Q.raxx A109

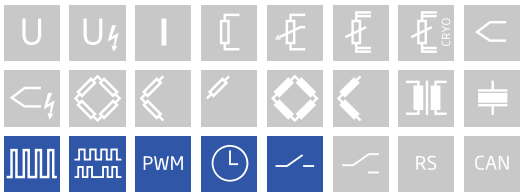
Analog Output Module with Digital I/Os

Q.raxx is the ideal 19" rackmount DAQ solution for applications that require high channel density and custom sensor terminations. Q.raxx DAQ systems can utilize an integrated, high-performance controller for communication, control, and data logging purposes. With a controller, multiple Q.raxx systems can be synchronized to each other allowing for efficient DAQ distribution with low jitter and gradual expansion up to thousands of channels.

- High Density
  up to 13 I/O modules per Q.raxx 3U chassis with up to 16 channels per I/O module
- User Friendly
  front panel indicators for module status, power, and input range error
- Fully Customizable
  multiple front panel termination options available
- Maximum Flexibility
  parallel communication available in TCP/IP, CAN, PROFIBUS, Modbus, and EtherCAT

Key Features

- 4 Analog output channels
  voltage (±10 VDC) or current (4 - 20 mA), configurable per channel
- 4 digital inputs and outputs
  status, frequency, pulse width and pulse counting
- Frequency measurement
  Frequency measurement up to 1 MHz, direction detection
- Counter
  Forward-backward counter, quadrature counter with reference position recognition (reset/enable), up to 1 MHz
- PWM input
  Measurement of duty cycle and frequency
- 3-Way galvanic isolation
  500 VDC channel to channel, channel to power supply, and bank



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Technical Data

Analog Output

Channels	4
Accuracy	0.02 % typical
Output type	voltage or current, configurable per channel
Isolation voltage	500 VDC channel to channel channel to power supply channel to bus [1]

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

Digital to Analog Conversion

Resolution	16-bit
Update rate	100 kHz per channel
Settling time	3 µs

Output Mode Voltage

Output voltage	±10 VDC	
Allowable load resistance	>2 kΩ	
Long term drift	<1 mV / 24 hrs	<2.5 mV / 8000 hrs
Temperature influence	<2 mV / 10 K offset drift	<0.05 % / 10 K gain drift
Noise voltage	<10 mV at 1000 Hz	<2 mV at 10 Hz

Output Mode Current

Output current	4 - 20 mA	
Load burden	<400 Ω	
burden influence	<0.04 µA / Ω	
Long-term stability	<2 µA / 24 hrs	<5 µA / 8000 hrs
Temperature drift	<4 µA / 10 K offset drift	<0.05 % / 10 K gain drift
Noise current	<20 µA at 1000 Hz	<4 µA at 10 Hz

Digital Input

Channels	4
Logic levels	TTL or 24 VDC according to IEC 61131-2, Type 1
TTL logic voltage	0 to 0.8 VDC (Low) 2 to 5 VDC (High)
24 VDC logic voltage	-3 to 5 VDC (Low) 11 to 30 VDC (High)
Input type	PNP (current sinking)
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, permanent up to 250 VDC

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Digital Input Modes

Status	
Response time	10 µs
Frequency measurement	
Method	Chronos method (optimized by a combination of time measurement and pulse counting), detection of rotational direction (0 deg. / 90 deg.)
Frequency range	0.1 Hz to 1 MHz
Time base	0.001 s to 1 s
Internal reference frequency	48 MHz
Resolution	0.002 %
Pulse counting	
Resolution	32-bit (±31-bit)
Counter frequency	1 MHz
Mode(s) of operation	- Forward and reverse counting (additional input for direction of counting) - Quadrature counter (additional input for detection of rotational direction) - Quadrature counter with zero reference and reset/enable (two additional inputs)
Pulse-width measurement	
Input frequency	0.1 Hz to 1 MHz
Resolution	21 ns

Digital Output

Channels	4
Contact	open drain p-channel MOSFET
Output voltage	10 - 30 VDC (external supply required)
Load capacity	30 VDC / 500 mA (ohmic load)
Isolation voltage	500 VDC, group to group, group to power supply, channel to bus [1]

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

Digital Output Modes

Status			
Response time	10 µs (>0.5 A)	100 µs (>0.1 A)	1000 µs (<0.1 A)
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		

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Communication Interface

Electrical standard	RS-485, 2-wire
Data format	8E1
Protocols	local bus (115200 bps to 24 Mbps) ASCII (19200 bps to 115200 bps) Modbus RTU

Power Supply

Input voltage	10 - 30 VDC, overvoltage and overcurrent protection
Power consumption	2 W (approx.)
Input voltage influence	< 0.001 % / V

Environmental

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

Remarks

Validity of all listed specifications are subject to a warm-up period of at least 45 minutes
Specifications subject to change without notice

Ordering Information

Article number	102015