

QUANTUM^X MX878

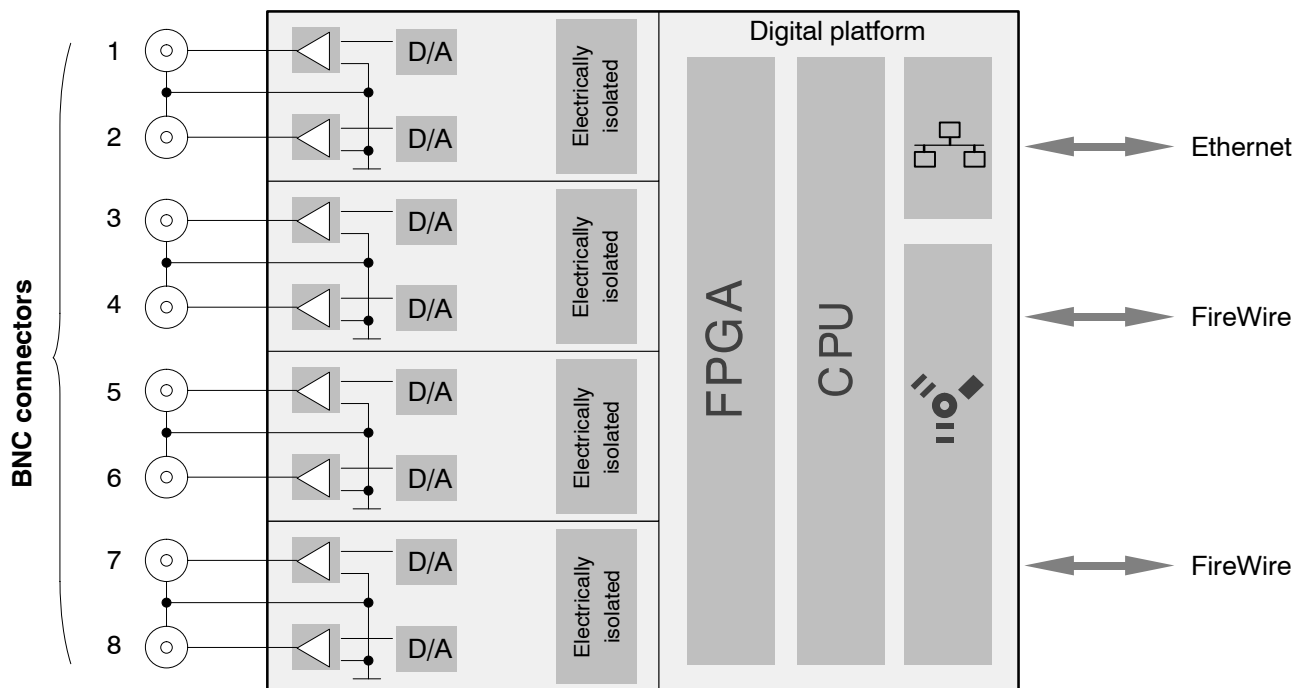
Analog output module

Special features

- 8 individually configurable analog outputs (electrically isolated, can be filtered)
- Mathematics unit, peak-value unit (real-time computation)
- Signal generator



Block diagram



Specifications MX878

General specifications		
Supply voltage range (DC)	V	10 ... 30 (24 V nominal (rated) voltage)
Supply voltage interruption		max. für 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
Synchronisation		FireWire (automatically, recommended)
EtherCAT		via CX27
NTP		via Ethernet
IRIG-B (B000 to B007; B120 to B127)		via MX440A- or MX840A input channel
Peak-value unit		
Number of peak values		4
Measurement input rate, max.	Hz	4,800
Measurement output rate, max.	Hz	4,800
Signal generator		
Arbitrary mode		Multiple buffering, triggered continuous
Max. output rate	Hz	96,000
Rates that can be represented		Even dividers of the maximum rate
Number of buffers		2
Depth of buffers		10,000 values in float data format
Waveforms		Constant value, sine Rectangle and triangle with variable duty cycle
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 tests³⁾		
Vibration (30 min)	m/s ²	50
Shock (6 ms)	m/s ²	350
EMC requirements		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.		880

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/s² 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/s² for 6 ms, half sine pulse shape, with 3 shocks in each of the 6 possible directions.

Specifications MX878

Analog outputs		
Number of outputs	-	8
Signal sources	-	QuantumX system signals i.e. measured (analog), acquired (digital), calculated
Type of connection	-	BNC
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	< 4
Permissible load impedance	Ω	> 2,000 / <2 nF
Crosstalk attenuation	dB	> 90
Zero drift	% / 10K	< 0.02 of full scale value
Full-scale drift	% / 10K	< 0.02 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
Measurement 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 output signals		1
Number of coefficients		4
Formula		$a_0+a_1*S_1+a_2*S_2+a_3*S_1*S_2$

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