

vibro-meter®

## IQS910 signal conditioner



### KEY FEATURES AND BENEFITS

- From the vibro-meter® product line
- For use with TQ9xx (and TQ4xx) proximity sensors / measurement chains
- Industry-standard 4 to 20 mA loop-powered signal conditioner
- Available in position measurement and vibration measurement versions
- “Peak-meter” vibration processing (when configured for vibration measurement)
- Low power consumption
- 1, 5 and 10 m measurement chains
- Temperature-compensated design
- Output signal: 4 to 20 mA current loop
- Signal transmission over distances up to 1 km
- Linear measurement range: 2 mm
- Frequency response: DC to 15 kHz (–3 dB)
- Temperature range: –40 to 85°C
- Available in standard versions and Ex versions certified for use in hazardous areas

### KEY FEATURES AND BENEFITS (cont'd)

- Optional diagnostic circuitry detects sensor, cabling and/or signal conditioner problems
- Suitable for use in functional safety contexts: SIL 2 in accordance with IEC 61508 and Cat 1 PL c in accordance with ISO 13849
- Removable screw-terminal connectors and DIN-rail mounting

### APPLICATIONS

- Acts as a simple position or vibration “transmitter” for measurement trending
- Position (gap) or shaft relative vibration measurement for machinery protection and/or basic condition monitoring
- Ideal for use with machinery monitoring systems such as a VM600<sup>Mk2</sup>/VM600, VibroSmart® or DCS/PLC
- Safety-related applications



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## DESCRIPTION

### Introduction

The IQS910 is an industry-standard 4 to 20 mA loop-powered signal conditioner (transmitter) designed for use with TQ9xx (and TQ4xx) proximity measurement chains/systems, from Parker Meggitt's vibro-meter® product line.

TQxxx and IQS910 based proximity measurement chains/systems allow contactless measurement of the relative displacement of moving machine elements, and provide a current-loop output signal proportional to the distance between the sensor tip and the target. Accordingly, these measurement chains are ideally suited for measuring the axial position or relative vibration of rotating machine shafts, such as those found in balance of plant (BOP) equipment such as compressors, gearboxes, motors, pumps and fans, as well as larger machinery.

A TQxxx and IQS910 based proximity measurement chain typically consists of a TQ9xx proximity sensor, an optional EA90x extension cable and a IQS910 signal conditioner, configured for a particular industrial application. The EA90x extension cable is used to effectively lengthen the front-end, as required. Together, these form a calibrated proximity measurement chain in which each component is interchangeable.

The IQS910 signal conditioner is a versatile and configurable device that performs all required signal processing and generates a 4 to 20 mA current-loop signal suitable for input to a machinery monitoring system such as a VM600<sup>Mk2</sup>/VM600, VibroSmart® or DCS/PLC. In addition, the IQS910 supports optional diagnostic circuitry (that is, built-in self-test (BIST)) that automatically detects and remotely indicates problems with a measurement chain.

### IQS910 signal conditioner

The IQS910 signal conditioner contains a high-frequency modulator/demodulator that supplies a driving signal to a TQ9xx (or TQ4xx) sensor. This generates an electromagnetic field in the tip of the sensor, which generates eddy-currents in the metallic target. When the target moves, the eddy-currents change, which causes a change in the electrical characteristics of the sensor that the signal conditioner converts into a signal that is proportional to the distance to the target.

Internally, the IQS910 signal conditioner processes an analogue signal from the sensor / measurement chain consisting of a dynamic component (AC) that corresponds to the measured vibration (displacement) and a quasi-static component (DC) that corresponds to the measured gap.

The IQS910 signal conditioner's output is a 4 to 20 mA current-loop signal that corresponds either to the measured position (DC gap) or vibration (AC displacement), depending on its configuration (position measurement or vibration measurement). Further, a IQS910 configured for vibration measurement implements special "peak-meter" vibration processing in order to provide a signal that corresponds to the measured AC vibration (a true peak-to-peak vibration signal measurement).

Note: The configuration of a IQS910 signal conditioner, including its output (position or vibration), is defined by its ordering option codes and is fixed in the factory during manufacture.

For a IQS910 signal conditioner with optional diagnostics, the current-loop signal also functions as a diagnostic indicator. That is, the IQS910's diagnostic circuitry continuously checks the integrity of the measurement chain and will drive the current-loop signal outside of its normal operating range to indicate a problem with the sensor, the cabling and/or the signal conditioner itself.

For test purposes, the IQS910 provides a "raw" voltage output signal and supports a test voltage input signal that allow the measurement chain/system operation to be tested in situ, thereby simplifying commissioning and troubleshooting.

### Application information

A TQxxx and IQS910 based proximity measurement chain acts as a simple position or vibration "transmitter" providing a slowly-varying output signal that easily interfaces with any machinery monitoring or process control system that supports industry-standard 4 to 20 mA current loops.

Accordingly, the IQS910 signal conditioner allows practical and cost-effective trending of overall measurement levels, thereby enabling the protection and/or basic condition monitoring of even more machinery and systems.

## DESCRIPTION (continued)

Different versions of the IQS910 signal conditioner, are available for position measurement or vibration measurement, as defined by the ordering option code Bxxx (see **Mechanical drawings and ordering information on page 13**).

Note: For vibration measurement versions of the IQS910 signal conditioner, the output is a signal intended for the trending of overall vibration levels are suitable for machinery protection, alarming, etc. However, if an application requires advanced condition monitoring such as spectral analysis, then a dynamic output signal such as that provided by the IQS900 signal conditioner is necessary.

In addition, a IQS910 signal conditioner with diagnostics automatically and remotely indicates the health/status of a TQxxx and IQS910 based measurement chain so you always know when measurements can be trusted. This helps to ensure that machinery is operated safely and reliably, extending its life and reducing costs.

Equally important, measurement chains using a IQS910 with diagnostics are SIL 2 “by design” so they bring enhanced reliability and significant risk reduction, making them suitable for use in safety-related applications (functional safety contexts).

For specific applications, contact your local Parker Meggitt representative.

## SPECIFICATIONS

### General

Compatible sensors	: Proximity measurement chains using TQ9xx proximity sensors and EA90x extension cables (optional). Older proximity measurement systems using TQ4xx proximity sensors and EA40x extension cables (optional). Note: The IQS910 signal conditioner is compatible with TQxx1 and TQxx2 proximity sensors.
Signal processing	: A IQS910 configured for position measurement provides a signal that corresponds to the measured gap. This is typically used for monitoring axial measurements such as static position/thrust. A IQS910 configured for vibration measurement implements special “peak-meter” vibration processing in order to provide a signal that corresponds to the measured AC vibration. This is typically used for monitoring radial measurements such as dynamic vibration. See also <b>Peak-meter vibration processing on page 4</b> .
Signal transmission	: 4 to 20 mA current loop
Output	: Position measurement or vibration measurement – depending on the ordering option code. See also <b>Output on page 10</b> .

### Operation

Linear measurement range (typical) – position measurement

Nominal sensitivity	: 8 $\mu\text{A}/\mu\text{m}$ (203.2 $\mu\text{A}/\text{mil}$ )
• Ordering option code B101	: 0.2 to 2.2 mm, corresponding to a 4 to 20 mA output
Note: Ordering option code B101 is for use with TQ9x1 (and TQ4x1) proximity sensors such as a TQ901.	
• Ordering option code B201	: 0.15 to 2.15 mm, corresponding to a 4 to 20 mA output
Note: Ordering option code B201 is for use with TQ9x2 (and TQ4x2) proximity sensors such as a TQ902 or TQ912.	

## SPECIFICATIONS *(continued)*

Linear measurement range (typical) – vibration measurement (peak-to-peak)

- Ordering option code B121 : 0 to 100  $\mu\text{m}$ , corresponding to a 4 to 20 mA output
- Ordering option code B122 : 0 to 125  $\mu\text{m}$ , corresponding to a 4 to 20 mA output
- Ordering option code B123 : 0 to 150  $\mu\text{m}$ , corresponding to a 4 to 20 mA output
- Ordering option code B124 : 0 to 200  $\mu\text{m}$ , corresponding to a 4 to 20 mA output
- Ordering option code B125 : 0 to 250  $\mu\text{m}$ , corresponding to a 4 to 20 mA output
- Ordering option code B126 : 0 to 500  $\mu\text{m}$ , corresponding to a 4 to 20 mA output

Note: Ordering option codes B121 to B126 are for use with TQ9x1 (and TQ4x1) proximity sensors such as a TQ901.

- Ordering option code B221 : 0 to 100  $\mu\text{m}$ , corresponding to a 4 to 20 mA output
- Ordering option code B222 : 0 to 125  $\mu\text{m}$ , corresponding to a 4 to 20 mA output
- Ordering option code B223 : 0 to 150  $\mu\text{m}$ , corresponding to a 4 to 20 mA output
- Ordering option code B224 : 0 to 200  $\mu\text{m}$ , corresponding to a 4 to 20 mA output
- Ordering option code B225 : 0 to 250  $\mu\text{m}$ , corresponding to a 4 to 20 mA output
- Ordering option code B226 : 0 to 500  $\mu\text{m}$ , corresponding to a 4 to 20 mA output

Note: Ordering option codes B221 to B226 are for use with TQ9x2 (and TQ4x2) proximity sensors such as a TQ902 or TQ912.

Interchangeability of elements : All components in the measurement chain/system are interchangeable (that is, TQxxx proximity sensors, EAxxx extension cables and IQS910 signal conditioners)

## Transfer function

Sensitivity drift

- -40 to 0°C (-40 to 32°F) :  $< \pm 1000$  ppm/°C
- 0 to 85°C (32 to 185°F) :  $< \pm 500$  ppm/°C

Zero thermal drift :  $< \pm 500$  ppm/°C of FSD at 23°C  $\pm$  5°C (73°F  $\pm$  9°F)

Frequency response : DC to 15 kHz (-3 dB)

## Peak-meter vibration processing

Frequency response (bandwidth) : 5 to 15 kHz (-3 dB)

Rise time (0 to 90%) : 70 ms

Fall time (100 to 10%) : 4.8 s

Sensitivity error :  $\pm 5\%$  max.

### Notes

The special “peak-meter” vibration processing operates internally on the dynamic component (AC) corresponding to the measured vibration (displacement) in order to provide a signal that is a true peak-to-peak vibration signal measurement.

The peak-meter vibration processing also supports optional diagnostic circuitry (BIST) that automatically detects and remotely indicates problems. For example, the diagnostic circuitry drives the current-loop signal below 4 mA to indicate if the gap is outside of the measurement range.

Peak-meter vibration processing is factory enabled for IQS910 signal conditioner’s configured for vibration measurement (ordering option codes B12x and B22x).

## SPECIFICATIONS *(continued)*

### Environmental

#### Potentially explosive atmospheres

Available in Ex approved versions for use in hazardous areas (ordering option code A5)

**⚠ For TQ9x2, EA902 and IQS910 proximity measurement chains intended for use in hazardous areas (potentially explosive atmospheres), each component of the sensor / measurement chain must be appropriately Ex marked.**  
**More specifically, for any order of a IQS9xx signal conditioner for use in an Explosive (Ex) environment with ordering option code A5 (Ex ec or Ex ia), the associated TQ9xx proximity sensor and any EA90x extension cable must also have the ordering option code A5.**

Protection mode	Europe
ec (Gas)	<p>⊕ Ex II 3 G (Zone 2)            Ex ec IIC T6...T5 Gc            LCIE 21 ATEX 1004 X            T6: For <math>-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +70^{\circ}\text{C}</math>            T5: For <math>-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +85^{\circ}\text{C}</math></p>
ia (Gas)	<p>⊕ Ex II 1 G (Zones 0, 1, 2)            Ex ia IIC T6 or T5 Ga            LCIE 21 ATEX 3002 X            T6: For <math>-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +70^{\circ}\text{C}</math>            T5: For <math>-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +85^{\circ}\text{C}</math></p>
ia (Dust)	<p>⊕ Ex II 1 D (Zones 20, 21, 22)            Ex ia IIIC T<sub>200</sub> 80°C... T<sub>200</sub> 115°C Da            LCIE 21 ATEX 3002 X            T<sub>200</sub> 80°C: For <math>-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +50^{\circ}\text{C}</math>            T<sub>200</sub> 95°C: For <math>-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +65^{\circ}\text{C}</math>            T<sub>200</sub> 115°C: For <math>-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +85^{\circ}\text{C}</math></p>

**SPECIFICATIONS (continued)**

Protection mode	International
ec (Gas)	Ex ec IIC T6... T5 Gc IECEx LCIE 21.0005X T6: For $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +70^{\circ}\text{C}$ T5: For $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +85^{\circ}\text{C}$
ia (Gas)	Ex ia IIC T6 or T5 Ga IECEx LCIE 21.0006X T6: For $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +70^{\circ}\text{C}$ T5: For $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +85^{\circ}\text{C}$
ia (Dust)	Ex ia IIIC T <sub>200</sub> 80°C... T <sub>200</sub> 115°C Da IECEx LCIE 21.0006X T <sub>200</sub> 80°C: For $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +50^{\circ}\text{C}$ T <sub>200</sub> 95°C: For $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +65^{\circ}\text{C}$ T <sub>200</sub> 115°C: For $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +85^{\circ}\text{C}$

Protection mode	North America
ec (Gas)	<i>Pending</i>
ia (Gas)	<i>Pending</i>
ia (Dust)	<i>Pending</i>

**SPECIFICATIONS (continued)**




Protection mode	South Korea
ec (Gas)	Pending
ia (Gas)	Pending
ia (Dust)	Pending

Protection mode	United Kingdom *
ec (Gas)	<p>⊕ Ex II 3 G (Zone 2)            Ex ec IIC T6... T5 Gc            CML 21 UKEX 4549 X            T6: For <math>-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +70^{\circ}\text{C}</math>            T5: For <math>-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +85^{\circ}\text{C}</math></p>
ia (Gas)	<p>⊕ Ex II 1 G (Zones 0, 1, 2)            Ex ia IIC T6 or T5 Ga            CML 21 UKEX 2548 X            T6: For <math>-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +70^{\circ}\text{C}</math>            T5: For <math>-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +85^{\circ}\text{C}</math></p>
ia (Dust)	<p>⊕ Ex II 1 D (Zones 20, 21, 22)            Ex ia IIIC T<sub>200</sub> 80°C... T<sub>200</sub> 115°C Da            CML 21 UKEX 2548 X            T<sub>200</sub> 80°C: For <math>-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +50^{\circ}\text{C}</math>            T<sub>200</sub> 95°C: For <math>-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +65^{\circ}\text{C}</math>            T<sub>200</sub> 115°C: For <math>-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +85^{\circ}\text{C}</math></p>

\* UKCA Marking is not engraved/marked on the products.

**SPECIFICATIONS (continued)**

Protection mode	Russian Federation
ec (Gas)	Pending
ia (Gas)	Pending
ia (Dust)	Pending

-  For specific parameters of the mode of protection concerned and special conditions for safe use, refer to the Ex certificates that are available from Parker Meggitt.
-  For a IQS9xx signal conditioner with protection mode “Ex ec” located in an Ex Zone 2, the user must ensure that the IQS9xx is installed in an industrial housing or enclosure that ensures a protection rating of at least IP54 (or equivalent).
-  For the most recent information on the Ex certifications that are applicable to this product, refer to the *Ex product register (PL-1511)* document that is available from Parker Meggitt.

**Note: Some certifications and approvals are pending!**

**Approvals**

- Conformity : European Union (EU) declaration of conformity (CE marking).  
EAC marking, Eurasian Customs Union (EACU) certificate/declaration of conformity.
- Electromagnetic compatibility (EMC) : EMC compliant (2014/30/EU):  
EN 61000-6-2:2005.  
EN 61000-6-4:2007 + A1:2011.  
EN 61326-1:2013.  
EN 61326-3-1:2017 (SIL) and EN 61326-3-2:2008 (SIL).
- Electrical safety : EN 61010-1:2010 + A1:2019
- Environmental management : RoHS compliant (2011/65/EU)
- Hazardous areas : Ex approved versions  
(see **Potentially explosive atmospheres on page 5**)
- Functional safety : SIL 2 in accordance with IEC 61508-1:2010 and IEC 61508-2:2010.  
Cat 1 PL c in accordance with ISO 13849-1:2015.

**Note: Some certifications and approvals are pending!**



## SPECIFICATIONS *(continued)*

### Signal conditioner / system (chain) calibration

Calibration temperature	: +23°C ±5°C
Target material	: VCL 140 steel (1.7225)

Note: For applications using a non-standard or special target material, performance curves can be generated and supplied. Contact Parker Meggitt for further information.

### Total system (chain) length

The total system length (TSL) is the sum of the length of the TQxxx sensor's integral cable and the length of the EAxxx extension cable. For IQS910 signal conditioners, the supported TSLs are obtained from the following different combinations of cables.

Total system (chain) lengths

- 1 m : 1.0 m integral cable with no extension cable.  
Note: The IQS910 signal conditioner only supports a total system (chain) length of 1 m when used with a TQxx2 proximity sensor such as a TQ902 or TQ912.
- 5 m : 0.5 m integral cable + 4.5 m extension cable.  
1.0 m integral cable + 4.0 m extension cable.  
1.5 m integral cable + 3.5 m extension cable.  
2.0 m integral cable + 3.0 m extension cable.  
5.0 m integral cable with no extension cable.
- 10 m : 0.5 m integral cable + 9.5 m extension cable.  
1.0 m integral cable + 9.0 m extension cable.  
1.5 m integral cable + 8.5 m extension cable.  
2.0 m integral cable + 8.0 m extension cable.  
5.0 m integral cable + 5.0 m extension cable.  
10.0 m integral cable with no extension cable.

Note: The combination of cables selected for a particular total system (chain) length depends on the application. For example, to obtain the optimum location for the separation between the integral and extension cables or to eliminate the requirement for an extension cable.

### Total system (chain) length trimming

Due to the characteristics of the coaxial cable, an "electrical trimming" of the nominal length of extension cables is necessary to optimize the system performance and the sensor interchangeability.

TSL for a 1 m measurement chain	: 0.9 m min.
TSL for a 5 m measurement chain	: 4.4 m min.
TSL for a 10 m measurement chain	: 8.8 m min.

## SPECIFICATIONS *(continued)*

### In-situ test support

Raw output	: The raw output (RAW/COM) provides a “raw” voltage output signal that corresponds to the internal signals of the IQS910 signal conditioner. This allows the measurement chain/system operation from sensor to signal conditioner to be easily verified in situ. See <b>Raw output (RAW/COM) on page 11.</b>
Test input	: The test input (TEST/COM) allows an AC voltage signal to be injected at the input to the IQS910 signal conditioner in order to test the IQS910 itself and/or cabling to the monitoring system. This allows the measurement chain/system operation from signal conditioner to monitoring system to be easily verified in situ. See <b>Test input (TEST/COM) on page 11.</b>

Note: See **Connectors on page 12** and refer to the *Proximity measurement chains using TQ9xx proximity sensors installation manual* for further information

### Output

#### Current-loop

Current at min. / max. gap	: 4 to 20 mA
Measurement range	: 16 mA (corresponding to 2 mm)
Output sensitivity	: See <b>Operation on page 3</b> and <b>Mechanical drawings and ordering information on page 13</b>
Nominal current-loop output	
• Without diagnostics	: 4 to 20 mA
• With diagnostics	: 4 to 20 mA indicates normal operation. Other current values (<4 or >20 mA) indicate a problem with the measurement chain (sensor, cabling or signal conditioner).

#### Position measurement (ordering option codes B101 and B201)

Measurement output	: Position (gap). The current-loop signal corresponds to the average gap (DC) measured between the sensor tip and the target.
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#### Vibration measurement (ordering option codes B12x and B22x)

Measurement output	: Vibration. The current-loop signal corresponds to the vibration (AC) measured between the sensor tip and the target. Note: The vibration measurement incorporates special “peak-meter” vibration processing that provides a signal corresponding to the measured AC vibration. See also <b>Peak-meter vibration processing on page 4.</b> Note: Vibration measurement versions of the IQS910 signal conditioner provide peak-to-peak measurements and require that the TQ9xx (or TQ4xx) sensor is installed in the middle of the required measurement range.
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## SPECIFICATIONS *(continued)*

### Raw output (RAW/COM)

Output voltage range	: -0.8 to -8.8 V (nominal). Note: -0.8 to -8.8 V corresponds to the main current-loop output range of 4 to 20 mA respectively.
Output impedance	: < 20 k $\Omega$ up to 15 kHz. < 10 k $\Omega$ for DC measurement. Note: Recommended test equipment input impedance: > 1 M $\Omega$ .
Protection	: Short-circuit, overvoltage ( $\pm 33 V_{DC}$ typical)

### Test input (TEST/COM)

Transfer function	
• Test voltage output (TEST input to RAW/COM output)	: $V_{RAW} \text{ output (V)} = (V_{TEST} \text{ (V)} \times 4) + \text{gap (DC)}$
• Main current-loop output (TEST input to -24V/COM output)	: A test input signal ( $V_{TEST}$ ) of 2 $V_{PEAK-TO-PEAK}$ results in the full scale output of 20 mA. Note: This corresponds to 2 mm (nominal) for position measurement or 2 mm peak-to-peak for vibration measurement.
Input impedance	: 100 k $\Omega$ . Note: Recommended test equipment output impedance: > 1 k $\Omega$ .
Protection	: Overvoltage ( $\pm 33 V_{DC}$ typical)

Note: A test input signal (AC voltage) injected at the input to the IQS910 signal conditioner is processed in addition to any signal from the TQ9xx (or TQ4xx) sensor, which should remain connected to the signal conditioner.

### Power supply (to IQS910)

Input voltage (current loop)	: -24 $V_{DC}$ (nominal). -18 to -30 $V_{DC}$ (range). Note: 4 to 20 mA current loop that uses the -24V and COM terminals.
Current consumption (with nominal 24 $V_{DC}$ supply)	: -25 mA max. -4 mA standby.
Overvoltage protection (diode)	: $\pm 33 V_{DC}$ typical

Note: The IQS910 should be powered (energized) using a limited-power, low-voltage power supply such as a sensor power supply output provided a VM600<sup>Mk2</sup>/VM600, VibroSmart<sup>®</sup> or DCS/PLC machinery monitoring and/or protection system, or other suitable power supply.

In safety-related applications, a IQS910 must be powered using a limited-power, low-voltage power supply with a safe limitation of -30  $V_{DC}$  (nominal), even in the event of a single fault with the power supply.

## SPECIFICATIONS *(continued)*

### Environmental

Temperature	: -40 to 85°C (-40 to 185°F)
Humidity	: 0 to 95%, non-condensing
Protection rating (according to IEC 60529)	: IP20. Note: The IQS910 is suitable for indoor use only unless it is installed in an industrial housing or enclosure that ensures a higher level of environmental protection.
Flammability	: UL94 V-0
Vibration (according to IEC 60068-2-6)	: 5 g peak between 10 and 500 Hz
Shock acceleration (according to IEC 60068-2-27)	: 15 g peak (half sine-wave, 11 ms duration)

### Connectors

Self-locking miniature coaxial connector (bidirectional)	: 1 contact for sensor-side signal: sensor (connects to TQxxx sensor or EAxix extension cable)
Screw-terminal connector (input)	: 4 contacts for test signals: raw output (RAW/COM) and test input (TEST/COM)
Screw-terminal connector (output)	: 2 contacts for monitor-side signals: measurement output and power supply input (-24V/COM). Note: The connection between the IQS910 signal conditioner and an external monitoring system is a 4 to 20 mA current loop that uses the -24V and COM terminals.
Screw-terminal connectors	
• Clamping range (min. to max.)	: 0.2 to 1.5 mm <sup>2</sup> (28 to 16 AWG)
• Tightening torque (min. to max.)	: 0.2 to 0.25 N·m (0.15 to 0.18 lb-ft) for conductor screws. 0.2 to 0.3 N·m (0.15 to 0.22 lb-ft) for mounting-flange screws.

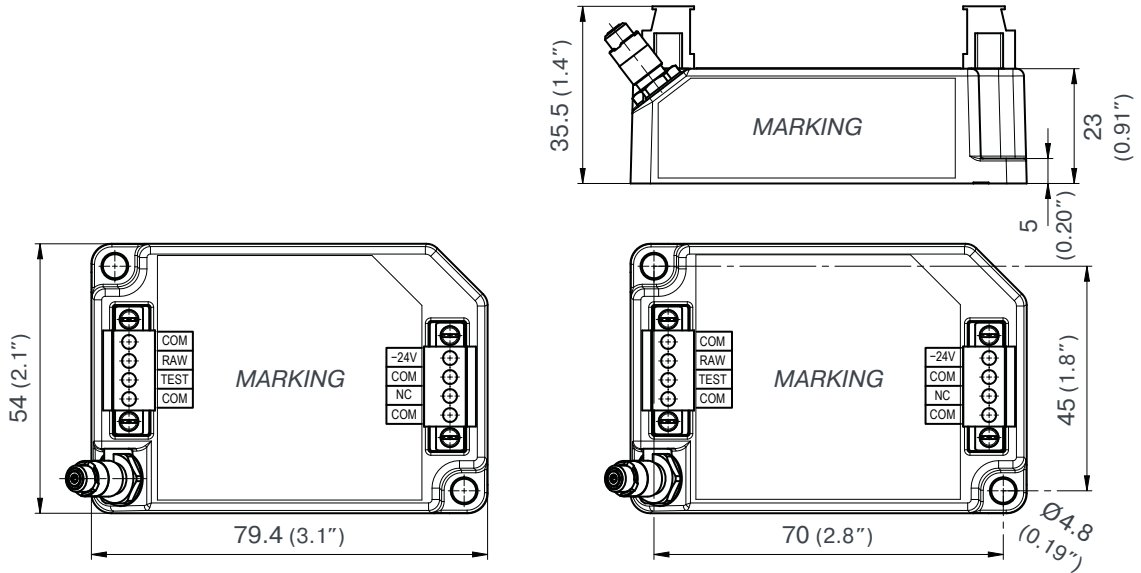
Note: The IQS910 features removal screw-terminal connectors that can unplugged from the main body of its housing to simplify installation and mounting.

### Physical characteristics

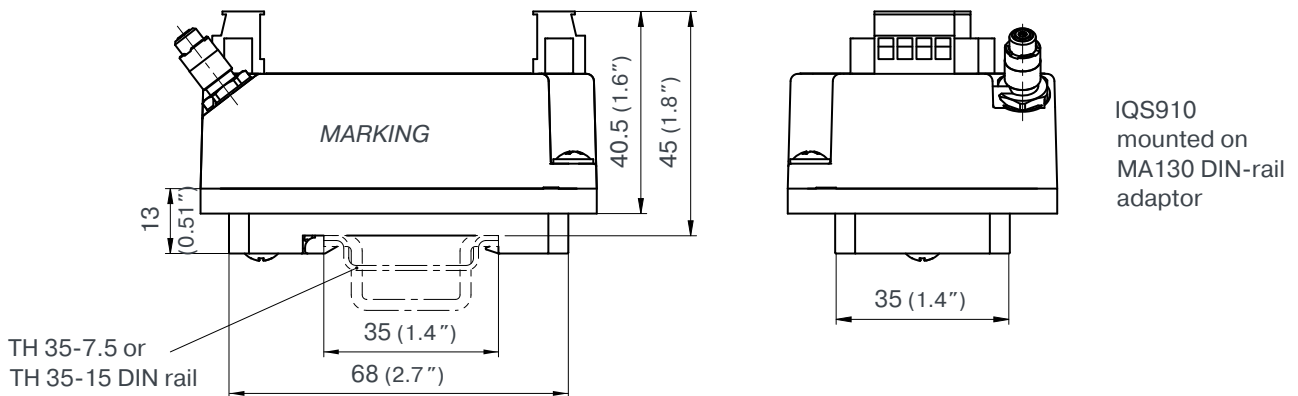
Electrical connections	: Self-locking miniature coaxial connector and removable screw-terminal connectors (see <b>Connectors on page 12</b> )
Housing material	: Injection-moulded aluminium, painted
Dimensions	: See <b>Mechanical drawings and ordering information on page 13</b>
Weight	: 200 g (0.44 lb) approx.
Mounting	
• Without DIN-rail mounting adaptor	: Two M4 screws
• With DIN-rail mounting adaptor (ordering option code I1)	: MA130 DIN-rail mounting adaptor for IQS9xx (and IPC707) signal conditioners. Suitable for TH 35 DIN rails (according to EN 50022 / IEC 60715). For example, TH 35-7.5 or TH 35-15. See <b>Accessories on page 15</b> .

## MECHANICAL DRAWINGS AND ORDERING INFORMATION

### Side and top views



### Side and end views with DIN-rail mounting adaptor (ordering option code I1)



Note: All dimensions in mm (in) unless otherwise stated.

## MECHANICAL DRAWINGS AND ORDERING INFORMATION (continued)

Ordering number (PNR):  
204 - 910 - 000 - 012



Environment (A) <sup>1</sup>	
Standard	1
Explosive (Ex)	5

Output	Sensor	Measurement range (B) <sup>2</sup>		
		Position	Vibration (peak-to-peak)	
4 - 20 mA	TQ9x1 (and TQ4x1)	0.2 - 2.2 mm	---	101
		---	0 - 100 µm	121
		---	0 - 125 µm	122
		---	0 - 150 µm	123
		---	0 - 200 µm	124
		---	0 - 250 µm	125
	TQ9x2 (and TQ4x2)	0.15 - 2.15 mm	---	201
		---	0 - 100 µm	221
		---	0 - 125 µm	222
		---	0 - 150 µm	223
		---	0 - 200 µm	224
		---	0 - 250 µm	225
---	0 - 500 µm	226		

Installation (I)	
Without DIN-rail adaptor	0
With DIN-rail adaptor (MA130)	1

Total system length (H) <sup>4</sup>	
1 m	01
5 m	05
10 m	10

Diagnostics (C) <sup>3</sup>	
Without diagnostics	1
With diagnostics (SIL)	2

### Notes

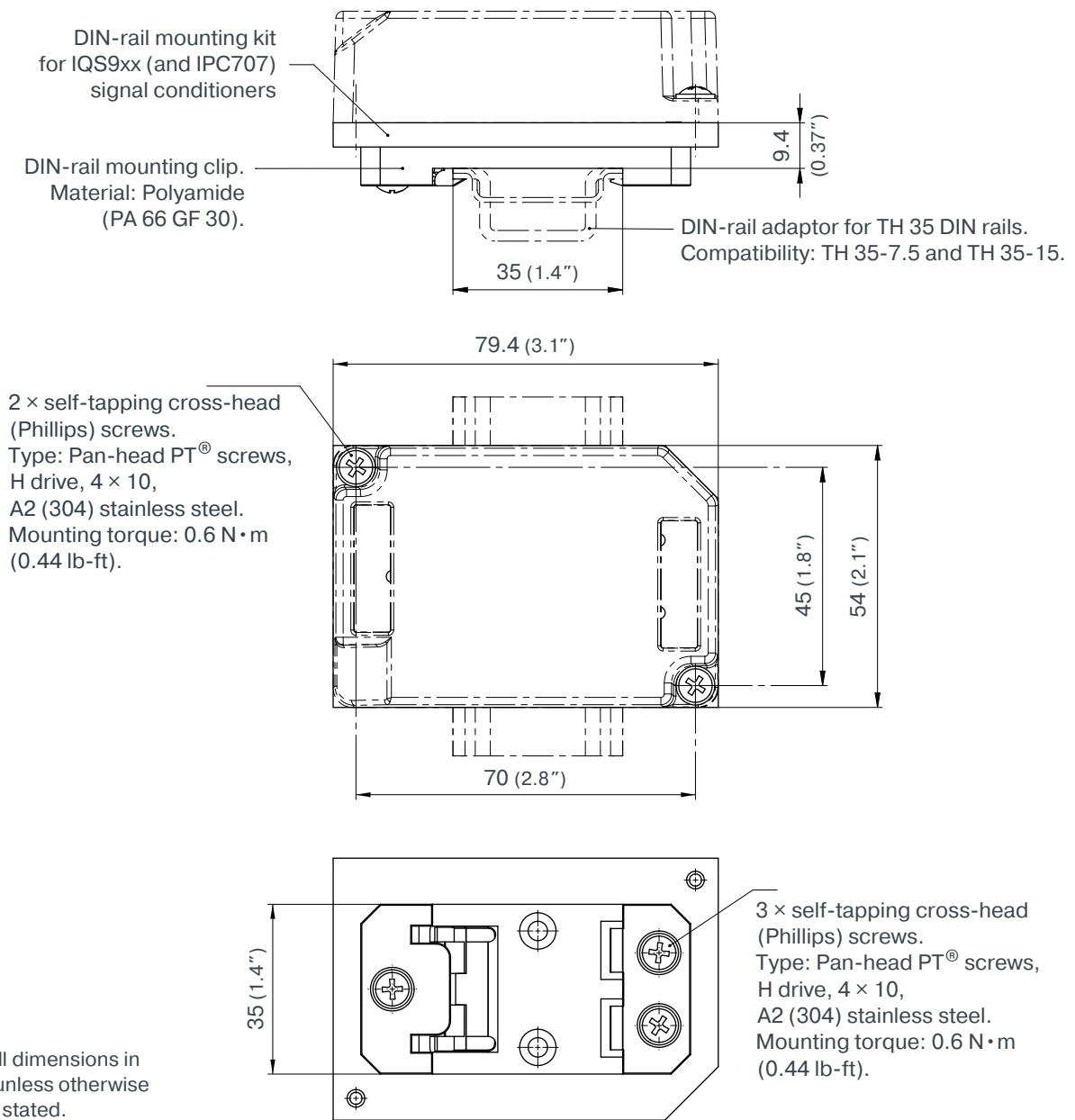
- Ordering option code A5 ("Ex") specifies a IQS910 signal conditioner suitable for use in hazardous areas:
  - For use in hazardous areas (potentially explosive atmospheres), each component of a sensor / measurement chain (TQ9x2, EA902 and IQS910) must be appropriately Ex certified, that is, with ordering option code A5.
  - For a IQS910 signal conditioner with protection mode "Ex ec" located in an Ex Zone 2, the user must ensure that the IQS910 is installed in an industrial housing or enclosure that ensures a protection rating of at least IP54 (or equivalent).
- Ordering option code Bxxx specifies a IQS910 signal conditioner either for measuring position or vibration, and depends on the sensor / measurement chain connected to the IQS910 and the required measurement range.
  - Ordering option codes B101 and B201 specify a IQS910 signal conditioner for measuring position.
  - Ordering option codes B12x and B22x specify a IQS910 signal conditioner for measuring vibration.
 See Operation starting on page 3 for further information.
- Ordering option code Cx specifies a IQS910 signal conditioner either without diagnostics (C1) or with diagnostics (C2):
  - A IQS910 signal conditioner with diagnostics (C2) includes optional diagnostic circuitry that automatically detects and remotely indicates problems with the measurement chain (sensor, cabling and/or the IQS910 itself). A IQS910 with diagnostics is certified SIL 2 (IEC 61508) and Cat 1 PL c (ISO 13849) "by design" to more easily meet the requirements of safety-related applications. Contact Parker Meggitt for further information.
- Ordering option code Hxx specifies the total system (chain) length for the sensor / measurement chain that the IQS910 signal conditioner will be used in.
 

A IQS910 signal conditioner with a total system (chain) length of 1 m (H01) can only be used with TQ9x2 (and TQ4x2) proximity sensors (for example, TQ902 or TQ912). That is, H01 (Total system length) is only compatible with B2xx (Measurement range).

## ACCESSORIES

ABA17x	Industrial housings	: Refer to corresponding data sheet
IP172	Interconnection protection	: Refer to corresponding data sheet
JB118	Junction box	: Refer to corresponding data sheet
KS107	Flexible conduit (protection tube)	: Refer to corresponding data sheet
MA130	Mounting adaptor	: See below
PA15x	Probe mounting adaptors	: Refer to corresponding data sheets
SG1xx	Cable feedthroughs	: Refer to corresponding data sheets

### MA130 DIN-rail mounting adaptor



Ordering number (PNR): 809-130-000-021

## RELATED PRODUCTS

TQ9xx, EA90x and IQS900	Proximity measurement chains	: Refer to corresponding data sheets
TQ4xx, EA40x and IQS900	Proximity measurement systems	: Refer to corresponding data sheets
TQ4xx, EA40x and IQS450	Proximity measurement systems	: Refer to corresponding data sheets

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