

Q.raxx A127

Module for Measuring Electrical Power

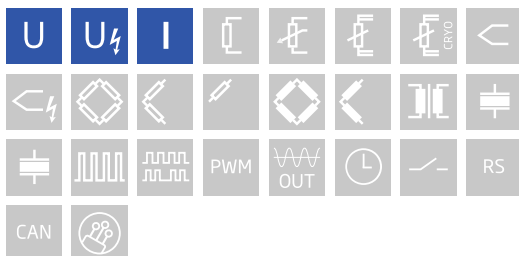
Q.raxx is the ideal 19" rackmount DAQ solution for applications that require high channel density. Q.raxx DAQ systems can utilize an integrated, high-performance controller for communication, control, and data logging purposes. With a controller, multiple Q.raxx systems can be synchronized to each other 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

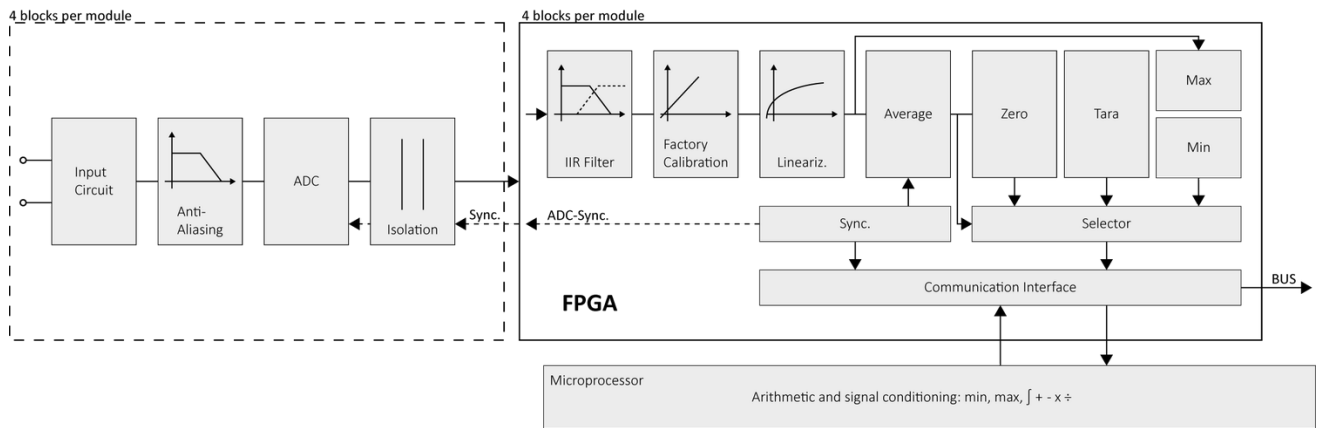


Key Features

- **4 voltage input channels**
2 inputs for voltage measurement
measuring ranges ± 40 V, ± 120 V, ± 400 V, ± 1200 V
2 inputs for current measurement via shunt resistors measuring ranges
 ± 80 mV, ± 240 mV, ± 800 mV, ± 2400 mV
- **Signal conditioning**
linearization, digital filter, average, scaling, min/max storage, RMS, alarm
- **Fast high accuracy digitalization**
24 bit ADC, 100 kHz sample rate per channel
- **Galvanic isolation**
channel to channel to power supply and to interface isolation voltage
1200 VDC / 848 VACrms test voltage 5 kVDC over 1 minute
- **Categories**
1000 V CAT II and 600 V CAT III



Block diagram



Technical Data

Analog Inputs

Channels	4
Accuracy	0.01 % typical
	0.025 % in controlled environment ¹
	0.05 % in industrial area ²
Linearity error	0.01 % typical full-scale
Repeatability	0.003 % typical (within 24 h)
Isolation voltage	1200 VDC continuous, channel to channel to power supply channel to bus ³

¹ according to EN 61326 2006: appendix B

² according to EN 61326 2006: appendix A

³ High voltage lifetime (TDD B E Model). Time to fail approx.. 4 years at 1200 VDC and 60 °C continuous

Measurement Mode Voltage AI1 + AI3

Range	± 1200 V	± 400 V	± 120 V	± 40 V
Accuracy	± 300 mV	± 100 mV	± 30 mV	± 10 mV
Resolution	6 mV	2 mV	600 μ V	200 μ V
Long-term offset stability	30 mV / 24 h	10 mV / 24 h	3 mV / 24 h	1 mV / 24 h
	100 mV / 8000 h	30 mV / 8000 h	10 mV / 8000 h	3 mV / 8000 h
Offset temperature influence	100 mV / 10k	30 mV / 10 k	10 mV / 10 k	3 mV / 10
temperature influence	0.025 % / 10K			
Input impedance	> 10 M Ω			

Measurement Mode Voltage AI2 + AI4

Range	$\pm 2.4 \text{ V}$	$\pm 800 \text{ mV}$	$\pm 240 \text{ mV}$	$\pm 80 \text{ mV}$
Accuracy	$\pm 600 \mu\text{V}$	$\pm 200 \mu\text{V}$	$\pm 60 \mu\text{V}$	$\pm 20 \mu\text{V}$
Resolution	$12 \mu\text{V}$	$4 \mu\text{V}$	$1.2 \mu\text{V}$	$0.4 \mu\text{V}$
Long-term offset stability	$60 \mu\text{V} / 24 \text{ h}$	$20 \mu\text{V} / 24 \text{ h}$	$6 \mu\text{V} / 24 \text{ h}$	$2 \mu\text{V} / 24 \text{ h}$
	$200 \mu\text{V} / 8000 \text{ h}$	$60 \mu\text{V} / 8000 \text{ h}$	$20 \mu\text{V} / 8000 \text{ h}$	$10 \mu\text{V} / 8000 \text{ h}$
Offset temperature influence	$200 \mu\text{V} / 10\text{k}$	$60 \mu\text{V} / 10 \text{ k}$	$20 \mu\text{V} / 10 \text{ k}$	$10 \mu\text{V} / 10 \text{ k}$
temperature influence	$0.025 \% / 10\text{K}$			
Input impedance	$> 100 \text{ M}\Omega$			

Measurement Mode Current

	range	max. error	resolution
Via Shunt Channel 2 and 4	$\pm 2400 \text{ mV}$	$\pm 600 \mu\text{V}$	$12 \mu\text{V}$
	$\pm 800 \text{ mV}$	$\pm 200 \mu\text{V}$	$4 \mu\text{V}$
	$\pm 240 \text{ mV}$	$\pm 60 \mu\text{V}$	$1.2 \mu\text{V}$
	$\pm 80 \text{ mV}$	$\pm 20 \mu\text{V}$	$0.4 \mu\text{V}$
Long-term drift	$< 20 \mu\text{V} / 24 \text{ h}$	$< 200 \mu\text{V} / 8000 \text{ h}$	
Temperature influence	Offset drift	Gain drift	
	$< 50 \mu\text{V} / 10 \text{ K}$	$< 0.02 \% / 10 \text{ K}$	

Analog/Digital-Conversion

Resolution	24-bit
Update rate	100 kHz
Modulation method	Sigma-Delta
Anti-aliasing filter	20 kHz, 3rd order
Digital filters	Infinite impulse response (IIR), low-pass, high-pass, band-pass, Butterworth or Bessel (2nd, 4th, 6th or 8th order), frequency range 0.1 Hz to 10 kHz (adjustable via software)
Averaging	configurable or automatic according to the selected data rate

Communication Interface

Protocols	proprietary Localbus (115200 bps to 24 Mbps, latency $< 100 \text{ ns}$) ASCII (19200 bps to 115200 bps) Modbus RTU Profibus-DP (19200 bps to 12 Mbps) (special Firmware required)
Data format	8E1
Electrical standard	ANSI/TIA/EIA-485-A, 2-wire

Power Supply

Input voltage	10 to 30 VDC, overvoltage and overcurrent protection
Power consumption	approx.. 2 W
Input voltage influence	$< 0.001 \% / \text{V}$

Environmental

Operating temperature	-20°C to +60°C
Storage temperature	-40°C to +85°C
Relative humidity	5 % to 95 % at 50°C, non-condensing
Pollution degree	1

Remarks

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

High Voltage Warnings



- Attention High voltage device, Danger for life and health in case of non regular use.
- Only special and sufficient educated persons are permitted to handle this device only.
- all metal housing parts must be safely and continuous connected to protected earth (PE)
- Only contact protection plugs and cables may be used. All parts must be approved for voltages up to 1200 VDC.
- During installation, the whole system must be without voltage and safely be disconnected from the mains.
- All relevant safety regulations must be considered.

Base is the european standard EN61010-1

Mechanical information

Material	Aluminum
Measurements (W x H x D)	30 x 128 x 118 mm
Weight	approx. 100 g

Ordering Information

Article number	290932
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