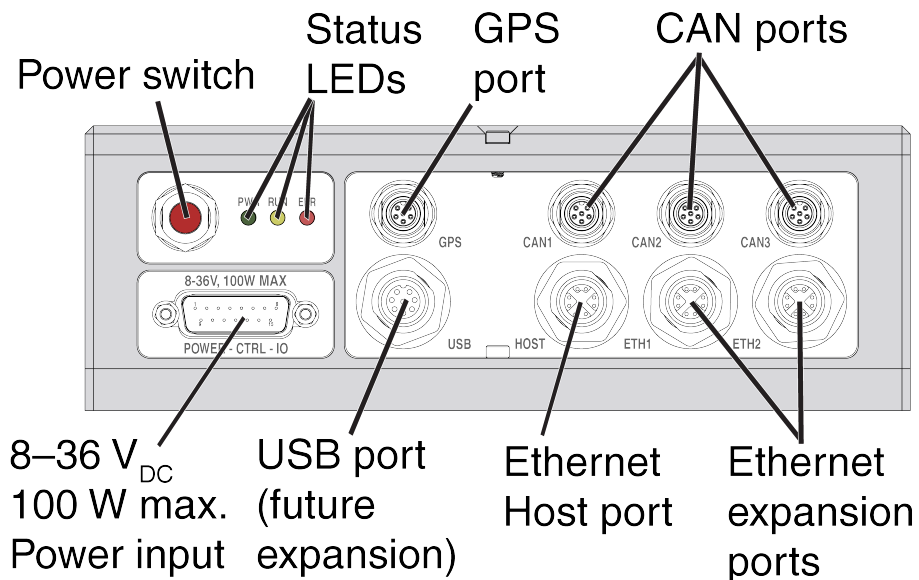


eXRCPU

Main Processor Layer

Special Features

- 8 to 36 V wide range input power (turns on at 10V and runs down to 8V)
- Internal backup capacitors to protect against unplanned power losses or low voltage events
- 1 Gigabit Ethernet port for Host PC connection and two PTP ports for expansion/networking
- Ultra-rugged: IP65/IP67, MIL202 (IP54 with eXRCPU on eDAQ-Plus layers)
- Wide thermal range: -40 to 80 °C
- Industrial-grade memory 32 GB, 64 GB optional
- 3 CAN, 1 GPS and 3 Ethernet ports
- Control IO, USB and Remote Switch



Specifications

General Specifications		
Parameter	Unit	Value
Data storage capacity (SLC FLASH) storage file type	GB -	32 or 64 SIE
Processing features	-	auto power fail test restart, storage full protection
Power button (push contact)	-	power on/off switch, password and IP address reset control
Input power supply voltage range current (maximum) over voltage/reverse voltage protection	- V _{DC} A -	- 8 ... 36 (on 10V, off 8V) 10 Yes
Power consumption (without CAN power) ¹⁾	W	15
Ethernet protocol connection crossover maximum cable length	- - - - m	100Base-TX/1000Base-T TCP/IPv6 or TCP/IPv4 M12 X-code shielded twisted pair cable (CAT-5E) Auto MDI/-X 95 at -40 °C, 85 at 20 °C, 75 at 75 °C ²⁾
Ethernet ports HOST ETHERNET 1 ETHERNET 2	- - - -	- 1 Gigabit, connection to PC, router or WiFi device Connection to MX module, or networking multiple eDAQXR systems Connection to MX module, or networking multiple eDAQXR systems
Precision timing protocol (PTP) (expansion module ports) device type protocol accuracy	- - - ns	Version 2 (IEEE 1588) ordinary clock IPv6 multicast <200
USB 2.0	-	for future expansion

¹⁾ Power consumption measurements include the efficiency of the power supply.

²⁾ Based on shielded cable lengths. Cable lengths up to or over 100 m possible using unshielded solid conductor twisted pair at 25 °C.

Specifications (Continued)

General Specifications (continued)		
Parameter	Unit	Value
Storage temperature range	°C [°F]	-40 ... +85 [-40 ... +185]
Operating temperature range	°C [°F]	-40 ... +80 [-40 ... +176]
Altitude de-rating	-	-
maximum temperature a 0 m	°C [°F]	+80 [+176]
maximum temperature a 2500 m	°C [°F]	+70 [+158]
maximum temperature a 5000 m	°C [°F]	+55 [+131]
Relative humidity range	%	5 ... 100
Protection class	-	III
Degree of protection	-	IP65/IP67 per EN 60529:2005 (When the eXRCPU is attached to eDAQ-Plus layers (EBRG, EHLS, EDIO, EITB and ENTB) the IP rating is downgraded to IP54)
-	-	
-	-	
FCC class for digital devices	-	-
eXRCPU and eDAQXR layers	-	Class B, eXRCPU alone or attached to eDAQXR layers
eXRCPU with eDAQ-Plus layers	-	Class A, when the eXRCPU is attached to eDAQ-Plus layers (EBRG, EHLS, EDIO, EITB and ENTB)
-	-	-
EMC requirements	-	CE conformity test per EN 61326-1:2012
Evaluated for safety according to	-	IEC61010-1:2010
Mechanical test	-	-
Vibration	-	accord. MIL-STD202G, Method 204, Test Condition D
acceleration	m/s ²	100
duration	min	450
frequency	Hz	5 ... 2,000
Shock	-	accord. MIL-STD202G, Method 213B, Test Condition H
acceleration	m/s ²	750
pulse duration	ms	6
number of impacts	-	18
Load dump	-	ISO 16750-2:2010 Test B 63 V _{peak}
Dimensions (H x W x D)	mm	68 x 197 x 200 with base and lid
Weight	g [lb]	2,004 [4.42] with base and lid

Specifications (Continued)

Internal I/O Specifications		
Parameter	Unit	Value
Sample rates ³⁾⁴⁾ - -	Samples/s Samples/s Samples/s	Decimal: 0.1 ... 100,000 Binary: 0.1 ... 98,304 HBM Classic: 0.1 ... 96,000
Control I/O - connector isolation (signal/ground to chassis) input voltage limit threshold level output current sink output voltage output update rate	- - - V V mV mV V Hz	2 inputs (pins 3, 4, pulled up to V_{in} , pins 10, 11 ground), 3 outputs (pins 5, 12, 13) female 15-pin D-Sub $500^5)$ 8 ... 36 $1/3 V_{in}$ threshold, 1.5V Hysteresis 350 ± 60 1 to 100 Hz (based on frame rate)
CAN Channels per connector CAN standards CAN protocols connector isolation (signal/ground to chassis) baud rates termination CAN supply voltage CAN current limit	- - - - V bps Ω V A	3 CAN connectors unlimited ISO 11898 CAN 2.0A and 2.0B No female 6-pin M8 $500^5)$ 1M, 800k, 666.6k, 500k, 400k, 250k, 125k, 100k, 50k, 41.6k 120 or unterminated 12 1
GPS connector isolation (signal/ground to chassis) power supply voltage power supply current limit baud rate compatible with 1-EGPS-5HZ-2 compatible with 1-EGPS-200-B-2 and 1-EGPS-200-P-2	- - V V A bps - - -	1 GPS female 6-pin M8 $500^5)$ 0, 5, or 12 (auto selected) $\pm 5\%$ 1 300 ... 1M (default of 38.4k) NMEA PPS 5 Hz updates NMEA PPS 200 Hz updates
Status LEDs POWER (green) RUN (yellow) ERROR (red)	- - - -	- system power indicator test running (data processing) indicator system alert or error

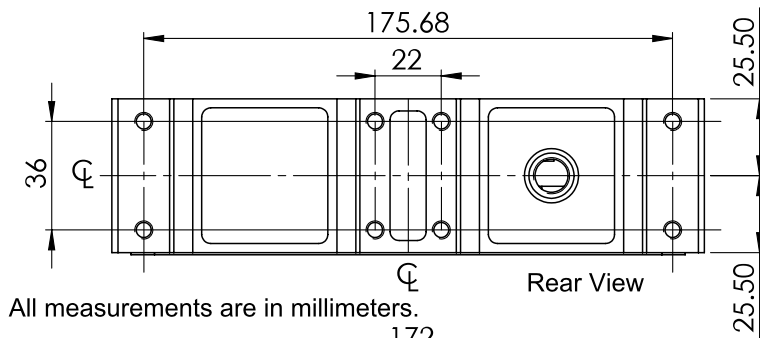
³⁾ Internal data sources only. For external data sources, refer to the appropriate data sheet.

⁴⁾ Sample rate has no lower limit with use of Down Sampler computed channels.

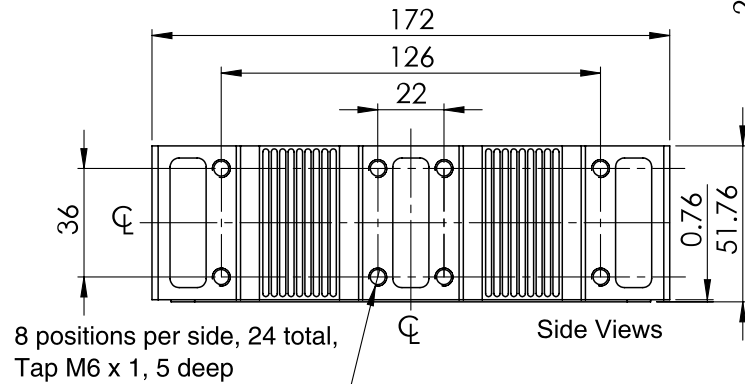
⁵⁾ There is no ground to chassis isolation when eDAQ layers are used.

Specifications (Continued)

Data Processing Parameter	Value
Data sources (internal)	1 Control IO (2 in, 3 out), 1 GPS, 3 CAN and 1 USB (future expansion)
Computed channels - - -	Anomaly detect, Bitmap trigger, Directional velocity, Down sampler, Function generator, Integrator, Interactive trigger, Over range detector, Pulse frequency, Run stopper, Signal calculator, Smoothing filter, State mapper, Statistics, Time base shifter, Time channel, Timed Trigger, Track, Triggered latch, Triggered zero suppression, Up sampler
Storage modes (Somat DataModes™) -	Time History, Burst History, Time at Level, Peak Valley, Peak Valley Matrix, Rainflow, Event Slice, Burst Message Logger, Message Logger
Run-time data visualizations -	single channel and multi-channel strip chart plots, digital meters, min/max/alarm digital trackers, single channel frequency spectrum charts and analog gauges



All measurements are in millimeters.



Detailed Description

The eDAQXR family is the next generation in the HBM eDAQ product line of rugged, mobile data acquisition modules. The eXRCPU data processor provides significant improvements in data throughput, supports seamless networking and a state of the art web-based interface. The system consists of a main processor layer allowing for flexible configurations for a variety of applications.

The system hosts its own secure web interface for intuitive and easy to use test setup, control, monitoring and data visualization interfaces. This server based interface supports multiple users (clients), and the capability to define and apply system access / control restrictions on a per user basis. The eXRCPU communicates through standard 100/1000 Base-T Ethernet using IPv4 or IPv6.

To manage test data, the system has the capacity to perform a broad range of on-board data processing. This includes a diverse set of computed channels for defining triggers and gates for the Somat DataModes™ as well as supporting arbitrarily complex mathematical computations.

The system supports a default “data collect” mode – acting as a simple data logger to get vehicle “shake down tests” up and running quickly. To minimize the need for post-test analysis and to allow for more efficient data storage, the Somat DataModes are available. These provide data storage in easy to define formats including triggered or gated Time History and Time-at-Level (histogram), and triggered Burst History (transient recorder with pre-trigger data collection). The system provides adequate storage for single or multiple SIE data files with a built-in 32 or 64 GB solid state drive (SSD).

The eXRCPU supports on board data sourcing from three CAN ports, one GPS port, and two digital input lines for switch controls. Three digital output sink lines are available for driving LEDs and relays. The ISA bus supports legacy eDAQ layers. The PCIe bus supports the future eXRBRG and other expansion layers. The two Ethernet expansion ports support eDAQXR networking, SomatXR MXB modules, the EX23-R, Axis cameras and other future Ethernet sources such as wheel force transducers.



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