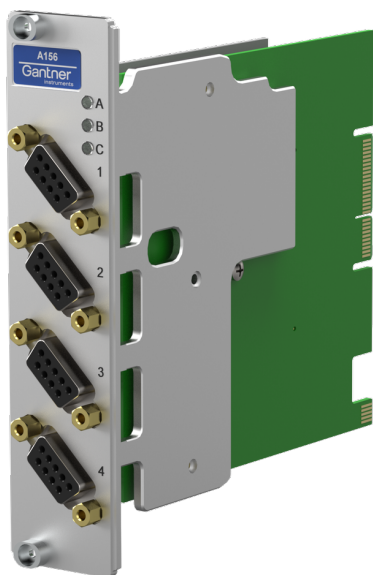


# Q.raxx XL A156 DB9

Measurement Module for Strain Gage and LVDT/RVDT

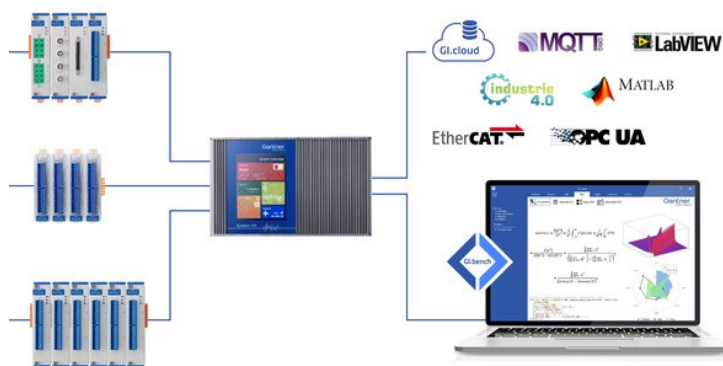
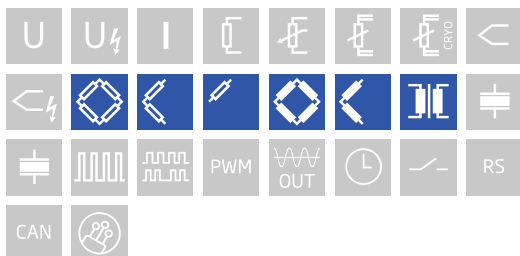
Q.raxx XL is a new addition to the Q.series product family - the ideal 19" rackmount DAQ solution for applications that require high channel density and custom sensor terminations. Q.raxx XL DAQ systems can utilize an integrated, high-performance controller for communication, control, and data logging purposes. With a controller, multiple Q.raxx XL 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
- Gantner's Quality Standard  
integrated filtering, galvanic isolation & signal/sensor conditioning per channel



## Key Features

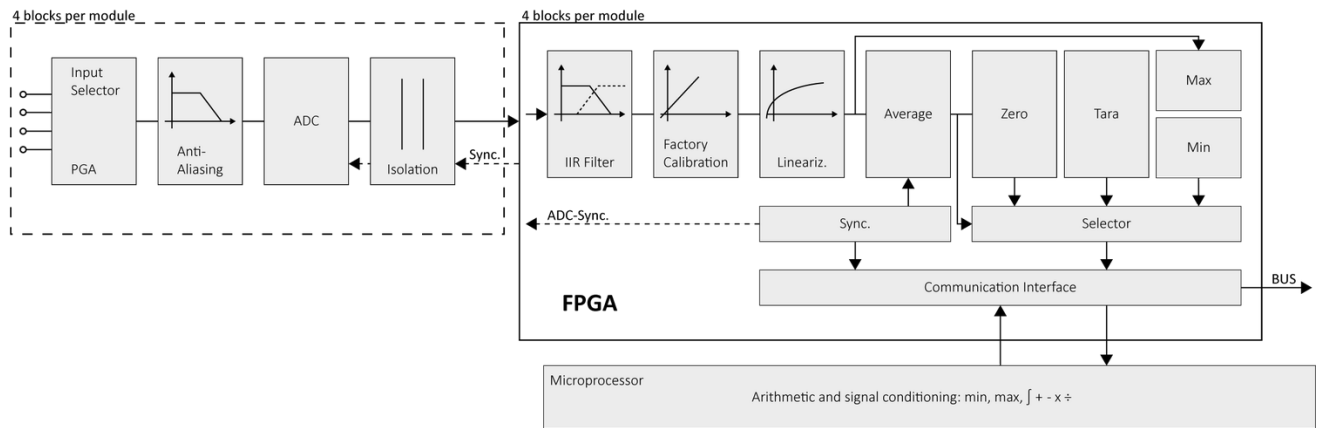
- 4 galvanically isolated analog inputs channels  
strain gage and inductive half and full bridges, LVDT, RVDT  
quarter bridge with completion terminal.  
Completion terminal is currently not available.
- Carrier frequency (CF) principle  
4.8 kHz carrier frequency
- High-accuracy digitization  
24-bit ADC, 20 kHz sample rate per channel
- Signal conditioning  
linearization, filtering, average, scaling, min/max, RMS, arithmetic, alarm
- 3-Way galvanic isolation  
500 VDC channel to channel, channel to power supply, and channel to bus



# Q.raxx XL A156 DB9

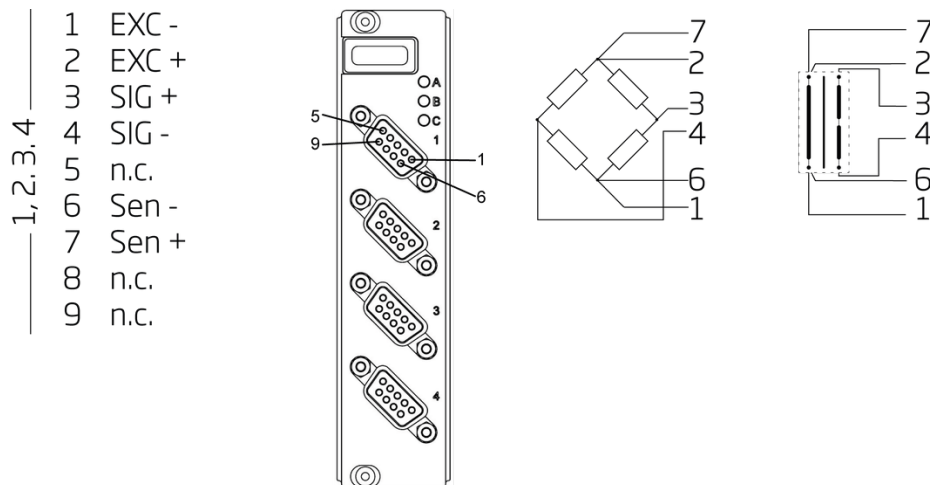
Measurement Module for Strain Gage and LVDT/RVDT

## Block diagram



## Technical Data

### Terminal assignments DSUB 9 male



## Analog Input

Channels	4
Accuracy	0.02 % typical
	0.05 % in controlled environment <sup>1</sup>
	0.1 % in industrial area <sup>2</sup>
Linearity error	0.02 % typical full-scale
Repeatability	0.01 % typical (within 24 hrs)
Input impedance	> 10 MΩ
Isolation voltage	500 VDC channel to channel, to power supply, channel to bus <sup>3</sup>

<sup>1</sup> according to EN 61326 2006: appendix B

<sup>2</sup> according to EN 61326 2006: appendix A

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

### Strain Gage Measurement

Bridge configuration(s)	resistive full-bridge (4/6-wire) resistive half-bridge (3/5-wire)	
Allowable sensor cable length	< 30 m	
Shunt resistor	100 k $\Omega$ internal resistor	
Bridge excitation	2.5 or 5 V <sub>eff</sub> , 4.8 kHz AC excitation	
Bridge excitation stability	< 0.01% / 24 hrs	
Bridge excitation drift	< 0.02% / 10 K	
	<b>5 V<sub>eff</sub></b>	<b>2.5 V<sub>eff</sub></b>
Allowable sensor resistance	> 300 $\Omega$	> 100 $\Omega$
Input range	$\pm 1.25$ mV/V	$\pm 2.5$ mV/V
	$\pm 2.5$ mV/V	$\pm 5$ mV/V
	$\pm 25$ mV/V	$\pm 50$ mV/V
	$\pm 50$ mV/V	$\pm 100$ mV/V
	$\pm 100$ mV/V	$\pm 200$ mV/V
	$\pm 200$ mV/V	$\pm 400$ mV/V
	$\pm 500$ mV/V	$\pm 1000$ mV/V
Long-term stability	< 0.1 $\mu$ V/V / 24 hrs	< 1 $\mu$ V/V / 8000 hrs
Temperature drift (range 2.5 mV/V)	< 0.2 $\mu$ V/V / 10 K Offset drift	< 0.05 % / 10 K Gain drift
Signal-to-noise ratio	< 0.3 $\mu$ V/V at 10 Hz	< 1 $\mu$ V/V at 100 Hz

### LVDT/RVDT Measurement

Sensor connection	4- / 6-wire	
Sensor excitation (selectable)	<b>5 V<sub>eff</sub></b>	<b>2.5 V<sub>eff</sub></b>
Allowable sensor resistance	> 300 $\Omega$	> 100 $\Omega$
Input range	$\pm 1.25$ mV/V	$\pm 2.5$ mV/V
	$\pm 2.5$ mV/V	$\pm 5$ mV/V
	$\pm 25$ mV/V	$\pm 50$ mV/V
	$\pm 50$ mV/V	$\pm 100$ mV/V
	$\pm 100$ mV/V	$\pm 200$ mV/V
	$\pm 200$ mV/V	$\pm 400$ mV/V
	$\pm 250$ mV/V	$\pm 500$ mV/V
	$\pm 500$ mV/V	$\pm 1000$ mV/V
Allowable sensor cable length	< 100 m <sup>1</sup>	
Long-term stability	< 0.1 $\mu$ V/V / 24 hrs	< 1 $\mu$ V/V / 8000 hrs
Temperature drift (range 2.5 mV/V)	< 0.2 $\mu$ V/V / 10 K Offset drift	< 0.05 % / 10 K Gain drift
Signal-to-noise ratio	< 0.3 $\mu$ V/V at 10 Hz	< 1 $\mu$ V/V at 100 Hz

<sup>1</sup> low capacity sensor cable is strongly recommended

# Q.raxx XL A156 DB9

Measurement Module for Strain Gage and LVDT/RVDT

## Analog-to-Digital Conversion

Resolution	24-bit
Sample rate	20 kHz per channel
Modulation method	sigma-delta
Anti-aliasing filter	1 kHz, 3th order (4.8 kHz CF excitation)
Digital filters	Infinite impulse response (IIR), low-pass, high-pass, band-pass, band-stop, Butterworth or Bessel (2nd, 4th, 6th or 8th order), frequency range 0.1 Hz to 1 kHz in steps of 0.1 (adjustable via software)
Averaging	configurable or automatic according to the user-defined data rate

## Communication Interface Localbus

Protocols	proprietary Localbus (115200 bps to 48 Mbps, latency <100 ns) ASCII (19200 bps to 115200 bps) Modbus RTU
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	2.5 W (approx.)
Input voltage influence	< 0.001 % / V

## Environmental Specifications

Electromagnetic compatibility (EMC)	according to IEC 61000-4 and EN 55011
Operating temperature	-20°C to +60°C
Storage temperature	-40°C to +85°C
Relative humidity	5 - 95 % at 50°C (non-condensing)

## Remarks

Validity of all listed specifications are subject to a warm-up period of at least 45 minutes

Specifications subject to change without notice

## Mechanical information

Material	Aluminum
Measurements (W x H x D)	30x 128 x 120mm
Weight	approx. 200 g

## Ordering Information

Article number	668129
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# Q.raxx XL A156 DB9

Measurement Module for Strain Gage and LVDT/RVDT

## Gantner Instruments

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