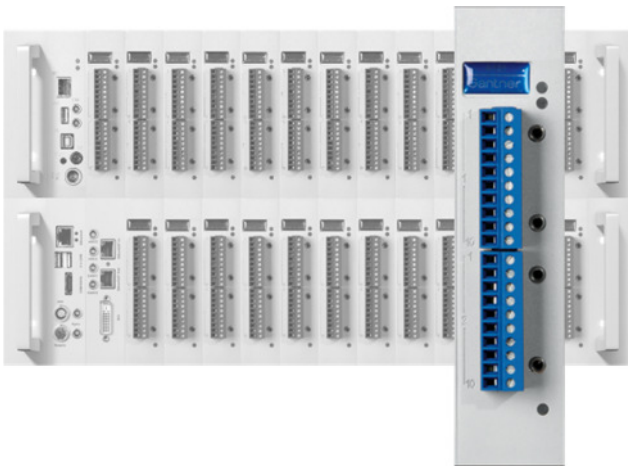




Q.raxx A101

Universal Measurement Plug-in Module



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:

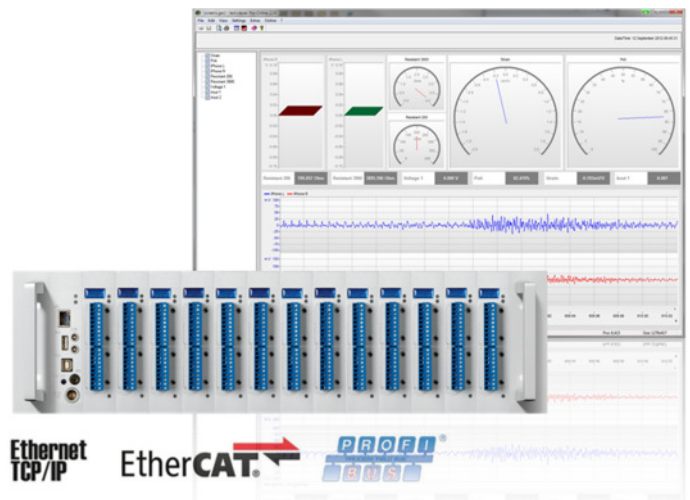
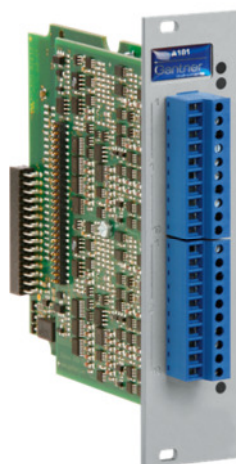
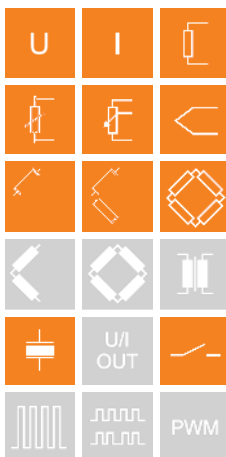
Dynamic signal acquisition up to 100 kHz, inputs and outputs for all types of signals, galvanic isolation of inputs and outputs, multi-channel solutions, high density packaging and intelligent signal conditioning for all kind of test applications.

Most important features of the system:

- **High density and flexibility**
up to 13 plug-in modules in one system in any constellation, flexible plug selection
- **Test Controller Q.station or Q.gate selectable**
Ethernet TCP/IP for configuration and data transfer, EtherCAT, internal memory expandable by USB device, logging features, PAC functionality, IRIG synchronization for details please see separate Test Controller data sheets
- **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 A101:

- **2 universal analog input channels**
voltage, current, resistance, potentiometer, Pt100, Pt1000, thermocouples, full and half bridges, IEPE-sensors
- **Fast high accuracy digitalization**
24 bit ADC, 100 kHz sample rate per channel
- **1 digital in or output per channel**
input: state, tare, memory reset, alarm, threshold
output: state alarm, thresh hold
- **Signal conditioning**
virtual channels, linearization, digital filter, average, scaling, min/max storage, RMS, arithmetic, alarm
- **Galvanic isolation**
channel to channel to power supply and to interface, V_{iso} 500 VDC

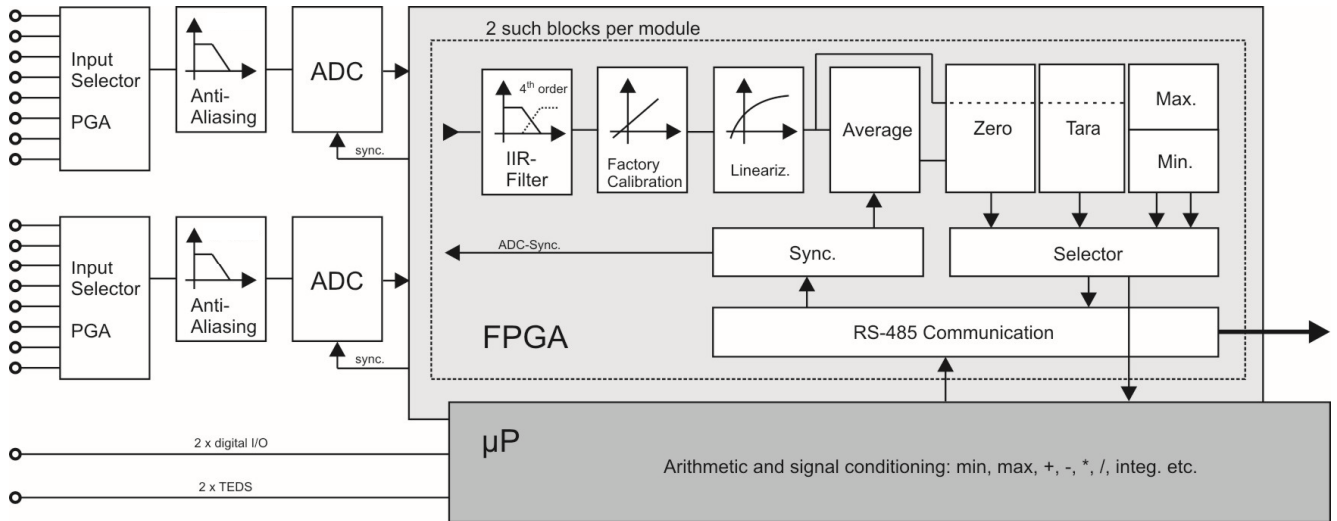




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Block Diagram



Analog Inputs			
Number	2		
Accuracy	0.01 % typical		
	0.02 % in controlled environment ¹		
	0.05 % in industrial area ²		
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 ³		
Sensor identification	TEDS		
Measurement Voltage	Range	max. Deviation	Resolution
	±60 V	±0.2 V	7.2 µV
	±10 V	±2 mV	1.2 µV
	±1 V	±0.2 mV	120 nV
	±100 mV	±20 µV	12 nV
Input resistance	>10 MΩ (range ±10 V = 1 MΩ; range ±60 V = 3 MΩ)		
Long term drift	<10 µV / 24 h; <25 µV / 8000 h		
Temperature influence	on zero	on sensitivity	range ±1 V
	<1 µV / 10 K	<0.05 % / 10 K	
Signal-noise-ratio	> 90 dB at 1 kHz	>120 dB at 1 Hz	

¹ according EN 61326: 1997, appendix B

² according EN 61326: 1997, appendix A

³ noise pulses up to 1000 VDC, permanent up to 250 VDC



Q.raxx A101

Universal Measurement Plug-in Module

Measurement Current (internal shunt 50 Ω)	Range	max. Deviation	Resolution
	±25 mA	±5 μA	3.0 nA
Long term drift	<0.2 μA / 24 h, <0.5 μA / 8000 h		
Temperature influence	on zero	on sensitivity	
	<0.1 μA / 10 K	<0.03 % / 10 K	
Measurement Resistance / RTD	Range	max. Deviation	Resolution
Resistance, 2-wire	100 kΩ	±100 Ω	12 mΩ
Resistance, 2- and 4-wire	4 kΩ	±1 Ω	0.5 mΩ
Resistance, 2- and 4-wire	400 Ω	±0.1 Ω	48 μΩ
Pt100, 2- and 4-wire	-200 up to +850°C	±0.25°C	0.2 m°C
Pt1000, 2- and 4-wire	-200 up to +850°C	±1°C	0.2 m°C
Long term drift	<0.02°C / 24 h; <0.05°C / 8000 h		
Temperature influence	on zero (range 400 Ω)	on sensitivity	
	<0.4 mΩ / 10 K	<0.03 % / 10 K	
Measuring Potentiometer	Relative measurement		
Zulässiger Potentiometer-Widerstand	1 kΩ bis 10 kΩ		
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	
Measuring Bridge	Full and half bridge, 5-/6-wire, quarter bridge with completion terminal 3-wire		
Accuracy class	0.05		
Sensor resistance	>100 Ω		
Supply	2.5 V, nominal		
Measurement range	±2.4 mV/V	±50 mV/V	±500 mV/V
Long term drift	<1 μV/V / 24 h, <2,5 μV/V / 8000 h		
Temperature influence	on zero	on sensitivity	
	<1 μV/V / 10 K	<0.05 % / 10 K	
Measurement Thermo Couple	Whole range	-100°C...upper limit	
Type B	better than ±5°C	better than ±2.5°C	
Type E, J, K, L, T, U	better than ±1°C	better than ±0.5°C	
Type N	better than ±2°C	better than ±1°C	
Type R, S	better than ±3°C	better than ±1.5°C	
Input resistance	>10 MΩ		
Langzeitdrift	<0.05°C / 24 h, 0.15°C / 8000 h		
Temperature influence	on zero	on sensitivity	
	<0.025°C / 10 K	<0.02% / 10 K	
Uncertainty cold junction compens..	<0.3°C		



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Universal Measurement Plug-in Module

Measurement IEPE sensor	Range	max. Deviation	Resolution
	±10 V	±10 mV	1.2 µV
	±1 V	±1 mV	4 µV
Supply	Constant current 4 mA		
Minimum input frequency	0.5 Hz		
Limit frequency	10 kHz		
Temperature influence	on zero	on sensitivity	
	<10 µV / 10 K	0.05 % / 10 K	
Analog/Digital-Conversion			
Resolution	24 bit		
Sample rate	100 kHz (measurement thermocouple 10 Hz)		
Conversion method	Sigma-Delta (group delay time 380 µs)		
Anti-aliasing filter	20 kHz, 5 th order		
Digital filter	IIR, low pass, high pass, band pass, 4 th order, 1 Hz up to 10 kHz in steps 1, 2, 5		
Averaging	configurable or automated according the selected data rate		
Digital In/Outputs			
Number	2 (1 digital I/O per channel)		
Response time	0.2 ms		
Input	state, tare, reset		
Input voltage	max. 30 VDC		
Input current	max. 0.5 mA		
Upper threshold	>10 V (high)		
Lower threshold	<2.0 V (low)		
Output	state, alarm		
Contact	open drain p-channel MOSFET		
Load	30 VDC / 100 mA (ohmic load)		
Power Supply			
Power supply	10 up to 30 VDC, overvoltage and overload protection		
Power consumption	approx. 2 W		
Influence of the voltage	<0.001 %/V		
Environmental			
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		
Dimension			
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 July 2015. Specification subject to change without notice
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