



Q.raxx A116-32 *slimline* RS / EC Multichannel Bridge Measurement System

The Q.raxx *slimline* product is based on the standardized 19" technology, one rack unit (1 U) and is designed for measurements with a high level of flexibility, reliability and accuracy in the field of stationary testing and assembly.

The EC version includes a Test Controller that offers the user a powerful solution with PAC functionality, synchronized data acquisition, sequencing, mathematics, combinations a Ethernet TCP/IP interface as well as a EtherCAT fieldbus. It is possible to connect three *slimline* basic units to the Test Controller of a *slimline* EC unit.

Beside the pre-defined standard versions customized systems regarding numbers of channels, kind of measurement inputs/connectable sensors as well as the required connectors are configurable.

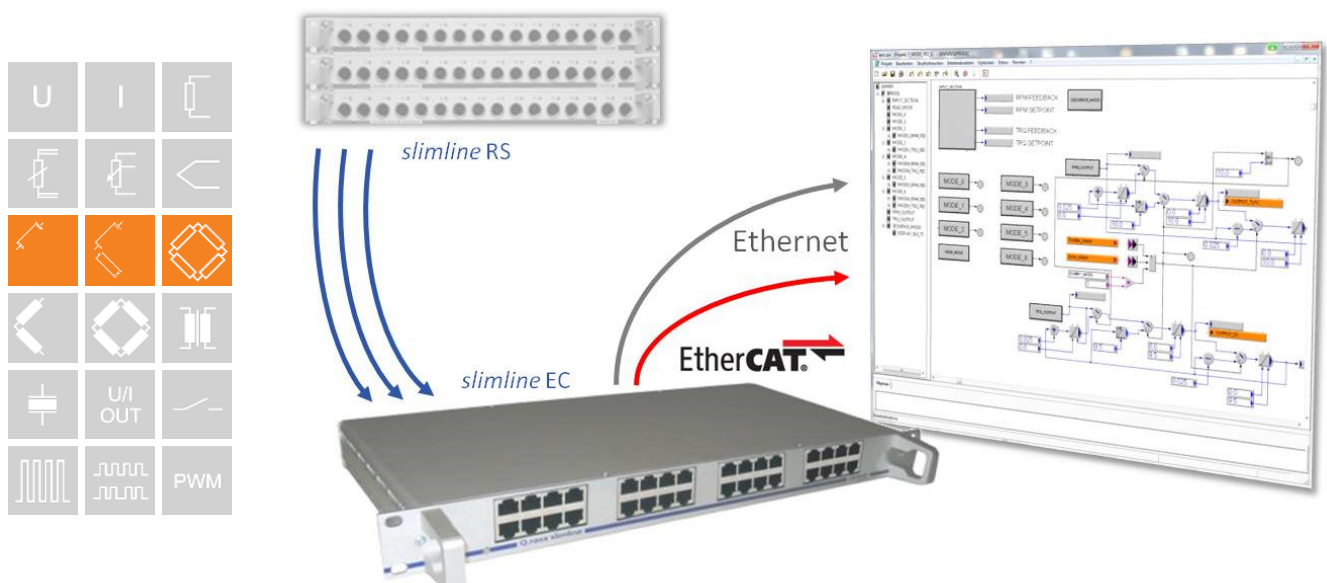
This modularity permits to design an optimized individual solution for any application. Further it is possible to mix different product lines like Q.raxx, Q.bloxx within Q.series.

Most important features:

- **32 analog input channels for bridges**
strain gauge bridges (full, half, quarter)
bridge completion 120 Ω and 350 Ω included
4/6 and 3/5 wire connection for cable compensation
32 real parallel inputs, neither scanned nor multiplexed
- **Flexible inputs**
DC bridge excitation selectable 2 VDC, 4 VDC
Measuring range selectable
- **Fast high accuracy digitalization**
24 bit ADU, 10 kHz sample rate per channel
- **Signal conditioning**
linearization, digital filter, average, scaling,
min/max storage, arithmetic, alarm
- **Shunt resistor per channel**
- **Galvanic isolation**
of analog in/out to power supply and interface, V_{iso} 500 VDC

With embedded Test Controller (version EC):

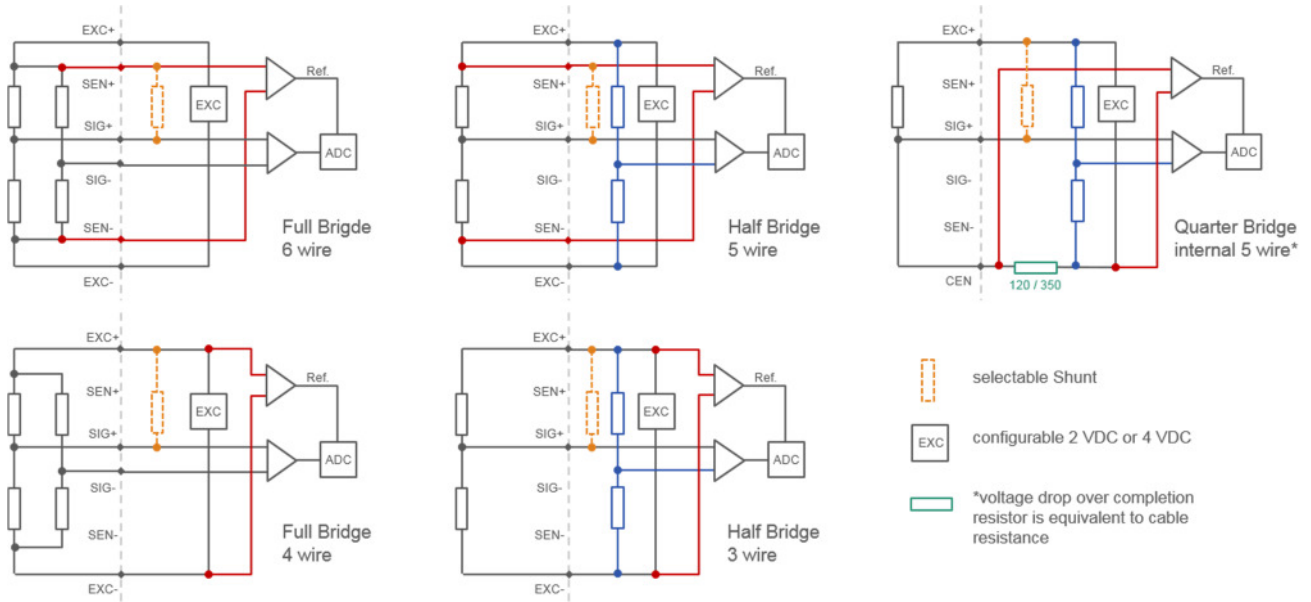
- **Optional fieldbus interface EtherCAT**
EtherCAT according specification ETG,
254 read and 254 write variable with 10 kHz
- **Ethernet interface for configuration and data output**
FTP, TCP/IP, UDP
- **FTP Server and FTP Client functionality**
configurable function
- **High data rate over Ethernet**
16 real variables with 10 kHz (block transfer)
64 real variables with 300 Hz (online)
- **Data buffer memory dyn. 16 MByte (RAM), stat. 128 MByte (flash)**
data buffer at block transfer of measurements
- **Connection of additional racks to the Test Controller**
up to 3 *slimline* racks without Test Controller can be connected to a *slimline* EC system with embedded controller



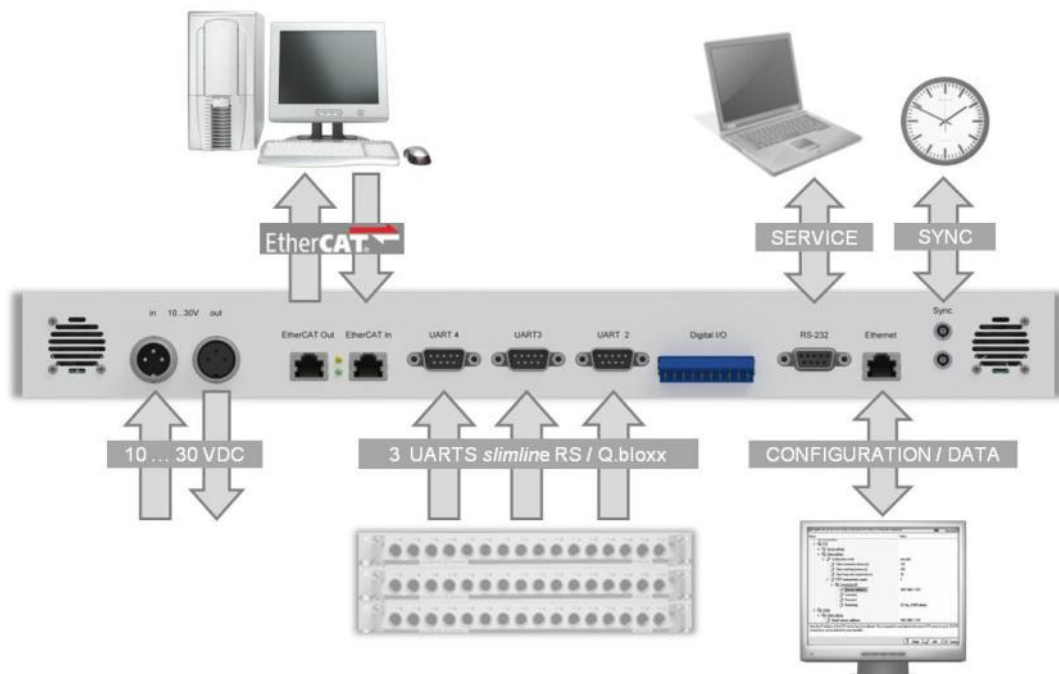


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Sensor Connection Diagram



Connection Diagram Q.raxx *slimline* EC (back panel)





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Analog Inputs	
Number	32
Accuracy	0.02 % typical
	0.05 % in controlled environment ¹
	0.1 % in industrial area ²
Repeatability	0.01 % typical (within 24 h)
Input resistance	>10 MΩ
Isolation voltage	500 VDC channel to power supply to interface ³
Sensor type	resistive full bridge (4 and 6 wire), resistive half bridge (3 and 5 wire), resistive quarter bridge 120 Ω or 350 Ω (3 wire incl. compensation of cable influence)
Quarter bridge completion resistor	120 Ω and 350 Ω, temperature stability 0.05 ppm / K
Permitted sensor cable length	<300 m full and half bridge, <100 m quarter bridge
Sensor excitation	2 VDC, 4 VDC
Permitted sensor resistance	>100 Ω
Shunt resistance	87,5 kΩ
Measuring range full and half bridges	±2.5 mV/V, ±10 mV/V
Measuring range quarter bridge	±1 mV/V and ±10 mV/V (±2000 μm/m and ±20000 μm/m at k=2)
Temperature influence on zero	<0.2 μV/V / 10 K
Temperature influence on sensitivity	<0.05 % / 10 K
Long term drift	<0.2 μV/V / 24 h , <2 μV/V / 8000h
Linearity Error	<0.02 % f.s.
Noise voltage at 10 Hz	<0.3 μV/V

Analog Digital Conversion	
Resolution	24 bit
Sample rate	10 kHz
Conversion method	Sigma-Delta (group delay time 700 μs)
Anti-aliasing Filter	1 kHz 2 nd order
Digital filter	IIR, low pass, high pass, band pass, 4 th order, 1 Hz up to 1 kHz in steps 1, 2, 5
Averaging	configurable or automated according the selected data rate

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



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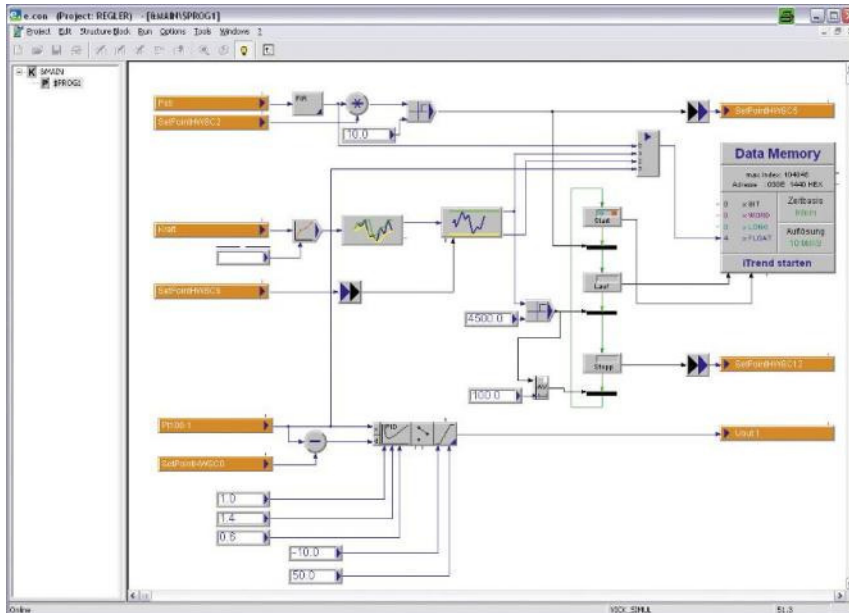
Slave Interfaces RS 485 (<i>slimline</i> EC only) to connect further <i>slimline</i> RS, see Connection Diagram		
Number of interfaces	3	
Standard	RS 485	
Data format	8E1	
Protocol	Local Bus	
Baud rate	9.6 kbps up to 24 Mbps	
Isolation voltage	500 V	
Data Memory (<i>slimline</i> EC)		
RAM	16 MByte, cycle buffer	
Flash	128 MByte	
Synchronization of a Multi Device System (<i>slimline</i> EC)		
Interface	RS485 Standard	
Mode	Master Slave principle, IRIG standard	DCF77, AFNOR etc, GPS over IRIG standard
	GPS NMEA over RS232	SNTP over Ethernet
Power Supply		
Power supply	10 bis 30 VDC, overvoltage and overload protection	
Power consumption <i>slimline</i> RS	approx. 10 W	
Power consumption <i>slimline</i> EC	approx. 15 W	
Influence of the voltage	<0,001 %/V	
Mechanical		
Type	19" Standard, 1 unit	
Dimensions (W x H x D)	(444 x 44 x 260) mm	
Protection system	IP20	
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	
PAC Functionality (<i>slimline</i> EC)		
Cycle time	≥1 ms	
Processing	cyclic or synchronized with data acquisition	



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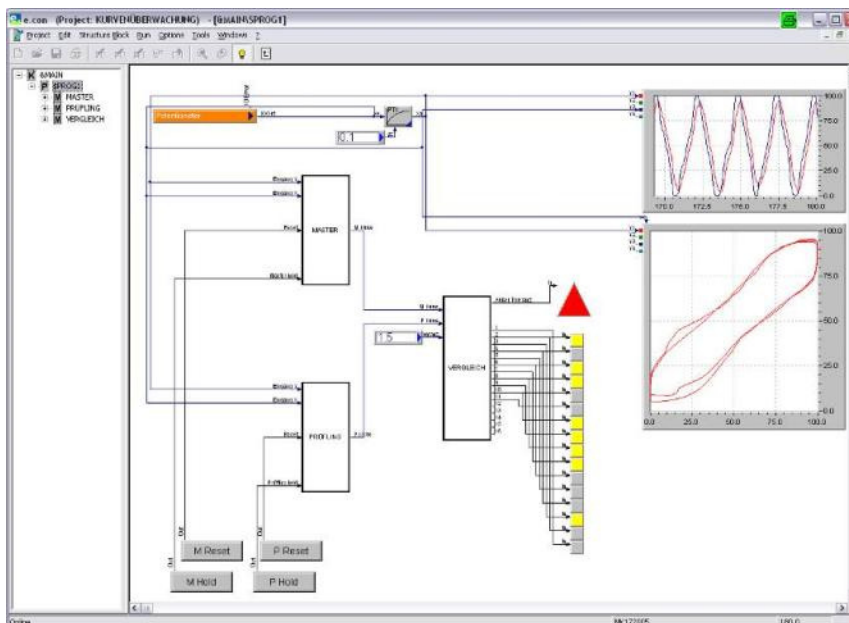
Programming Tool test.con

Using test.con for programming of the PAC-function in a graphical way:



Project Libraries

- Advanced System Functions (V1.0)
- Archive (V 5.0)
- Arithmetic (Time) V1.0
- Arithmetic (Word, Long, Float) (V4.0)
- Comparison (Time) V1.0
- Control elements (V0.0)
- Controller (Float)
- Converter (Bit, Byte, Word, Long, Float, Text) (V4.0)
- Converter (Time) V1.0
- Counter (Word)
- Device Data Access Functions
 - Read access
 - Write access
- Digital Filter (V1.0)
- Edge detection (Bit)
- Extended SFB
- FlipFlops (Bit)
- Function generator (V 3.0)
- Global Variables and References (extended)
- Logic (Bit)
- Memory (V1.0)
- Numeric (Float)
- OperatingSystem-Functions (V1.0)
- Parameter (Time) V1.0
- Parameter blocks (V 1.0)
- Selection and comparison (Byte, Word, Long, Float)
 - Comparator
 - Limit indicator
 - Limitler
 - Maximum
 - Minimum
 - Multiplexer
 - Switch
- Sequence blocks
 - Joining transition
 - Preset
 - Splitting transition
 - Step
 - Transition
- Shift and rotate (Byte, Word, Long)
- Signal generators (V1.0)
- Signal processing (V1.0)
- Standard
- Standard transmission terms (Float)
- String functions
- Timer (Float)
- Timer (Time) V2.0
- Visualization blocks (Time) V2.0
- Visualization Blocks (V6.0)



Warm Up Time

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

Preliminary version July 2015. Specification subject to change without notice
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