Data Sheet

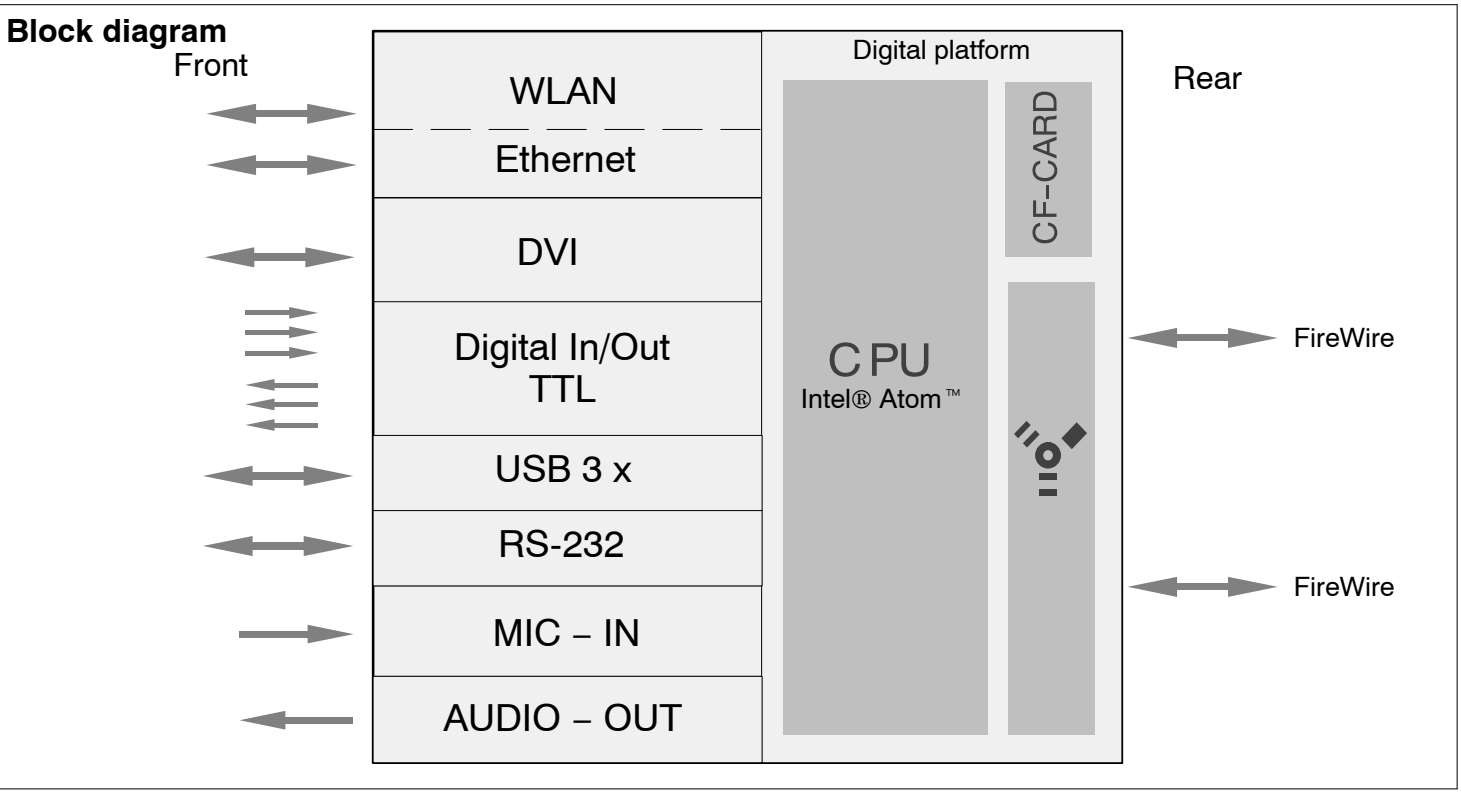
QUANTUMX CX22W

Data recorder

Special features

- **Stand-alone data acquisition: exchangeable CF–CARD**
- **Connection of QuantumX modules**
- **Easy system configuration: trigger, computation, virtual channels, signal analysis**
- **Many interfaces: LAN, WLAN, USB, Digital I/O**
- **Touchscreen connection (optional): DVI / USB**
- **Supply voltage (DC): 10 V ... 30 V no fan**

Block diagram



Specifications

Installed Software		catman®EASY
Devices that can be connected		QuantumX
Number of channels FireWire (QuantumX) Ethernet NTP (QuantumX, MGCplus Cp42, Interrogator)		384 (24 modules x 16 Channels) 400
Synchronization options		FireWire (only QuantumX, automatica, recommended) Ethernet / NTP (QuantumX)
System configuration / Data access		Remote access or via "QuantumX Network Assistant" software Direct connection to a PC (Ethernet or WLAN) or via network (DHCP) Data access via Windows Explorer
Channel configuration		Manually via integrated sensor database (all typical transducers, HBM sensors, CAN–dbc import, open, expandable) Automatically via TEDS (integrated editor)
Data recording / Start of recording		After switching on the operating voltage Triggered (pre–trigger) to measurement signal, message, digital input Via software (remote access or direct connection of peripheral devices), time
Number of sample rates		3 different data rates and groups (depending on measurement module)
Formula editor (calculation channels)		Arithmetic, exponent, root, root mean square value, logic, trigonometry, integral/differential, exponential, logarithm, limit values (connect digital output, play audio file via external speaker, entry in log file), software filters (moving averages, Bessel, Butterworth), experimental stress analysis using SG
Trigger signals		Analog, bus signal, computed signals, digital input (0/1)
Trigger type		Edge (rising, falling), level (above, below)
End of recording		Switch off, manual, triggered (post), time, number of measured values
Scope of recording		Selected signals, meta data (sensors, measurement configuration, test parameters), statistics log
Recording mode		Standard Time interval (periodic file creation, without data loss) Long–term measurement (time, cycle with counter/cycle time/peak–valley) Peak values (interval) Ring buffer (up to 10 minutes)
Sequences		10 sequential recording configurations (measurement jobs), repetitions
Storage formats		HBM catman® (bin) ASCII (asc, replay with MX878) Microsoft Excel® (xls, xlsx, xlsb) MTS (RPC III) MathWorks MATLAB™ (mat) HBM nCode (dac) Vector (MDF 4.0) NI DIAdem (dac)
Automation		Key scripting (Visual Basic for application)
Data storage		Exchangeable CF card, USB stick, external USB hard disk
Display or remote control		
Online display **Recommended display**		Freely configurable display and control panels in full screen mode 1024 x 768 pixels DVI digital [1)]
Display elements		Numeric display, line recorder (y–t, x–y, y–f / FFT), spreadsheet, indicator, bar graph, LED, polar diagram, switch (button), checkbox, selection box, background image, text
Keypad		Control via function keys

[1)] DVI–2–VGA adapter does not work

Specifications

Protection		
System change		Enhanced Write Filter (EWF) needs to be opened to save changes.
General specifications		
Operating system		WindowsXP embedded
Prozessor		Intel Atom, 1.33 GHz with 533 MHz FSB
Internal storage medium	GB	8, two partitions
Exchangeable memory Version Formfactor Memory capacity, max. Recording rate, max. Measured value / Signal	 GByte Values/s Byte	CompactFlash 4.1 CompactFlash type 1 128 400000 4
Starting time, approx.	sec	45
Interfaces (number)[1]		Ethernet (1) WLAN (1) FireWire (2) USB2.0 (3) RS232(1) DVI (1) Digital I/O (6)
Supply voltage range (DC)	V	10 ... 30, nominal (rated) voltage 24V
Power consumption (at 24V)	W	< 12, no rotating parts (fans), no noise
Ethernet (Konfiguration des Datenrekorders) Protocol/addressing Connection Max. cable length to module **WLAN** (data recorder configuration) WLAN standard Data transfer rate Security protocols Straight line range Frequency carrier, Country/Region Antenna	 m MBit m	10Base–T / 100Base–TX / 1000Base–TX TCP/IP (direct IP address or DHCP) 8P8C plug (RJ-45) with twisted pair cable (CAT-5) 100 IEEE 802.11 n/h and IEEE 802.11 b/g, Adhoc-support 54 WEP, WPA, WPA2, TKIP, AES 200 (IEEE 802.11n) 2.4 GHz Standard SMA socket, Typ RF Coax
FireWire (module synchronization, data link, optional supply voltage) Baud rate Max. current from module to module Max. cable length between the nodes Max. number of modules connected in series (daisy chain) Max. number of modules in a FireWire system (including hubs[2], backplane) max. chain of hops[3]	 MBaud A m	IEEE 1394b (HBM modules only) 400 (approx. 50 MByte/s) 1.5 5 12 (=11 hops) 24 14
USB Version / Connector Cable length, max.	 m	 2.0/Standard Highspeed (Host) compatible with Version 1.1 5
RS-232-C Connector Baud rate, max. Devices	 kBaud	 DSUB 9–pin 115 e.g. GPS (NMEA)
DVI Type		 Digital, connecting LCD monitor

[1] Rack installation not possible
[2] Hub: FireWire node or distributor
[3] Hop: Transition from module to module/signal conditioning

Specifications

Protection class (up to 2000 m height, degree of contamination 2)		III
Line out / voice output		Jack, 3.5 mm
Degree of protection		IP20
Mechanical tests[1)]		
Vibration (30 min)	m/s^2	50
Shock (6 ms)	m/s^2	350
EMC requirements		according to EN61326
Nominal (rated) temperature range	°C [°F]	−20 °C ... +60 °C [−4 ... +140]
Operating temperature range (no dewing allowed/module not dew-point proof)	°C [°F]	−20 °C ... +65 °C [−4 ... +149]
Storage temperature range	°C [°F]	−40 °C ... +75 °C [−40 ... +167]
Rel. humidity at 31 °C	%	80 (non condensing) lin. reduction to 50 % at 40 °C
Weight, approx.	g	1200
Dimensions, horizontal (H x W x D)	mm	52.5 x 200 x 122 (with case protection) 44 x 174 x 119 (without case protection)
Real Time Clock		
Clock drift		max. 1.2 minutes per month
Time buffering		CMOS Batterie
Time zone (factory settings)		UTC (Universal Time, Coordinated)
Digital I/Os		
Number of inputs/outputs		6 3 inputs (clamps 1, 2, 3) 3 outpust (clamps 4, 5, 6)
Type of connection		screw terminals Plug: MC 1,5/7−ST−3,5 (Phoenixcontact)
LEDs (number) output state		3
Cable length (max.)	m	3
Cable type (required with interference)		shielded
Input signal range TTL		
Max. permissible input level	V	−0.5 ... 5.5
Input level High	V	4
Input level Low	V	0.7
Internal pullup resistors	kOhm	100
Output signal range TTL		
Output High	V	4
Output Low	V	0.7
Output current max.	mA	1

1) 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 25 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 200 m/s^2 for 11 ms, half sine pulse shape, with shocks in each of the 6 possible directions.

Accessories, to be ordered separately

General accessories		
Article	**Description**	**Order No.**
AC-DC power supply / 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 connector	1−NTX001
3m cable − QuantumX supply	3 m cable for voltage supply of QuantumX modules; Suitable plug (ODU Medi-Snap S11M08−P04MJGO−5280) on one side and open strands on the other end.	1−KAB271−3
Ethernet cross over cable	Ethernet cross over cable for direct operation between a PC or Notebook and a modul / device, length 2 m, type CAT5+	1−KAB239−2
FireWire cable (module-to-module)	FireWire connection cable for QuantumX modules; with matching plugs on both sides. Lengths 0.2 m/2 m/5 m Note: The cable enables QuantumX modules to be supplied with voltage (max. 1.5 A, from the source to the last drain).	1−KAB269−0.2 1−KAB269−2 1−KAB269−5
IEEE1394b FireWire IEEE ExpressCard	FireWire IEEE 1394b ExpressCard (ExpressCard/34) to connect QuantumX modules to a notebook or PC	1−IF002
Connecting elements for QuantumX modules	Connecting elements (clips) for QuantumX modules; Set comprising 2 case clips including mounting 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
FireWire Extender	SCM−FM FireWire Extender Pakage consists of 2 In−line elements (SCM−FW−1A and SCM−FW−1B) to extend the FireWire connection up to 50 m; Necessary parts: 2 x 1−KAB269−x and Industrial Ethernet cable (M12, CAT5e/6, max. 50 m). KAB270−3 connection is not possible!	1−SCM−FW

QuantumX survey

	MX840A	MX440A	MX410	MX460	MX1615	MX1609	MX1601	MX878	MX471	CX27	CX22W
Number of channels (total)	8	4	4	4	16	16	16	-	-	-	-
Data rate (Samples/s)	19200	19200	96000	96000	19200	300	19200	-	-	-	-
Bandwidth (Hz)	3200	3200	38000	38000	3000	14	3000	-	-	-	-
Full-bridge strain gages	•	•	•		•						
Half-bridge strain gages	•	•	•		•						
Inductive full-bridge	•	•	•								
Inductive half-bridge	•	•	•								
LVDT	•	•									
Voltage	•	•	•		•		•				
Current (± 20 mA)	•	•	•				•				
Current fed piezoelectric transducer (IEPE)	•[1]	•[1]	•[1]				•				
Piezoresistive transducer	•	•	•								
Resistance	•	•			•						
Potentiometers	•	•									
PT100 and PT1000 resistance thermometers	•	•			•						
Thermocouples	•	•				• (Type K)					
Indctive rotary encoder				•							
Incremental encoder	•	•		•							
SSI	•	•									
Frequency measurement, pulse counting	•	•		•							
PWM				•							
Torque / rotary speed	•	•		•							
CANbus	• (Input/Output)								• (Input/Output)		
Analog outputs			•					•			
Digital IN (static)										•	•
Digital OUT (static)										•	•
EtherCAT										•	
Mathematics			•	•				•			•
Local recording of measured data											•

[1]) A Smart module (1-EICP-B-2) is required for connecting current-fed piezoelectric transducers.

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