Data sheet

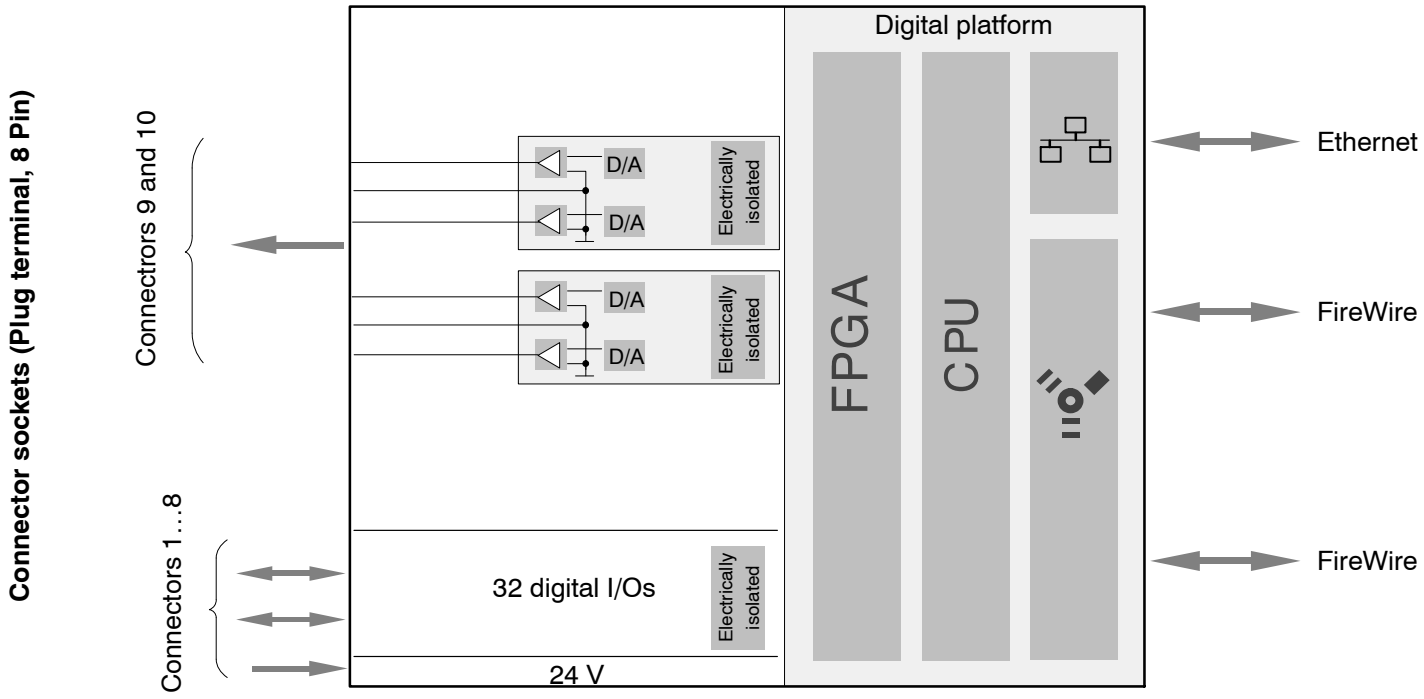
QUANTUMX MX879

Multi I/O module

Special features

- **8 individually configurable analog outputs**
- **32 individually configurable I/Os**
- **Real-time functions**
- **Signal generator**

Block diagram



Specifications MX879

General specifications		
Supply voltage range (DC)	V	10 ... 30 (24 V nominal (rated) voltage)
Analog outputs	Number	8, electrically isolated from each other and from the supply
Digital In/Outputs	Number	32, individually freely configurable as input or output
Type of connection		Plug terminal: Phönix Contact FMC−1,5/8−ST−3,5−RF (plug included in scope of supply)
Supply voltage interruption		max. for 5 ms at 24 V
Power consumption	W	7
Ethernet (data link)		10Base-T / 100Base-TX
Protocol/addressing	–	TCP/IP (direct IP address or DHCP)
Connection	–	8P8C plug (RJ-45) with twisted pair cable (CAT-5)
Max. cable length to module	m	100
FireWire (module synchronization, data link, optional supply voltage)		IEEE 1394b (HBM modules only)
Baud rate	MBaud	400 (approx. 50 MByte/s)
Max. current from module to module	A	1.5
Max. cable length between the nodes	m	5
Max. number of modules connected in series (daisy chain)	–	12 (=11 hops)
Max. number of modules in a FireWire system (including hubs[1], backplane)	–	24
Max. chain of hops[2]	–	14
Synchronization EtherCAT NTP IRIG−B (B000 to B007; B120 to B127)		FireWire (automatically, recommended) via CX27 via Ethernet via MX440A- or MX840A input channel
Nominal (rated) temperature range	°C [°F]	−20 .. +60 [−4 ... +140]
Operating temperature range	°C [°F]	−20 ... +65 [−4 ... +149]
Storage temperature range	°C [°F]	−40 ... +75 [−40 ... +167]
Rel. humidity	%	5 ... 95 (non condensing)
Protection class		III
Degree of protection		IP20 per EN60529
Mechanical tests[3]		
Vibration (30 min)	m/s^2	50
Shock (6 ms)	m/s^2	350
EMC requirements Compliance with emission per EN55011, class B : with snap-on ferrite on power supply cable, to be mounted at 12 cm distance from the device. Ferrit included. Compliance with emission emission per EN55011, class A: without snap-on ferrite.		per EN 61326
Dimensions, horizontal (W x H x D)	mm	52.5 x 200 x 122 (with case protection)
	mm	44 x 174 x 119 (without case protection)
Weight, approx.		980

1) Hub: FireWire node or distributor

2) Hop: Transition from module to module/signal conditioning

3) Mechanical stress is tested according to European Standard EN60068−2−6 for vibrations and EN60068−2−27 for shock. The equipment is subjected to an acceleration of 50 m/s^2 in a frequency range of 5...65 Hz in all 3 axes. Duration of this vibration test: 30min per axis. The shock test is performed with a nominal acceleration of 350 m/s^2 for 6 ms, half sine pulse shape, with 3 shocks in each of the 6 possible directions.

Specifications MX879

Analog outputs		
Accuracy class		0.1
Number of outputs	–	8
Signal sources	–	**Real–time output:** QuantumX system signals, e.g. inputs (analog, digital, CANbus), internal signal generator (sine, rectangle, triangle), internal buffer (replay of any data / arbitrary), computed signals (see functions) **Online output:** Default signals from PC level (observe min. latency of 50 ms)
Type of connection	–	Plug terminal: Phönix Contact FMC–1,5/8–ST–3,5–RF
Cable length, max.	m	30
Nominal (rated) voltage	V	±10
Reference signal		2 output each with common ground, electrically isolated from supply and housing. Max. potential difference 60V
D/A converter resolution	Bit	16
Update rate	kHz	96
Noise (peak to peak)	mV	< 15
Permissible load impedance	Ω	> 2,000 / <2 nF
Crosstalk attenuation	dB	> 90
Zero drift	% / 10K	< 0.05 of full scale value
Full-scale drift	% / 10K	< 0.05 of output value
Cut–off frequency (–1 dB)	kHz	10
Additional adjustable filter	Hz	0.1 ... 10 000
Output resistance	Ω	< 2
Max. measurement input rate	Hz	4,800

Real-time computation on the module		
Mathematics unit		
Number of computations		4
Measurment input rate, max.	Hz	4,800
Measurement output rate, max.	Hz	4,800
Root mean square value (RMS), adjustable observation period		
with 4,800 Hz input rate	ms	2 ... 1,200
Matrix computation (e.g. compensation matrix of customized HBM transducers)		
Number of input signals		6
Number of output signals		6
Number of coefficients		36
Add&Multiply		
Number of input signals		2
Number of coefficients		4
Formula		a0+a1*S1+a2*S2+a3*S1*S2
Peak-value unit		
Number of peak values		4
Measurment input rate, max.	Hz	4,800
Measurement output rate, max.	Hz	4,800
Limit value unit		
Number of limit values		8
Update rate	Hz	4,800
Signalgenerator		
Standard mode		
Signalt ype		Constant, sine, rectangle, triangle
Max. Output rate	S/sec	4800
Parameter		Amplitude, frequency, duty ratios
Arbitrary mode		
Signal type / format		Any (ASCII)
Data format		Float
Number of buffers		2
Number of signal values per buffer		10.000
Max. output rate	S/sec	96.000
Parameter		Repeat, trigger, continuous, buffer change

Specifications MX879

Digital inputs & outputs		
Number		32 can be individually parameterized as input or output
Type of connection		Plug terminal
Cable length, max.	m	30
Update rate	Hz	4,800
Status display : Light-emitting diodes		
Input / output status (electrically) Number		32
24 V display		4
Input signal range		
Permissible input signal range, max.	V	36
Threshold		
Activation threshold external supply	V	8
Deactivation threshold external supply	V	6.8
Activation threshold internal supply	V	3.2
Deactivation threshold internal supply	V	2
Input resistance (nominal)	kΩ	6.9
External supply of the digital I/O	V	5.5 … 36
Output with external supply, 24 V terminal		
Level min., active High, at 100 mA load	V	(voltage supply digital I/O) – 1
Output current, max.	mA	200 (short-circuit-proof)
Short–circuit current max. , typical	mA	500
Output with internal excitation, U_{INT}		
Voltage, typ.	V	5.4
Total current, max.	mA	32
Level at active high	V	4.9 – 5.6

Accessories, to be ordered separately

MX879 accessories		
Article	**Description**	**Order no.**
Voltage supply		
AC/DC power pack / 24 V	Input: 100 ... 240 V AC (±10 %), 1.5 m cable Output: 24 V DC, max. 1.25 A, 2 m cable with ODU plug	1-NTX001
3 m cable – QuantumX supply	3 m cable for voltage supply of QuantumX modules; suitable plug (ODU Medi-Snap S11M08-P04MJGO-5280) at one end and exposed wires at the other.	1-KAB271-3
Communication		
IEEE1394b FireWire cable, (module-to-module)	FireWire cable connector between QuantumX modules, fitted with suitable plugs at both ends. Lengths 0.2 m/2 m/5 m. Note: Voltage can also be supplied to the QuantumX modules via the cable (max. 1.5 A, from source to last acceptor).	1-KAB269-0.2 1-KAB269-2 1-KAB269-5
IEEE1394b FireWire-cable, hub-to-module, 3 m	FireWire connection cable between HUB and module.	1-KAB276-3
FireWire Extender SCM-FW	Package including 2 in-line elements for extension of the FireWire connection up to 40 m; required parts: 2 x 1-KAB269-x and Industrial Ethernet cable (M12, CAT5e/6, max. 30 m). KAB270-3 connection is not possible!	1-SCM-FW
Ethernet cross over cable	Ethernet cross-over cable for direct operation of devices on a PC or notebook, length 2 m, type CAT5+	1-KAB239-2
Mechanical data		
Connecting elements for QuantumX modules	Connecting elements (clips) for QuantumX modules; set comprising 2 case clips including assembly material for fast connection of 2 modules.	1-CASECLIP
Connecting elements for QuantumX modules	Fitting panel for mounting of QuantumX modules using case clips (1-CASECLIP), lashing strap or cable tie. Basic fastening by 4 screws.	1-CASEFIT
QuantumX backplane (Standard)	QuantumX backplane – Standard for a maximum of 9 modules, IP 20 version; – Mounting on wall or control cabinet (19") - Connection of external modules by FireWire possible; - Power supply: 24 V DC / max. 5 A (150 W);	1-BPX001
QuantumX Backplane	QuantumX Backplane – Rack for maximum 9 modules in IP 20; - 19" rack mounting with handles left and right; - Connection of external modules via FireWire possible; - Power supply: 24 V DC / max. 5 A (150 W).	1-BPX002
Push-In connector (8 Pins), gold	10 push-In-connectors, Phönix Contact, 8 pins gold	1-CON-S1015

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