⁾ , differential	5 VDC	+A 1	-A 1	NN	+A 2	-A 2	NN	+A 3	-A 3	GND
3 x single single-ended	5 VDC	+A 1	-A 1	NN	+A 2	-A 2	NN	+A 3	-A 3	GND
1 x double ²⁾ + 1 single differential	5 VDC	+A 1	-A 1	NN	+B 1	-B 1	NN	+A 2	-A 2	GND
1 x double + 1 single single-ended	5 VDC	+A 1	-A 1	NN	+B 1	-B 1	NN	+A 2	-A 2	GND
1 x triple ³⁾ differential	5 VDC	+A 1	-A 1	NN	+B 1	-B 1	NN	+Z 2	-Z 2	GND
1 x triple single-ended	5 VDC	+A 1	-A 1	NN	+B 1	-B 1	NN	+Z 1	-Z 2	GND
			1) State, 1 pin frequency or counter signals			2) 2 pin frequency with direction recognition, up/down counter, quadrature counter			3) Quadrature counter with reference zero signal	
Sensor Excitation										
Number	2									
Voltage	5 VDC									
Current	<150 mA									
Power supply										
Power supply	10 up to 30 VDC, overvoltage and overload protection									
Power consumption	ca. 2 W									
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	Aluminium 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 October 2015. Specification subject to change without notice
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