

## Q.raxx A107

Universal Measurement Plug-in



The Q.raxx product is based on the standardized 19" technology and is designed for measurements with a high level of flexibility, reliability and accuracy. The range of applications starts from small stand-alone solutions up to networked multi-channel applications in the field of stationary testing and assembly.

The wide range of available plug-in modules and the flexibility of the system configuration allows an optimized solution for each single task. Up to 13 plug-in modules in one system plus a Controller Unit provide a powerful package with PAC functionality, logging possibilities and an Ethernet TCP/IP interface.

Conclusion:

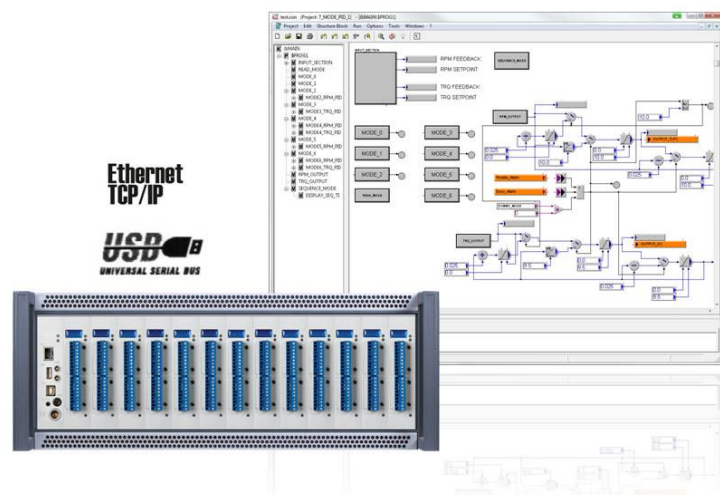
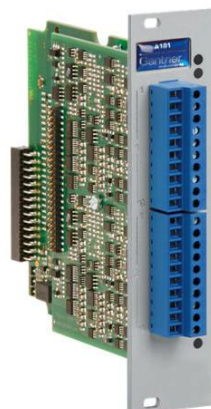
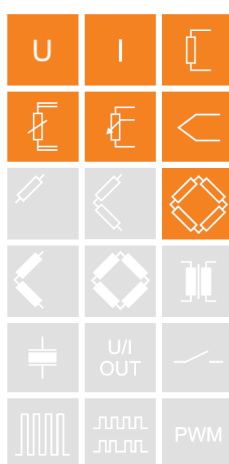
Dynamic signal acquisition up to 100 kHz, inputs and outputs for all types of signals, galvanic isolation of inputs and outputs, multi-channel solutions, high density packaging and intelligent signal conditioning for all kind of test applications.

### Most important features of the system:

- **High density and flexibility**  
up to 16 plug-in modules in one system in any constellation, flexible plug selection
- **Test Controller inclusive**  
Ethernet TCP/IP for configuration and data transfer, 16 MByte data memory, expandable by USB device, logging features, PAC functionality, IRIG synchronization
- **Robust and reliable**  
stable and compact aluminum housing, easy to carry  
electromagnetic compatibility according EN 61000-4 and EN 55011  
Temperature range -20 up to +60°C  
power supply 10 up to 30 VDC

### Most important features of the plug-in A107:

- **4 universal analog input channels**  
voltage, current, resistance, potentiometer, Pt100, Pt1000, thermocouples, measuring bridges
- **Fast high accuracy digitalization**  
24 bit ADC, 10 kHz sample rate per channel
- **Signal conditioning**  
16 virtual channels, linearization, digital filter, average, scaling, min/max storage, RMS, arithmetic, alarm
- **Galvanic isolation**  
of channel to power supply and to interface  
 $V_{iso}$  500 VDC

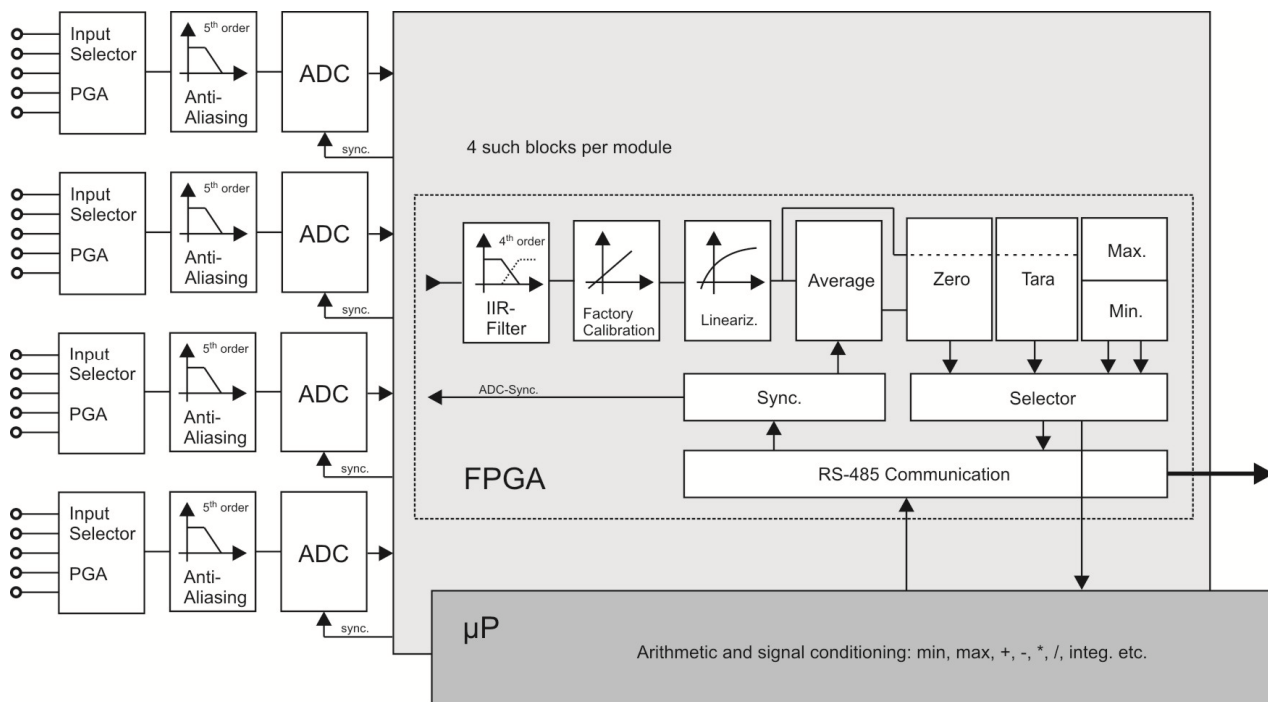




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## Block Diagram



Analog Inputs			
Number	4		
Accuracy	0.01 % typical		
	0.02 % in controlled environment <sup>1</sup>		
	0.05 % in industrial area <sup>2</sup>		
Linearity error	0.01 % of the final value typical		
Repeatability	0.003 % typical (within 24 h)		
Isolation voltage	500 VDC channel to channel to power supply to interface <sup>3</sup>		
Measurement Voltage	Range	max. Deviation	Resolution
	±10 V	±2 mV	1.2 µV
	±1 V	±0.2 mV	120 nV
	±100 mV	±20 µV	12 nV
Input resistance	>100 MΩ		
Long term drift	<10 µV / 24 h; <25 µV / 8000 h		
Temperature influence	on zero	on sensitivity	
	<1 µV / 10 K	<0.05 % / 10 K	
Signal-noise-ratio	> 90 dB at 1 kHz	>120 dB at 1 Hz	
		range ±1 V	

<sup>1</sup> according EN 61326: 1997, appendix B

<sup>2</sup> according EN 61326: 1997, appendix A

<sup>3</sup> noise pulses up to 1000 VDC, permanent up to 250 VDC



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Measurement Current	Range	max. Deviation	Resolution
(internal shunt 50 $\Omega$ )	$\pm 25$ mA	$\pm 5$ $\mu$ A	3.0 nA
Long term drift	<0.2 $\mu$ A / 24 h; <0.5 $\mu$ A / 8000 h		
Temperature influence	on zero	on sensitivity	
	<0.1 $\mu$ A / 10 K	<0.03 % / 10 K	
Measurement Resistance / RTD	Range	max. Deviation	Resolution
Resistance, 2-wire	100 k $\Omega$	$\pm 100$ $\Omega$	12 m $\Omega$
Resistance, 2- and 4-wire	4 k $\Omega$	$\pm 1$ $\Omega$	0.5 m $\Omega$
Resistance, 2- and 4-wire	400 $\Omega$	$\pm 0.1$ $\Omega$	48 $\mu$ $\Omega$
Pt100, 2- and 4-wire	-200 up to +850 $^{\circ}$ C	$\pm 0.25^{\circ}$ C	0.2 m $^{\circ}$ C
Pt1000, 2- and 4-wire	-200 up to +850 $^{\circ}$ C	$\pm 1^{\circ}$ C	0.2 m $^{\circ}$ C
Temperature influence	on zero (range 400 $\Omega$ )	on sensitivity	
	<0.4 m $\Omega$ / 10 K $\cong$ 0.002 $^{\circ}$ C / 10 K	<0.03 % / 10 K	
Measurement Potentiometer	Relative measurement		
Permitted potentiometer resistance	1 k $\Omega$ to 10 k $\Omega$		
Long term drift	<0.02 % / 24 h, <0.05 % / 8000 h		
Temperature influence	on zero (range 1)	on sensitivity	
	<0.0001 / 10 K	<0.03 % / 10 K	
Measurement Bridge			
Accuracy class	0.05		
Bridge Type	full bridge, 4-wire connection, half and quarter bridge with completion terminal		
Sensor resistance	>100 $\Omega$		
Supply	2.5 V nominal		
Measurement range	$\pm 2.5$ mV/V	$\pm 50$ mV/V	$\pm 500$ mV/V
Temperature influence	on zero (range 2.5 mV/V)	on sensitivity	
	<1 $\mu$ V/V / 10 K	<0.05 % / 10 K	
Long term drift	<1 $\mu$ V/V / 24h; <2.5 $\mu$ V/V / 8000 h		
Measurement Thermocouple	Whole range	-100 $^{\circ}$ C...upper limit	
Type B	better than $\pm 5^{\circ}$ C	better than $\pm 2.5^{\circ}$ C	
Type E, J, K, L, T, U	better than $\pm 1^{\circ}$ C	better than $\pm 0.5^{\circ}$ C	
Type N	better than $\pm 2^{\circ}$ C	better than $\pm 1^{\circ}$ C	
Type R, S	better than $\pm 3^{\circ}$ C	better than $\pm 1.5^{\circ}$ C	
Input resistance	>100 M $\Omega$		
Long term drift	<0,05 $^{\circ}$ C/24 h; 0,15 $^{\circ}$ C/8000 h		
Temperature influence	on zero	on sensitivity	
	<0,025 $^{\circ}$ C / 10 K	<0.005% / 10 K	
Uncertainty cold junction compens.	<0.3 $^{\circ}$ C		



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<b>Analog/Digital-Conversion</b>	
Resolution	24 bit
Sample rate	10 kHz, (measurement thermocouple 10 Hz)
Conversion method	Sigma-Delta (group delay time 600 $\mu$ s)
Anti-aliasing filter	2 kHz, 5 <sup>th</sup> order
Digital filter	IIR, low pass, high pass, band pass, 4 <sup>th</sup> order, 1 Hz up to 1 kHz in steps 1, 2, 5
Averaging	configurable or automated according the selected data rate
<b>Power Supply</b>	
Power supply	10 up to 30 VDC, overvoltage and overload protection
Power consumption	approx. 2.5 W
Influence of the voltage	<0.001 %/V
<b>Environmental</b>	
Operating temperature	-20°C up to +60°C
Storage temperature	-40°C up to +85°C
Relative humidity	5 % up to 95 % at 50°C, non condensing
<b>Dimension</b>	
Front plate (W x H)	(30 x 128) mm
Depth	118 mm

### Warm Up Time

All declarations are valid after a warm up time of 45 minutes.

Valid from January 2011. Specification subject to change without notice  
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