

Hazardous Area Proximity Sensors



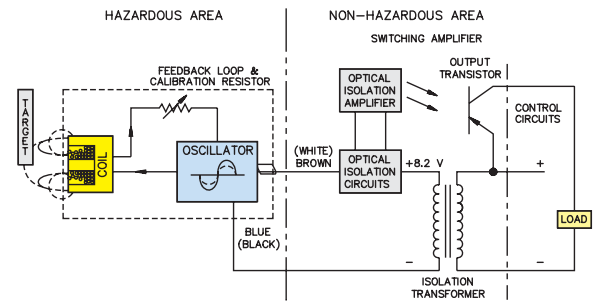
Type	NAMUR Barrel Style	NAMUR Rectangular Style	Hazardous Area Metal Barrel	Hazardous Area Plastic Barrel
Sensing Range	1.5 - 15 mm	3 - 10 mm	12 - 30 mm	12 - 30 mm
Pages	L49	L50	L53	L53

Hazardous Area Proximity Sensors

TURCK NAMUR proximity sensors are 2-wire sensing devices meeting the interoperability requirements of EN 60947-5-6. Because NAMUR sensors operate on very low power, they can be designed to be intrinsically safe for use in hazardous locations. Turck NAMUR compliant sensors have intrinsic safety approval from FM, CSA, ATEX and others.

The operation of NAMUR sensors is similar to that of a variable resistor, with a change of impedance as a target approaches the sensor. When no metal is being sensed, an inductive sensor is in a low impedance state and draws a current of more than 2.2 mA. When a metal target enters the high-frequency field radiated from the sensor face, the impedance increases as the target approaches. When fully damped, the sensor draws less than 1.0 mA. This current change is used to trigger an external amplifier at a defined switch point, usually about 1.5 mA.

Figure 1



NAMUR sensors contain a relatively small number of components, which allows the construction of small devices and helps to ensure a high degree of reliability. As the sensors are 2-wire current loops with fairly low impedance, they are unaffected by most transients.

General NAMUR Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN60947-5-6)
Resistance Change from Nonactivated to Activated Condition	typical <1.0 to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	>1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

See **TURCK** Sensors Catalog for detailed individual specifications for all NAMUR sensors.



TURCK NAMUR proximity sensors are functionally compatible with all switch amplifiers with input characteristics that meet the NAMUR requirements. Their approved intrinsic safety entity parameters are compatible with all **TURCK** safety switch amplifiers and remote I/O systems. See Section B, IS Interface Technology, and Section C, IP 20 Slice I/O, for more information.

NAMUR Barrel Style Sensors

Metal Barrel



Quick Disconnect



Integral Cable

8 mm Diameter, Sensing Range 1.5-3 mm

Bi 1.5-EG08K-Y1-H1341	Bi 1.5-GS880-Y0
Bi 1.5-EG08K-Y1X-H1341	Bi 1.5-EG08K-Y1
Bi 1.5-EG08-Y1-H1341	Bi 1.5-EG08-Y1
Ni 1.5-EG08K-Y1-H1341	Bi 1.5-G08-Y1
Ni 1.5-EG08K-Y1X-H1341	Ni 2-G08-Y1
Ni 1.5-EG08-Y1-H1341	Ni 3-EG08K-Y1

12 mm Diameter, Sensing Range 2-5 mm

Bi 2-EM12-Y0X-H1141	Bi 2-EG12-Y0X
Bi 2-M12-Y1X-H1141	Bi 2-G12-Y0
Bi 2-MT12-Y0X-H1141	Bi 2-G12-Y0X
Bi 2-M12E-Y0X-H1141	Ni 5-G12-Y0
Ni 5-M12-Y1X-H1141	Ni 5-G12-Y0X
Ni 5-G12-Y0-H1141	

18 mm Diameter, Sensing Range 5-10 mm

Bi 5-M18-Y1X-H1141	Bi 5-EG18-Y0
Ni10-M18-Y1X-H1141	Bi 5-G18-Y0
BiD2-G18-Y0-H1141/S212	Bi 5-EG18-Y0X
	BiD2-G180-Y1/S212
	Ni10-G18-Y0
	Ni10-G18-Y0X

30 mm Diameter, Sensing Range 10-15 mm

Bi10-M30-Y1X-H1141	Bi10-G30-Y0
	Bi10-G30-Y0X
	Bi10-G30-Y0/S90
	Ni15-G30-Y0
	Ni15-G30-Y0X

Plastic Barrel



Quick Disconnect



Integral Cable



Terminal Chamber

11 mm Diameter, Sensing Range 2-5 mm

Bi 2-K11-Y1
Ni 5-K11-Y0

12 mm Diameter, Sensing Range 2-5 mm

Bi 2-S12-Y0X-H1141	Bi 2-P12-Y0	Bi 2-P12SK-Y1X
Ni 5-S12-Y0X-H1141	Bi 2-P12-Y0/S100	Ni 5-P12SK-Y0X
	Bi 2-P12-Y0X	
	Bi 2-P12-Y1X/S97	
	Ni 5-P12-Y0/S100	
	Ni 5-P12-Y0X	
	Ni 5-P12-Y1	

18 mm Diameter, Sensing Range 5-10 mm

Ni10-K18-Y1	Bi 5-P18-Y0	Bi 5-P18SK-Y1X
	Bi 5-P18-Y0X	Ni10-P18SK-Y1X
	Bi 5-P18-Y0/S100	
	Ni10-P18-Y0X	
	Ni10-P18-Y1	
	Ni10-P18-Y0/S100	

20 mm Diameter, Sensing Range 10 mm

Ni10-K20-Y1

20 mm Diameter, Sensing Range 10 mm

Bi10-P30-Y0X
Bi10-P30-Y1
Ni15-P30-Y0X
Ni15-P30-Y1

20 mm Diameter, Sensing Range 10 mm

Ni20-K40-Y1

See **TURCK** Sensor Catalog for detailed individual specifications for all NAMUR sensors.

NAMUR Rectangular Style Sensors



6-20 mm with
Integral Cable



20-26 mm with
Quick Disconnect

6 mm , Sensing Range 3 mm

Bi 2-Q5.5-Y1X

8 mm , Sensing Range 5 mm

Bi 2-Q08-Y1X

10 mm , Sensing Range 2 mm

Bi 2-Q10S-Y1X

11 mm , Sensing Range 2 mm

Bi 2-Q11S-Y1X

14 mm , Sensing Range 10 mm

Bi10-Q14-Y0X

20 mm , Sensing Range 15 mm

Bi15-Q20-Y0X | Bi15-Q20-Y0X-H1141

26 mm , Sensing Range 10 mm

| Bi15-Q20-Y0X-H1141



40 mm CP40



80 mm CP80



80 mm Q40



90 mm K90

6 mm , Sensing Range 3 mm

Bi 5-CP40-Y1X

8 mm , Sensing Range 5 mm

Ni20-CP40-Y1X

10 mm , Sensing Range 2 mm

| Ni40-CP40-Y1

11 mm , Sensing Range 2 mm

| Ni50-CP40-Y1 | Ni50-K90SR-Y1/M20

14 mm , Sensing Range 10 mm

| Ni60-Q80-Y0X

Class I, Division 2 Hazardous Area Sensors

TURCK 3-wire DC proximity sensors with code AN6., AP6., RN6., or RP6. with threaded barrels are approved by FM Approvals for installation in Class I, Division 2 hazardous locations. The sensors must be installed using a Division 2 wiring method, which, for all practical purposes, means that the sensor must be either installed in an enclosure that requires the use of a tool to open, or they must be adapted to a raceway or conduit product. **TURCK** TMF conduit adapters or other suitable thread adapters may be used for this purpose.



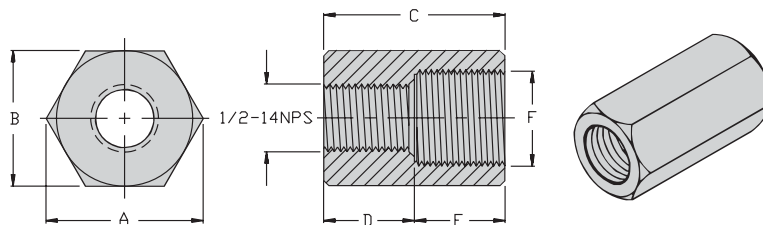
Conduit Adapters

When installed in this fashion and powered from a supply not exceeding 30 VDC, there are no further energy limiting or protective enclosure requirements for installation in Class I, Division 2. The sensors have no arcing or sparking components and will not dissipate heat under normal operating conditions.

Part Number	ID Number	Barrel Diameter	Dimensions					
			A	B	C	D	E	F
TMF 12-G	A3310	12 mm	1.15 [29.2]	1.00 [25.4]	1.00 [25.4]	0.50 [12.7]	0.50 [12.7]	M12x1
TMF 18-G	A3320	18 mm	1.15 [29.2]	1.00 [25.4]	1.00 [25.4]	0.50 [12.7]	0.50 [12.7]	M18x1
TMF 30-G	A3345	30 mm	1.73 [44.0]	1.50 [38.1]	1.00 [25.4]	0.60 [15.2]	0.40 [10.2]	M30x1.5
Use above Conduit Adapters with G and P Barrel sensors.								
TMF 18-MS	A3330	18 mm	1.15 [29.2]	1.00 [25.4]	2.00 [50.8]	1.50 [38.1]	0.50 [12.7]	M18x1
TMF 30-MS	A3355	30 mm	1.73 [44.0]	1.50 [38.1]	2.00 [50.8]	0.60 [15.2]	1.40 [35.6]	M30x1.5

Use above Conduit Adapters with M and S Barrel sensors.

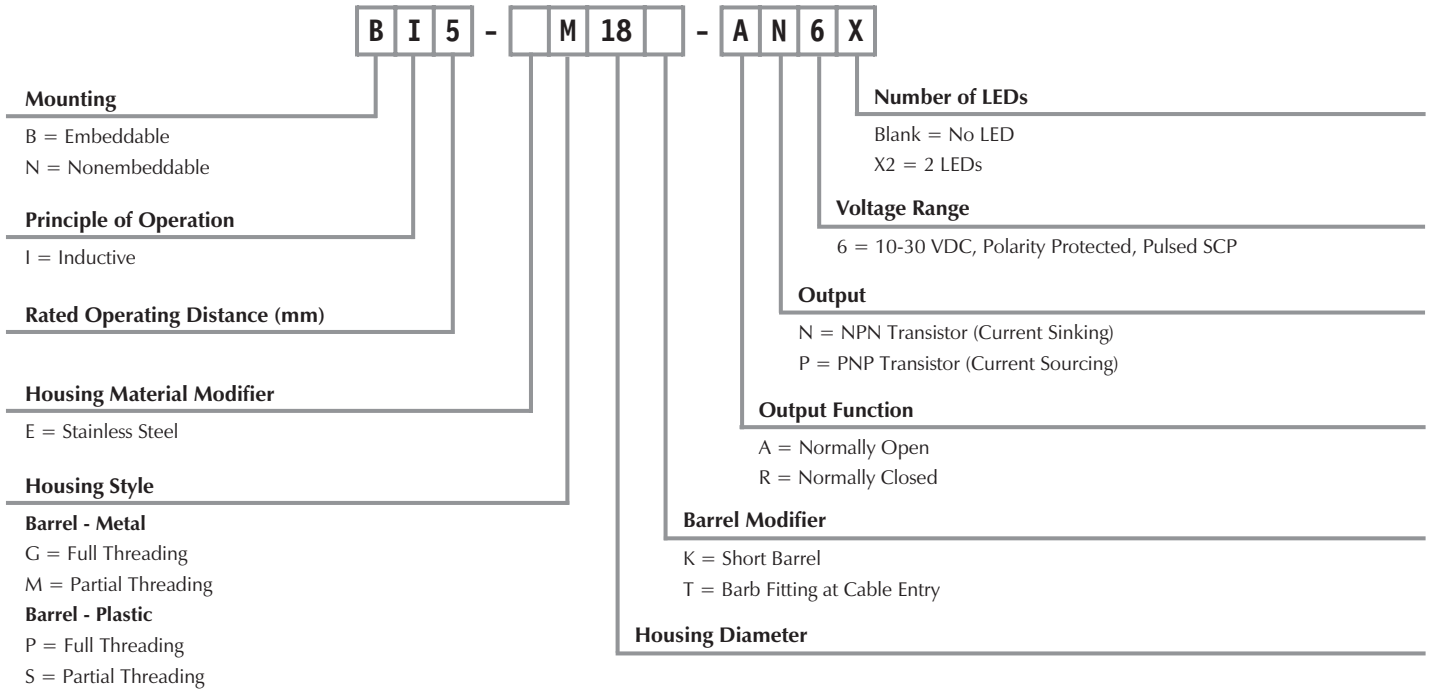
Material: Aluminum
 Inches [mm]





Class I, Division 2 Hazardous Area Metal Barrel Sensors Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.



Class I, Division 2 Hazardous Area Sensors

Metal Barrel



12 - 18 mm



30 mm

Plastic Barrel



12 - 18 mm



30 mm

Embeddable

Bi 2-EG12-AN6X	Bi 4-EM12-AN6X	Bi 5-G18K-AN6X	Bi10-G30-AN6
Bi 2-EG12-AP6X	Bi 4-G12-AN6	Bi 5-G18K-AP6	Bi10-G30-AN6X
Bi 2-EG12-RP6X	Bi 4-G12-AN6X	Bi 5-G18K-AP6X	Bi10-G30-AP6
Bi 2-G08-AN6	Bi 4-G12-AP6X	Bi 5-G18K-RN6X	Bi10-G30-AP6X
Bi 2-G12-AN6	Bi 4-G12K-AN6X	Bi 5-G18-RP6X	Bi10-G30K-AN6
Bi 2-G12-AN6X	Bi 4-G12K-AN6X	Bi 5-M18-AN6X	Bi10-G30K-AN6X
Bi 2-G12-AP6	Bi 4-G12K-AP6X	Bi 5-M18-AP6X	Bi10-G30K-AP6X
Bi 2-G12-AP6X	Bi 4-G12K-RP6X	Bi 5-M18T-AN6X	Bi10-G30K-RP6X
Bi 2-G12K-AN6X	Bi 4-M12-AN6X	Bi 5-M18T-AP6X	Bi10-G30-RN6X
Bi 2-G12K-AP6	Bi 4-M12-AP6X	Bi 5-M18T-RP6X	Bi10-G30-RP6X
Bi 2-G12K-AP6X	Bi 4-M12-RN6X	Bi 8-G18-AN6X	Bi10-M30-RP6
Bi 2-G12K-RN6X	Bi 4-M12-RP6X	Bi 8-G18-AP6X	Bi10-M30T-AN6X
Bi 2-G12K-RP6X	Bi 4-M12T-AN6X	Bi 8-G18-RN6X	Bi10-M30T-AP6X
Bi 2-G12-RN6X	Bi 4-M12T-AP6X	Bi 8-M18-AN6X	Bi15-G30K-AP6X
Bi 2-G12-RP6X	Bi 5-EG18-AN6X	Bi 8-M18-AP6X	Bi15-M30-AN6X
Bi 2-M12-AN6X	Bi 5-EG18-AP6X	Bi 8-M18-RN6X	Bi15-M30-AP6X
Bi 2-M12-AP6X	Bi 5-G18-AN6	Bi 8-M18-RP6X	Bi15-M30-RP6X
Bi 2-M12-RP6X	Bi 5-G18-AN6X	Bi 8-M18T-AN6X	Bi15-M30T-AN6X
Bi 2-M12T-AN6X	Bi 5-G18-AP6	Bi 8-M18T-AP6X	Bi15-M30T-AP6X
Bi 2-M12T-AP6X	Bi 5-G18-AP6X		
Bi 4-EG12-AN6X	Bi 5-G18K-AN6		

Nonembeddable

Ni 4-M12-AP6X	Ni 5-G12K-AP6X	Ni10-G18-AN6X	Ni15-M30T-AN6X
Ni 4-M12T-AN6X	Ni 5-G12K-RN6X	Ni10-G18-AP6	Ni15-M30T-AP6X
Ni 4-M12T-AP6X	Ni 5-G12K-RP6X	Ni10-G18-AP6X	
Ni 5-G12-AN6	Ni 5-G12-RN6X	Ni10-G18K-AN6X	
Ni 5-G12-AN6X	Ni 5-G12-RP6X	Ni10-G18K-AP6X	
Ni 5-G12-AP6	Ni 8-M18-AP6X	Ni10-G18K-RP6X	
Ni 5-G12-AP6X	Ni 8-M18T-AN6X	Ni10-G18-RN6X	
Ni 5-G12K-AN6X	Ni 8-M18T-AP6X	Ni10-G18-RP6X	
Ni 5-G12K-AP6	Ni10-G18-AN6		

Embeddable

Bi 2-S12-AN6X	Bi10-S30-AN6X
Bi 2-S12-AP6X	Bi10-S30-AP6X
Bi 2-S12-RN6X	
Bi 5-S18-AN6X	
Bi 5-S18-AP6X	
Bi 5-S18-RN6X	
Bi 5-S18-RP6X	

Nonembeddable

Ni 4-S12-AN6X	Ni15-S30-AN6X
Ni 4-S12-AP6	
Ni 4-S12-AP6X	
Ni 8-S18-AN6X	
Ni 8-S18-AP6	
Ni 8-S18-AP6X	
Ni 8-S18-RN6X	

See **TURCK** Sensor Catalog for detailed individual specifications for all NAMUR sensors.



Notes:

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Process Automation – Instrumentation

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