

ROTARY POSITION TECHNOLOGY – INDUCTIVE

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Rotary Position Technology – Inductive



Rotary Inductive Sensors

What is a rotary inductive sensor?

Turck's rotary inductive analog sensor operation is based on the RLC (Resistance Inductive Capacitance) principle and incorporates an advanced microprocessor and precisely positioned emitter and receiver coils on a printed circuit board.

The emitter coils are excited with a high frequency AC field. The interaction between the moving position element and the receiver coils creates different voltages that are induced into the receiver coils which determines the position of the target.

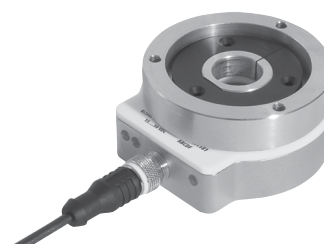
The tuned positioning element can be mounted in a number of ways, but because it is contactless, there is no wear to the sensor or to the positioning element. Irregular rotating shafts can cause vibration and offset of the positioning element. Because of the contactless arrangement of the sensor and positioning element, there is a $\leq 3\text{mm}$ compensation of lateral offset. The absence of a shaft and bearing enables easy adaptation to many applications.



Where can I use a rotary inductive sensor?

The rotary inductive sensor can be used in a variety of applications and industries.

- Mobile equipment: Detection of the boom angle, platform rotation and ladder position.
- Solar panel tracking and wind turbine blade pitch.
- Commercial: Gate or door position on trains and buses.



Why choose Turck rotary inductive sensors?

High noise immunity

As a result of the RLC circuit. All products meet IEC 60529 and EN 60529 standard for noise immunity. The sensor is also inherently weld field immune.

High linearity and precision

The new rotary inductive sensors provide high precision measurement and a repeatability of 0.09° with a measuring range of 360° . Bearing tolerances are eliminated through the contactless design as well as vibration caused by irregular rotating shafts, guaranteeing high linearity.

Robust housing

Made of high quality plastic. The IP67 rated sensor protects the sensor from most chemicals and oils. It is also shock and vibration resistant up to 30 g (11 ms) and 55 Hz (1 mm displacement).

Analog or digital outputs

The standard units feature analog outputs 0-10 V and 4-20 mA with operating voltage of 15-30 VDC or 0.5-4.5 V with operating voltage of 8-30 VDC. All standard units have 12 bit resolution. Operating temperatures available are -25 to $+70^\circ\text{C}$ or -40 to $+70^\circ\text{C}$. Enhanced units feature SSI output with operating voltage of 15-30 VDC and 16 bit resolution. Versions with incremental outputs can be used in place of optical encoders in counting applications.



Rotary Inductive Sensors, Analog Output, QR14

Part Number	ID Number	Measuring Range	Resolution (12 bit)	Ambient Temperature	Operating Voltage	Voltage Output	Current Output	Dimensional Drawing	Wiring Diagram
Ri360P2-QR14-ELiU5X2*	1590857	0-360°	≤ 0.09°	-13 to +158 °F (-25 to +70 °C)	15-30 VDC	0-10 V	4-20 mA	1	1
Ri360P2-QR14-ELU4X2/S97	1590858	0-360°	≤ 0.09°	-40 to +158 °F (-40 to +70 °C)	8-30 VDC	0.5-4.5 V	N/A	1	2
Ri360P2-QR14-ELiU5X2-0.3-RS5*	1590859	0-360°	≤ 0.09°	-13 to +158 °F (-25 to +70 °C)	15-30 VDC	0-10 V	4-20 mA	2	3

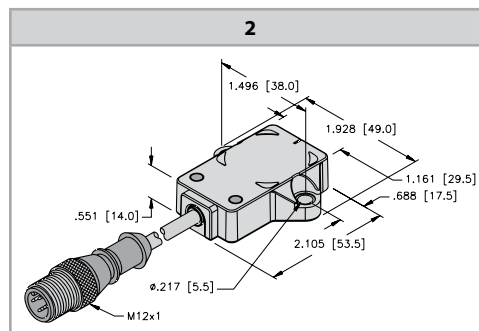
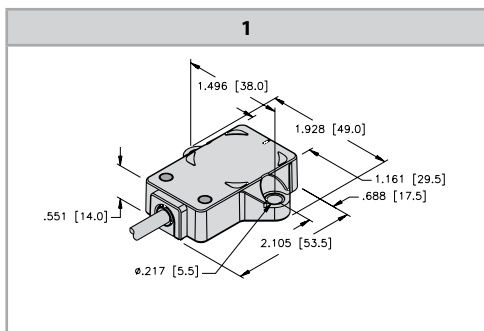
*P2 of part number indicates position element P2-Ri-QR14 included in delivery

Technical Specifications:

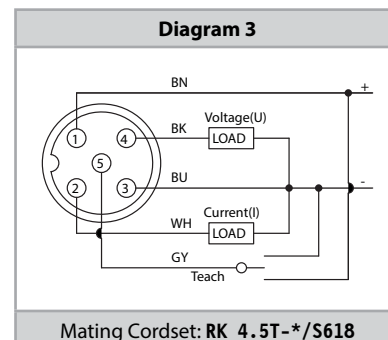
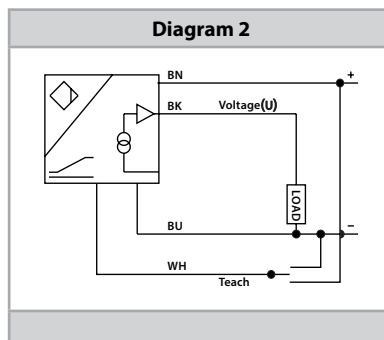
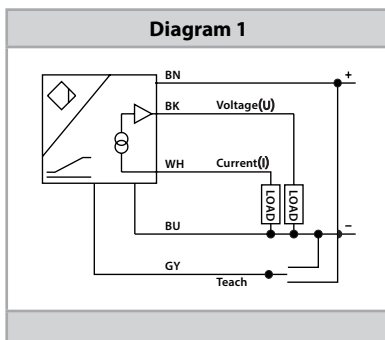
Measuring Principle:	inductive, absolute singleturn
Nominal distance:	1.5 mm
Repeat accuracy:	≤0.025% of full scale
Nominal distance:	1.5 mm
Linearity deviation:	≤ 0.3% f.s.
Temperature drift:	≤ ±0.01% / K
Lateral offset:	≤ 3 mm
Residual ripple:	≤ 10% Upp
Isolation test voltage:	≤ 0.5 kV
Short-circuit protection:	yes
Wire-break/Rev. pol. protection:	yes/yes (supply voltage)
Load resistance voltage:	≥ 4.7 kΩ
Load resistance current output:	≤ 0.4 kΩ
Sampling rate:	800 Hz
Current consumption:	< 100 mA

Housing:	rectangular, QR14
Dimensions:	53.5 x 49 x 14 mm
Housing material:	plastic, PBT-GF30-V0
Electrical connection:	cable/connector
Vibration resistance (EN 60068-2-6):	20 g, 10-3000 Hz, 50 cycles, 3 axes
Shock resistance (EN 60068-2-27):	100 g, 11 ms 1/2 sine, 3x each, 3 axes
Continuous Shock resistance (EN60068-2-29):	40 g, 6 ms 1/2 sine, 4000x each, 3 axes
Degree of protection:	IP68/IP69K
Power-on indication:	LED, green
Measuring range indication:	multifunction LED, green , green flashing

Dimensions:



Wiring Diagrams:



Mating Cordset: RK 4.5T-*/S618

* Length in meters.

Rotary Inductive Sensors, SSI Output, QR14

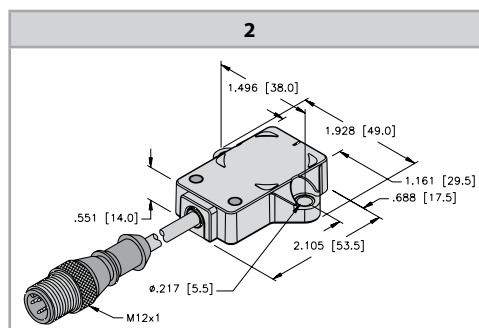
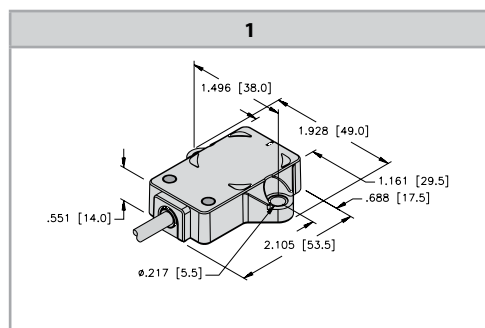
Part Number	ID Number	Measuring Range	Resolution (16bit)	Ambient Temperature	Operating Voltage	Function Output	Dimensional Drawing	Wiring Diagram
Ri360P2-QR14-ESG25X2*	1590827	0-360°	≤ 0.006°	-13 to +158 °F (-25 to +70 °C)	15-30 VDC	SSI	1	1
Ri360P2-QR14-ESG25X2-0.3-RS8*	1590826	0-360°	≤ 0.006°	-13 to +158 °F (-25 to +70 °C)	15-30 VDC	SSI	2	2

*P2 of part number indicates position element P2-Ri-QR14 included in delivery

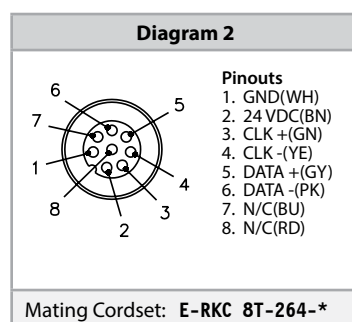
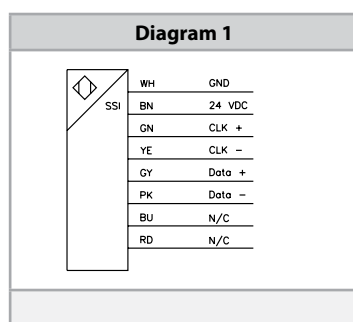
Technical Specifications:

Measuring Principle:	inductive, absolute singleturn	Sampling rate:	500 Hz
Nominal distance:	1.5 mm	Power consumption:	< 100 mA
Repeat accuracy:	≤0.025% of full scale	Housing:	rectangular, QR14
Linearity deviation:	≤ 0.3% of full scale	Dimensions:	53.5 x 49 x 14 mm
Temperature drift:	≤ ±0.001% / K	Housing material:	plastic, PBT-GF30-V0
Lateral offset:	≤ 3 mm	Electrical connection:	cable/cable with connection
Residual ripple:	≤ 10% Uss	Vibration resistance:	55 Hz (1 mm)
Isolation test voltage:	≤ 0.5 kV	Vibration resistance	
Short-circuit protection:	yes	(EN 60068-2-6):	20 g, 10-3000 Hz, 50 cycles, 3 axes
Wire-break/Rev. pol. protection:	yes/yes (supply voltage)	Shock resistance	
Output function:	8-wire, SSI, 25 bit, gray coded	(EN 60068-2-27):	100 g, 11 ms 1/2 sine, 3x each, 3 axes
Process data area:	Bit 0 to Bit 15	Continuous Shock resistance	
Diagnostic bits:	Bit 22: Positioning element is in measuring range, lower signal quality (e.g., distance too large)	(EN60068-2-29):	40 g, 6 ms 1/2 sine, 4000x each, 3 axes
	Bit 23: Positioning element is outside measuring range	Degree of protection:	IP68/IP69K
		Power-on indication:	LED, green
		Measuring range indication:	multifunction LED, green, green flashing

Dimensions:



Wiring Diagrams:



Rotary Inductive Sensors, Analog Output, QR20



Technical Specifications:

Measuring Principle:	inductive, absolute singleturn
Nominal distance:	1 mm
Resolution:	0.09°
Repeat Accuracy:	≤0.09°
Linearity Deviation:	≤1.08°
Temperature Drift:	≤±0.01 %/K
Output type:	analog
Operating Voltage:	LU4: 8-30 VDC
Residual Ripple:	≤ 10% U _{ss}
Isolation Test Voltage:	≤0.5 kV
Short-circuit protection:	yes
Wire-break/Rev. pol. protection:	no/yes (supply voltage)
Load Resistance:	LU4: ≥4.7kΩ
Sampling rate:	800 Hz
Load dump protection (DIN ISO 7637-2):	severity degree IV/Level 4
Current Consumption:	<100 mA

Housing:	rectangular, QR20
Dimensions:	71.3 x 64 x 20 mm
Housing material:	plastic, Ultem
Electrical connection:	cable/connector
Vibration resistance:	55 Hz (1 mm)
Vibration resistance (EN 60068-2-6):	20 g, 10-3000 Hz, 50 cycles, 3 axes
Shock resistance (EN 60068-2-27):	100 g, 11 ms 1/2 sine, 3x each, 3 axes
Continuous Shock resistance (EN60068-2-29):	40 g, 6 ms 1/2 sine, 4000x each, 3 axes
Salt Spray Test (EN 60068-2-52):	severity degree 5 (4 test cycles)
Degree of protection:	IP68/IP69K
Ambient temperature:	-40 to +185 °F (-40 to +85 °C)
Storage temperature:	-40 to +257 °F (-40 to +125 °C)
Temperature change (EN60068-2-14):	-40 to +185 °F (-40 to +85 °C)
Measuring range indication:	multifunction LED, green, green flashing
Diagnostic:	positioning element not detected: Output signal 5 V

Part Number Key: QR20

A	B	C		D		E		F
RI	20	P1	-	QR20	-	LU4X2	-	BLANK

A	Type
RI	Rotary Inductive

B	Measuring Range
20	20° Measurement
40	40° Measurement
60	60° Measurement
90	90° Measurement
120	120° Measurement
240	240° Measurement
360	360° Measurement

C	Positioning Element (Included in Delivery)
P1	QR20 Element w/ 6 mm shaft opening
P2	QR20 Element w/ 1/4" shaft opening

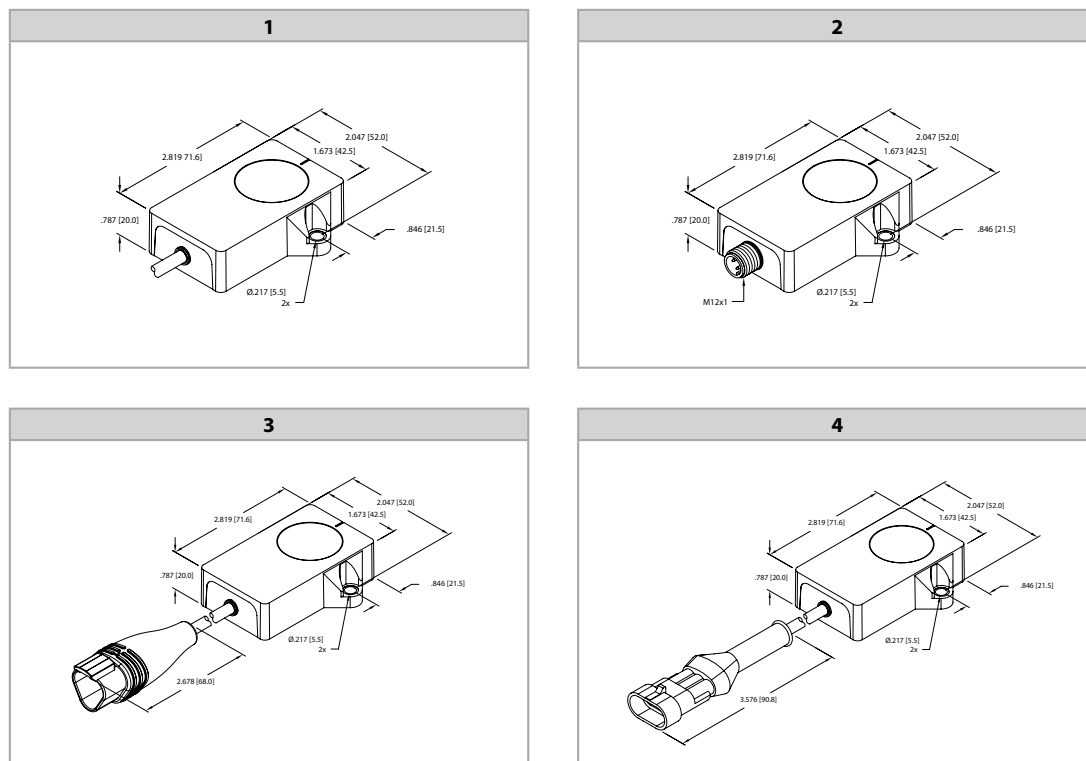
D	Housing
QR20	Rectangular, 20 mm

E	Voltage Supply and Output Type
LU4X2	8-30 VDC, 0.5-4.5 V

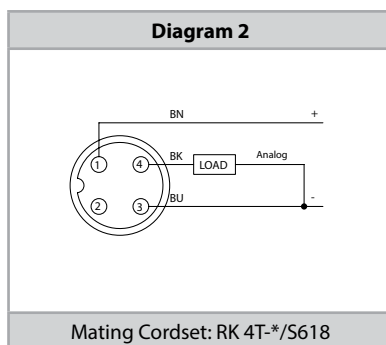
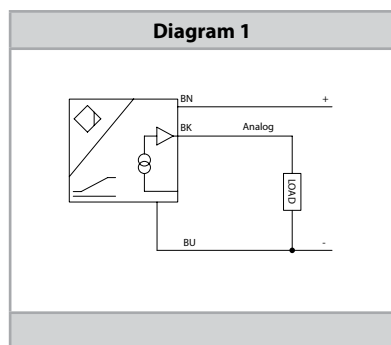
F	Type of Connection
BLANK	Cable (2 m TPE)
H1141	4-pin M12 Eurofast Connector
0.15-DT04-3PMB	3-pin Deutsch Pigtail (0.15 m TPE)
0.24-AMP01-3P	3-pin AMP Pigtail (0.24 m TPE)

Rotary Inductive Sensors, Analog Output, QR20

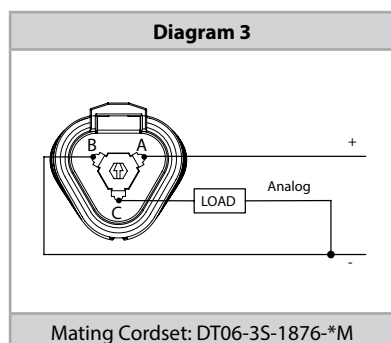
Dimensions:



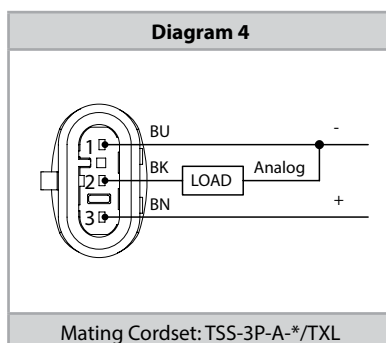
Wiring Diagrams:



* Length in meters.



* Length in meters.



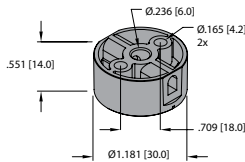
* Length in meters.

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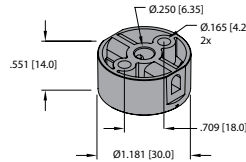
Rotary Inductive Sensors – Accessories, QR20/QR14

Positioning Element
P1-Ri-QR20



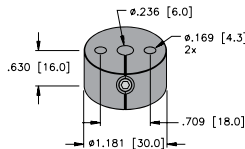
Positioning element, operating at a distance of 0-5 mm to the sensor surface. Nominal distance is 1 mm.

Positioning Element
P2-Ri-QR20



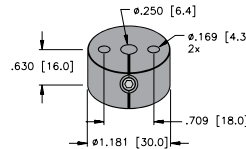
Positioning element, operating at a distance of 0-5 mm to the sensor surface. Nominal distance is 1 mm.

Positioning Element
P1-Ri-QR14



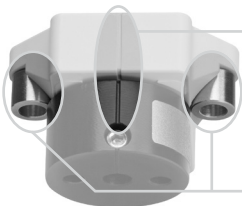
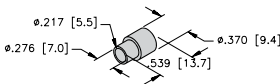
Positioning element, operating at a distance of 0-5 mm to the sensor surface. Nominal distance is 1.5 mm.

Positioning Element
P2-Ri-QR14



Positioning element, operating at a distance of 0-5 mm to the sensor surface. Nominal distance is 1.5 mm.

Spacer Sleeve
DS-Ri-QR14



Alignment marks for zero position

Offset spacers for face down mounting

Spacer sleeve for overhead mounting

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Rotary Position Technology – Inductive



Rotary Inductive Sensors, Analog Output, QR24

Part Number	ID Number	Measuring Range	Resolution (16bit)	Ambient Temperature	Operating Voltage	Voltage Output	Current Output	Dimensional Drawing	Wiring Diagram
Ri360P0-QR24M0-ELIU5X2-H1151	1590908	0-360°	≤ 0.006°	-13 to +185 °F (-25 to +85 °C)	15-30 VDC	0-10 V ¹⁾	4 - 20 mA ²⁾	1	1
Ri360P0-EQR24M0-ELIU5X2-H1151	1590977	0-360°	≤ 0.006°	-13 to +185 °F (-25 to +85 °C)	15-30 VDC	0-10 V ¹⁾	4 - 20 mA ²⁾	1	1

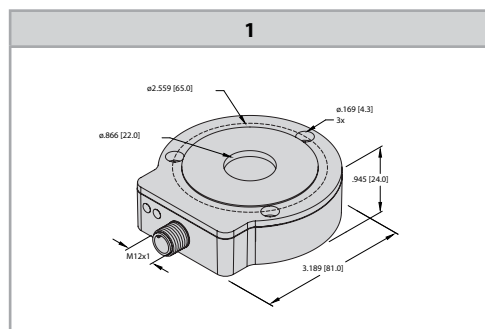
¹⁾ Programmable to other outputs: 0-5 V or 0.5-4.5 V²⁾ Programmable to 0-20 mA

Technical Specifications:

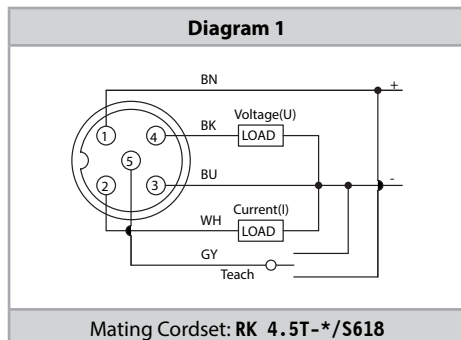
Measuring Principle:	inductive, absolute singleturn
Nominal distance:	1.5 mm
Repeat accuracy:	≤ 0.01% of full scale
Linearity deviation:	≤ 0.05% of full scale
Temperature drift:	≤ ±0.004% / K
Residual ripple:	≤ 10% U _{ss}
Isolation test voltage:	≤ 0.5 kV
Short-circuit protection:	yes
Wire-break/Rev. pol. protection:	yes/yes (supply voltage)
Load resistance (voltage):	≥ 4.7 kΩ
Load resistance (current):	≤ 0.4 kΩ
Sampling rate:	5000 Hz
Current consumption:	< 50 mA

Housing:	QR24
Dimensions:	81 x 78 x 24 mm
Housing material (QR24):	metal/plastic, ZnAlCu1/PBT-GF30-V0
Housing material (EQR24):	stainless steel/plastic V4A (1.4404) PA12-GF30
Shaft type:	hollow shaft
Electrical connection:	M12 x 1
Vibration resistance:	55 Hz (1 mm)
Vibration resistance (EN 60068-2-6):	20 g, 10-3000 Hz, 50 cycles, 3 axes
Shock resistance (EN 60068-2-27):	100 g, 11 ms 1/2 sine, 3x each, 3 axes
Continuous Shock resistance (EN 60068-2-29):	40 g, 6 ms 1/2 sine, 4000x each, 3 axes
Degree of protection:	IP68/IP69K
Power-on indication:	LED, green
Measuring range indication:	LED, yellow, yellow flashing

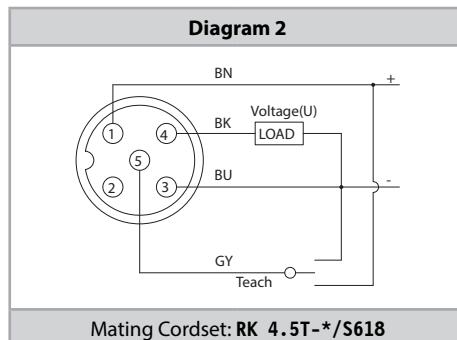
Dimensions:



Wiring Diagrams:



* Length in meters.



* Length in meters.

Rotary Inductive Sensors, Incremental Output, QR24

Part Number	ID Number	Measuring Range	Resolution	Ambient Temperature	Operating Voltage	Output	Dimensional Drawing	Wiring Diagram
Ri360P0-QR24M0-INCRX2-H1181	1590910	0-360°	1-5000* ppr	-13 to +185 °F (-25 to +85 °C)	10-30 VDC	Push-Pull/HTL	1	1
Ri360P0-EQR24M0-INCRX2-H1181	1590912	0-360°	1-5000* ppr	-13 to +185 °F (-25 to +85 °C)	10-30 VDC	Push-Pull/HTL	1	1

NOTE: Incremental output QR24 sensors not to be used for speed feedback.

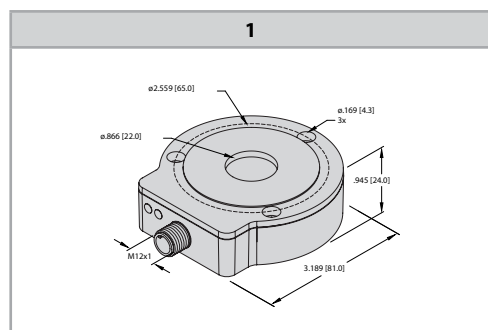
* Easyteach pulse rates available: 360, 512, 1000, 1024, 2048, 2500, 3600, 4096, 5000 ppr

Technical Specifications:

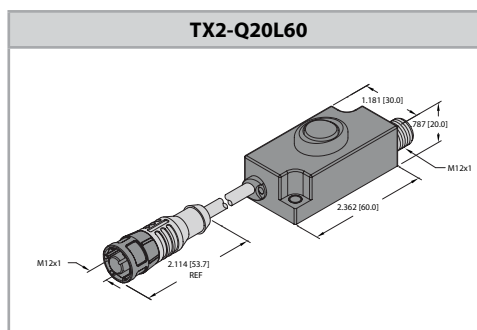
Measuring Principle:	inductive, incremental
Nominal distance:	1.5 mm
Repeat accuracy:	≤0.01% of full scale
Linearity deviation:	≤ 0.05% of full scale
Temperature drift:	≤ ±0.003% / K
Residual ripple:	≤ 10% Uss
Isolation test voltage:	≤ 0.5 kV
Short-circuit protection:	yes (cyclic)
Wire-break/Rev. pol. protection:	yes/yes (supply voltage)
Pulse frequency max.:	200 kHz
Signal level high:	min. V+ - 2V
Signal level low:	max. 2V
Sampling rate:	1000 Hz
Current consumption:	< 100 mA

Housing:	QR24
Dimensions:	81 x 78 x 24 mm
Housing material (QR24):	metal/plastic, ZnAlCu1/PBT-GF30-V0
Housing material (EQR24):	stainless steel/plastic V4A (1.4404) PA12-GF30
Shaft type:	hollow shaft
Electrical connection:	M12 x 1
Vibration resistance:	55 Hz (1 mm)
(EN 60068-2-6):	20 g, 10-3000 Hz, 50 cycles, 3 axes
Shock resistance	
(EN 60068-2-27):	100 g, 11 ms 1/2 sine, 3x each, 3 axes
Continuous Shock resistance	
(EN60068-2-29):	40 g, 6 ms 1/2 sine, 4000x each, 3 axes
Degree of protection:	IP68/IP69K
Power-on indication:	LED, green
Measuring range indication:	LED, yellow, yellow flashing

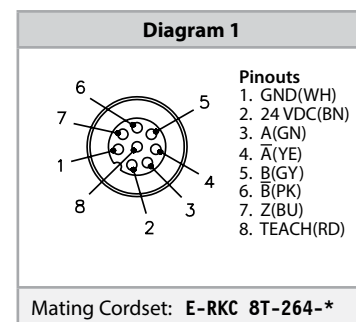
Dimensions:



Easyteach Programming Tool:



Wiring Diagrams:



Sample Configuration: IO-Link Master

The following components can be used for parameterization of the QR24 incremental sensor through IO-Link:

1 x IO-Link Master	USB-2-IOL-0002
1 x Connection Cable	RK 8T-2-RS 4T/S90/S3501



Rotary Inductive Sensors, IO-Link, QR24

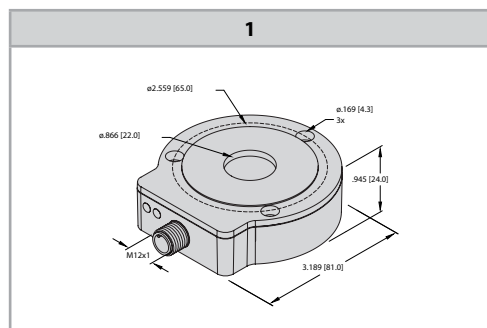
Part Number	ID Number	Measuring Range	Resolution (16bit)	Ambient Temperature	Operating Voltage	IO-Link Data Telegram	Dimensional Drawing	Wiring Diagram
Ri360P0-QR24M0-IOLX2-H1141	1590975	0-360°	≤ 0.006°	-13 to +185 °F (-25 to +85 °C)	15-30 VDC	32-bit	1	1
Ri360P0-EQR24M0-IOLX2-H1141	1590978	0-360°	≤ 0.006°	-13 to +185 °F (-25 to +85 °C)	15-30 VDC	32-bit	1	1

Technical Specifications:

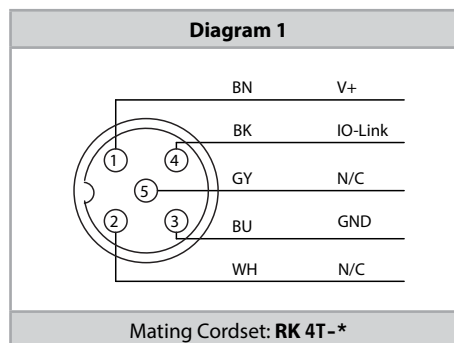
Measuring principle:	inductive, absolute semi-multiturn	Housing:	QR24
Nominal distance:	1.5 mm	Dimensions:	81 x 78 x 24 mm
Repeat accuracy	≤ 0.01% of full scale	Housing material (QR24):	metal/plastic, ZnAlCu1/PBT-GF30-V0
Linearity deviation:	≤ 0.05% of full scale	Housing material (EQR24):	stainless steel/plastic V4A (1.4404) PA12-GF30
Temperature drift:	≤ ±0.003%/K	Shaft type:	hollow shaft
Residual ripple:	≤ 10% Uss	Electrical connection:	M12 x 1
Isolation test voltage:	≤ 0.5 kV	Vibration resistance:	55 Hz (1 mm)
Wire-break/Rev. pol. protection:	yes/yes (supply voltage)	Vibration resistance (EN 60068-2-6):	20 g, 10-3000 Hz, 50 cycles, 3 axes
IO-Link Specification:	Version 1.1	Shock resistance (EN 60068-2-27):	100 g, 11 ms 1/2 sine, 3x each, 3 axes
IO-Link Telegram	16-bit single-turn 13-bit multiturn, 3 error bits	Continuous Shock resistance (EN 60068-2-29):	40 g, 6 ms 1/2 sine, 4000x each, 3 axes
Sampling rate:	1000 Hz	Degree of protection:	IP68/IP69K
Current consumption:	<50 mA	Power-on indication:	LED, green
Programming:	FDT/DTM	Measuring range indication:	LED, yellow, yellow flashing
Communication mode:	COM 2 (38.4 kBaud)		
Minimum cycle time:	3 ms		
Function Pin 4:	IO-Link		
Included in the SIDI GSDML:	Yes		

We reserve the right to make technical alterations without prior notice.

Dimensions:



Wiring Diagrams:



* Length in meters.

Rotary Inductive Sensors, SSI Output, QR24

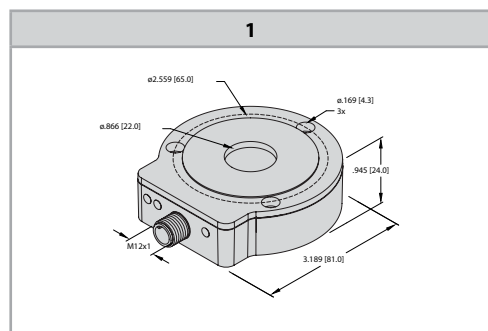
Part Number	ID Number	Measuring Range	Resolution (16-bit)	Ambient Temperature	Operating Voltage	Output Function	Dimensional Drawing	Wiring Diagram
Ri360P0-QR24M0-HESG25X3-H1181	1590905	0-360°	≤ 0.006°	-13 to +185 °F (-25 to +85 °C)	15-30 VDC	SSI	1	1
Ri360P0-EQR24M0-HESG25X3-H1181	1590911	0-360°	≤ 0.006°	-13 to +185 °F (-25 to +85 °C)	15-30 VDC	SSI	1	1

Technical Specifications:

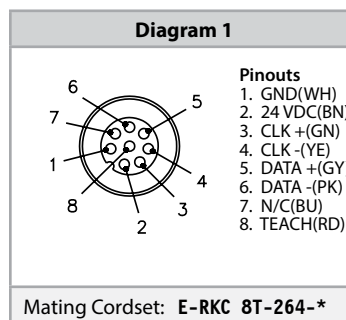
Measuring Principle:	inductive, absolute semi-multiturn
Nominal distance:	1.5 mm
Repeat accuracy:	≤ 0.01% of full scale
Linearity deviation:	≤ 0.05% of full scale
Temperature drift:	≤ ±0.003% / K
Residual ripple:	≤ 10% Uss
Isolation test voltage:	≤ 0.5 kV
Wire-break/Rev. pol. protection:	yes/yes (supply voltage)
Output function:	8-wire, SSI, 25 bit, gray coded
Process data area:	Configurable
Resolution singleturn:	16 bit
Resolution multiturn:	6 Bit
Diagnostic bits:	Bit 22: Positioning was changed during power drop Bit 23: Positioning element has reached the end of the measuring range. This is indicated by a lower signal quality Bit 24: Positioning element is outside the measuring range. Data messages parameterizable as multiturn and singleturn process data or error bits

Sampling rate:	5000 Hz
Current consumption:	< 100 mA
Housing:	QR24
Dimensions:	81 x 78 x 24 mm
Housing material (QR24):	metal/plastic, ZnAlCu1/PBT-G30-V0
Housing material (EQR24):	stainless steel/plastic V4A (1.4404) PA12-GF30
Shaft type:	hollow shaft
Electrical connection:	M12 x 1
Vibration resistance:	55 Hz (1 mm)
Vibration resistance (EN 60068-2-6):	20 g, 10-3000 Hz, 50 cycles, 3 axes
Shock resistance (EN 60068-2-27):	100 g, 11 ms 1/2 sine, 3x each, 3 axes
Continuous Shock resistance (EN60068-2-29):	40 g, 6 ms 1/2 sine, 4000x each, 3 axes
Degree of protection:	IP68/IP69K
Power-on indication:	LED, green
Measuring range indication:	LED, yellow, yellow flashing
Error indication:	LED, red

Dimensions:



Wiring Diagrams:



Sample Configuration: IO-Link Master

The following components can be used for parameterization of the QR24 SSI sensor through IO-Link:

1 x IO-Link Master	USB-2-IOL-0002
1 x Connection Cable	RK 8T-2-RS 4T/S90/S3501



Rotary Inductive Sensors, CANopen Output, QR24

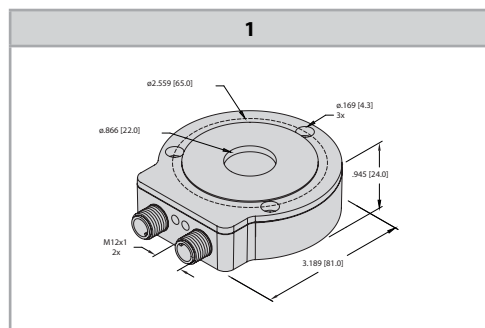
Part Number	ID Number	Measuring Range	Resolution (16-bit)	Ambient Temperature	Operating Voltage	Output Function	Dimensional Drawing	Wiring Diagram
Ri360P0-QR24M0-CNX4-2H1150	1590914	0-360°	≤ 0.006°	-13 to +185 °F (-25 to +85 °C)	10-30 VDC	CANopen, DS406 V3.4 LSS DS 305	1	1

Technical Specifications:

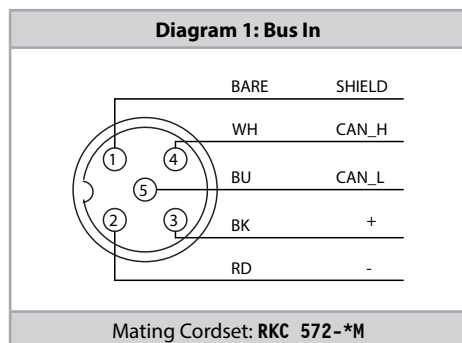
Measuring principle:	inductive, absolute semi-multiturn
Nominal distance:	1.5 mm
Repeat accuracy	≤ 0.01% of full scale
Linearity deviation:	≤ 0.05% of full scale
Temperature drift:	≤ ±0.003% / K
Residual ripple:	≤ 10% Uss
Isolation test voltage:	≤ 0.5 kV
Wire-break/Rev. pol. protection:	yes/yes (supply voltage)
Node ID:	1 - 127, factory default: 3
Baud rate:	10, 20, 50, 125, 250, 500, & 800 kbps factory default: 125 kbps
Sampling rate:	800 Hz
Current consumption:	< 60 mA

Housing:	QR24
Dimensions:	81 x 78 x 24 mm
Housing material:	metal/plastic, ZnAlCu1/PBT-GF30-V0
Shaft type:	hollow shaft
Electrical connection:	2 x M12 x 1
Vibration resistance:	55 Hz (1 mm)
Vibration resistance (EN 60068-2-6):	20 g, 10-3000 Hz, 50 cycles, 3 axes
Shock resistance (EN 60068-2-27):	100 g, 11 ms 1/2 sine, 3x each, 3 axes
Continuous Shock resistance (EN60068-2-29):	40 g, 6 ms 1/2 sine, 4000x each, 3 axes
Degree of protection:	IP68/IP69K
Power-on indication:	LED, green
Measuring range indication:	LED, yellow, yellow flashing
Status CANopen:	LED, green/red

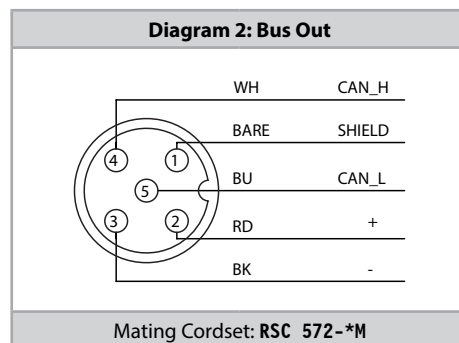
Dimensions:



Wiring Diagrams:



* Length in meters.

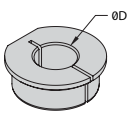


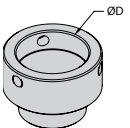
* Length in meters.

We reserve the right to make technical alterations without prior notice.

Accessories, QR24

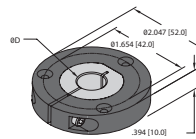
Reducing Bushings and Shaft Adapters

Dimension Drawing	Type	Description
	RA1-QR24 ¹⁾ (20 mm)	Reducing bushing 20 mm
	RA2-QR24 (14 mm)	Reducing bushing 14 mm
	RA3-QR24 ¹⁾ (12 mm)	Reducing bushing 12 mm
	RA4-QR24 ¹⁾ (10 mm)	Reducing bushing 10 mm
	RA5-QR24 (6 mm)	Reducing bushing 6 mm
	RA6-QR24 (3/8 in)	Reducing bushing 3/8"
	RA7-QR24 (1/4 in)	Reducing bushing 1/4"
	RA8-QR24 ¹⁾ (BP)	Blanking plug
	RA9-QR24 ¹⁾ (1/2 in)	Reducing bushing 1/2"
	RA10-QR24 ¹⁾ (5/8 in)	Reducing bushing 5/8"
	RA11-QR24 ¹⁾ (3/4 in)	Reducing bushing 3/4"

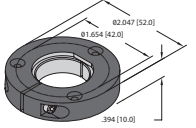
Dimension Drawing	Type	Description
	RAA6-QR24 (1 in)	Shaft Adapter 1"
	RAA7-QR24 (1 1/8 in)	Shaft Adapter 1 1/8"
	RAA8-QR24 (1 1/4 in)	Shaft Adapter 1 1/4"
	RAB1-QR24 (1 1/2 in)	Shaft Adapter 1 1/2"

Other shaft adapter sizes available upon request

Ready-to-Install Positioning Elements

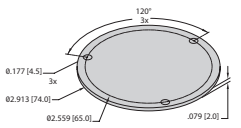
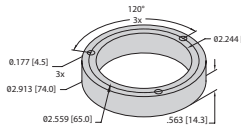
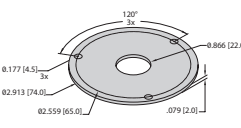
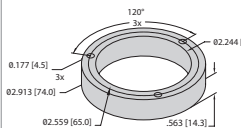
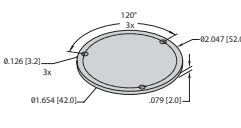
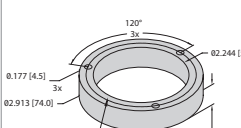
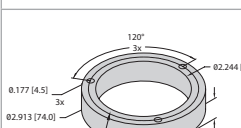
Dimension Drawing	Type	Description
	P1-Ri-QR24 ¹⁾ (20 mm)	Positioning element with hollow shaft 20 mm
	P2-Ri-QR24 (14 mm)	Positioning element with hollow shaft 14 mm
	P3-Ri-QR24 ¹⁾ (12 mm)	Positioning element with hollow shaft 12 mm
	P4-Ri-QR24 ¹⁾ (10 mm)	Positioning element with hollow shaft 10 mm
	P5-Ri-QR24 (6 mm)	Positioning element with hollow shaft 6 mm
	P6-Ri-QR24 (3/8 in)	Positioning element with hollow shaft 3/8"
	P7-Ri-QR24 (1/4 in)	Positioning element with hollow shaft 1/4"
	P8-Ri-QR24 ¹⁾ (BP)	Positioning element with blanking plug
	P9-Ri-QR24 ¹⁾ (1/2 in)	Positioning element with hollow shaft 1/2"
	P10-Ri-QR24 ¹⁾ (5/8 in)	Positioning element with hollow shaft 5/8"
	P11-Ri-QR24 ¹⁾ (3/4 in)	Positioning element with hollow shaft 3/4"

¹⁾ Items offered with stainless steel components (EQR24). Contact factory for more options.

Dimension Drawing	Type	Description
	PE1-QR24 ¹⁾	Base unit for positioning element

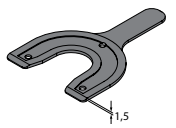
Accessories, QR24

Protection Ring and Shielding Plate

Dimension Drawing	Type	Description	Dimension Drawing	Type	Description
	SP1-QR24	Shield Ø 74 mm, aluminium		M1-QR24 ²⁾	Aluminium ring
	SP2-QR24	Shield Ø 74 mm with bore for shaft guidance, aluminium		M2-QR24	M1-QR24+SP1-QR24
	SP3-QR24	Shield Ø 52 mm, aluminium		M3-QR24	M1-QR24+SP2-QR24
				M4-QR24	M1-QR24+SP3-QR24

²⁾ Also offered in plastic (M5-QR24).

Spacing Tool

Dimension Drawing	Type	Description
	MT-QR24	Mounting aid, already included in the delivery scope of the sensor

We reserve the right to make technical alterations without prior notice.



Rotary Inductive Sensors, DSU35

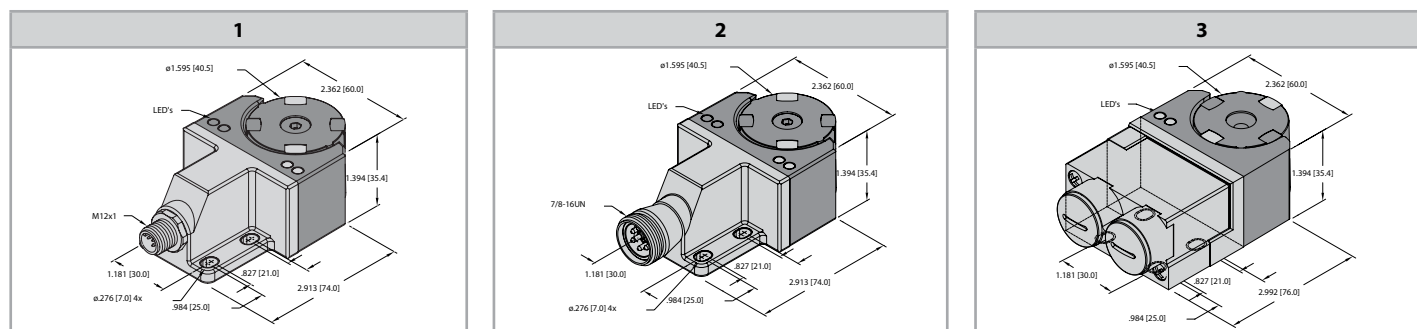
Part Number	ID Number	Measuring Range	Resolution (12-bit)	Ambient Temperature	Operating Voltage	Output Function	Dimensional Drawing	Wiring Diagram
Ri360P1-DSU35-ELIU5X2-H1151*	1590866	0-360°	≤ 0.09°	-13 to +167 °F (-25 to +75 °C)	15-30 VDC	Analog 0-10 V/ 4-20 mA	1	1
Ri360P1-DSU35-2UP6X4-H1151*	1590867	0-360°	≤ 0.09°	-13 to +167 °F (-25 to +75 °C)	10-30 VDC	2 x NO/NC, PNP	1	2
Ri360P1-DSU35-ELIU5X2-B1150/S1265*	1593040	0-360°	≤ 0.09°	-13 to +167 °F (-25 to +75 °C)	15-30 VDC	Analog 0-10 V/ 4-20 mA	2	3
Ri360P1-DSU35TC-ELI-EXI*	1593015	0-360°	≤ 0.09°	-13 to +158 °F (-25 to +70 °C)	14-30 VDC	Analog 4-20 mA	3	4

*P1 of part number indicates P1-Ri-DSU35 included in delivery

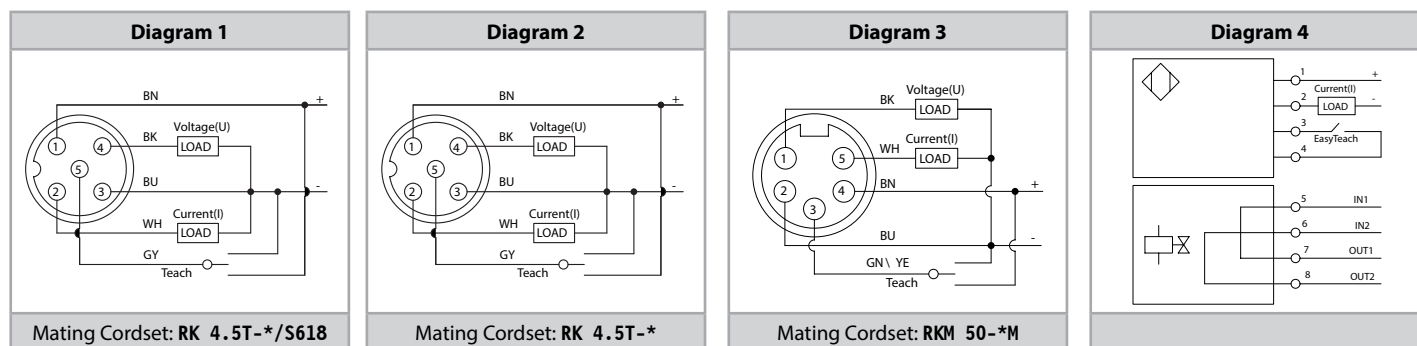
Technical Specifications:

Measuring principle:	inductive, absolute singleturn	Housing:	DSU35
Nominal distance:	1 mm	Hazardous approvals (EXI version only):	ATEX (Zone 1 & 21), IECEx
Repeat accuracy:	≤ 0.025% of full scale	Housing materials:	plastic, PP-GF30
Temperature drift:	≤ ±0.02% / K	Electrical connection:	M12 x 1, 7/8" -20UNF, terminal chamber
Residual ripple:	≤ 10% Uss	Vibration resistance:	55 Hz (1 mm)
Isolation test voltage:	≤ 0.5 kV	Shock resistance:	30 g (11 ms)
Short-circuit protection:	yes	Degree of protection:	IP67
Wire-break/Rev. pol. protection:	yes/yes (supply voltage)	Power-on indication:	LED, green
Load Resistance (voltage):	≥ 4.7 kΩ	Measuring range indication:	LED, green, green flashing
Load Resistance (current):	≤ 0.7 kΩ	Error indication:	LED, yellow
Sampling rate:	500 Hz		
Current consumption:	< 100 mA		

Dimensions:



Wiring Diagrams:



* Length in meters.

* Length in meters.

* Length in meters.

Notes:

We reserve the right to make technical alterations without prior notice.

