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Inductive Proximity Sensors

Quick Selection Guide





Specifications	 <p>871TM All Stainless Steel</p>	 <p>872C WorldProx General Purpose</p>	 <p>871T Stainless Steel Barrel</p>	 <p>871TS Food and Beverage</p>
Description	Tubular Style • Stainless steel face/ threaded stainless steel barrel	Tubular Style • Plastic face/threaded nickel-plated brass barrel • Plastic face/threaded plastic barrel	Tubular Style • All metal sensing: plastic face/threaded stainless steel barrel • Ferrous selective: stainless steel face/ threaded stainless steel barrel	Tubular Style • PPS plastic face/stainless steel 316L barrel • High pressure washdown rated (IP67, IP68 and IP69K)
Features	<ul style="list-style-type: none"> • Stainless steel face and barrel • Full mechanical seals (all-metal sensing models) • ToughLink™ or PVC cable styles • Mini, micro or EAC micro QD styles • Short-circuit protection • Overload protection • Transient noise protection • False pulse protection • Reverse polarity protection (DC models) • Radio frequency interference protection 	<ul style="list-style-type: none"> • Threaded, nickel-plated brass barrel or plastic barrel • 360° visible LED • Cable or quick-disconnect styles • Short-circuit protection • Overload protection • Transient noise protection • False pulse protection • Reverse polarity protection 	<ul style="list-style-type: none"> • Threaded stainless steel barrel • Cable or QD styles • Short-circuit protection (DC models) • Overload protection (DC models) • Transient noise protection • False pulse protection • Reverse polarity protection (DC models) 	<ul style="list-style-type: none"> • Threaded stainless steel 316L barrel • PPS (FDA Certified) plastic face • Standard and extended sensing range • Short circuit protection • Overload protection • False pulse protection • Reverse polarity protection
Diameter	• 12, 18, 30 mm	• 6.5, 8, 12, 18, 30 mm	• 12, 18 mm	• 12, 18 mm
Available Models	<ul style="list-style-type: none"> • DC 3-Wire 2-22 • DC 3-Wire Extended Sensing 2-25 • DC 3-Wire Ferrous Selective 2-28 • DC 3-Wire Nonferrous Selective 2-28 • DC 3-Wire Submersible 2-31 • DC 2-Wire 2-33 • DC 2-Wire Intrinsically Safe 2-36 • AC/DC 2-Wire 2-41 • AC/DC 2-Wire PLC Interfacer 2-44 • DeviceNet™ Sensors NO TAG 	<ul style="list-style-type: none"> • DC 3-Wire 2-48 • DC 3-Wire Short Barrel 2-52 • DC 3-Wire Extended Sensing 2-56 • DC 3-Wire Short Barrel with Extended Sensing 2-60 • DC 3-Wire Long Range NEW • DC 3-Wire Plastic Barrel 2-64 • DC 2-Wire 2-67 • DC 2-Wire QuadroPlex 2-70 • DC 4-Wire Complementary Output 2-72 • AC 2-Wire 2-74 • AC 2-Wire Extended Sensing 2-77 • AC/DC 2-Wire 2-80 • AC/DC 2-Wire Relay Output 2-83 	<ul style="list-style-type: none"> • DC 3-Wire 2-86 • AC 2-Wire 2-88 • AC 4-Wire Ferrous Selective 2-90 	<ul style="list-style-type: none"> • DC 3-Wire 2-93
Connections	<ul style="list-style-type: none"> • PVC Cable • ToughLink™ cable • Mini QD • Micro QD 	<ul style="list-style-type: none"> • Cable (PVC) • Mini Quick-Disconnect • Micro Quick-Disconnect • Pico Quick-Disconnect 	<ul style="list-style-type: none"> • Cable (PVC) • Mini QD 	<ul style="list-style-type: none"> • Micro QD
Enclosure	<ul style="list-style-type: none"> • Stainless steel face and barrel • NEMA 1, 2, 3, 3R, 4, 4X, 6, 6P, 12, 13; IP67 (IEC529) • 1200 psi (8270 kPa) washdown • IP69K (some models) 	<ul style="list-style-type: none"> • NEMA 1, 2, 3, 4, 6P, 12, 13 IP67 (IEC529) • Nickel-plated brass barrel or plastic barrel, plastic face (PBT) 	<ul style="list-style-type: none"> • NEMA 1, 2, 3, 4, 12, 13 IP67 (IEC529) • 303 Stainless steel barrel 	<ul style="list-style-type: none"> • NEMA 1, 2, 3, 3R, 4, 4X, 12, 13 and IP67, IP68 and IP69K
Additional Info	• See page 2-21	• See page 2-47	• See page 2-85	• See page 2-93







 <p>871Z Weld Field Immune</p>	 <p>871ZT Weld Field Immune Equal Sensing</p>	 <p>871C Special Purpose</p>	 <p>871P VersaCube</p>
<p>Tubular Style</p> <ul style="list-style-type: none"> • PTFE face/threaded PTFE-coated brass barrel • Thermoset plastic face/ threaded PTFE-coated brass barrel 	<p>Tubular Style</p> <ul style="list-style-type: none"> • PTFE face/threaded ptf-coated brass barrel 	<p>Tubular Style</p> <ul style="list-style-type: none"> • Plastic face/threaded nickel-plated brass barrel • Plastic face/smooth nickel-plated brass barrel • Plastic face/threaded plastic barrel 	<p>Rectangular Style</p> <ul style="list-style-type: none"> • Plastic housing
<ul style="list-style-type: none"> • Cable or QD styles • PTFE-coated brass barrel • Weld field immunity • Short-circuit, false pulse, overload, and transient noise protection 	<ul style="list-style-type: none"> • Weld field immunity • Equal sensing • PTFE-coated brass barrel • Micro QD • Short-circuit, false pulse, overload, and transient noise protection 	<ul style="list-style-type: none"> • Cable or QD styles • Short-circuit protection • Overload protection • Transient noise protection • False pulse protection • Reverse polarity protection 	<ul style="list-style-type: none"> • 5-position sensing head • Rugged burn and weld-slag resistant housing on weld-field immune models • Mini and micro QD styles • Weld field immunity (some models) • Equal sensing (some models) • Short-circuit protection • False pulse protection • Overload protection • Transient noise protection • Reverse polarity protection (DC models)
<ul style="list-style-type: none"> • 12, 18, 30 mm 	<ul style="list-style-type: none"> • 12, 18, 30 mm 	<ul style="list-style-type: none"> • 3, 4, 5, 12, 18, 30 mm 	<ul style="list-style-type: none"> • 40 x 40 x 69 mm
<ul style="list-style-type: none"> • Weld Field Immune DC 3-Wire 2-98 • Weld Field Immune AC 2-Wire 2-100 	<ul style="list-style-type: none"> • DC 3-Wire Weld Field Immune 2-104 	<ul style="list-style-type: none"> • DC 3-Wire Small Diameter 2-114 • DC 3-Wire Extended Temperature Range 2-117 • AC 2-Wire Full-Featured 2-119 • AC 2-Wire Plastic Barrel 2-122 • NAMUR Intrinsically Safe 2-124 • Analog Output 2-127 	<ul style="list-style-type: none"> • DC 3-Wire 2-130 • DC 4-Wire 2-133 • AC/DC 2-Wire 2-134
<ul style="list-style-type: none"> • Cable (ToughLink™) • Mini QD • Micro QD 	<ul style="list-style-type: none"> • Micro QD 	<ul style="list-style-type: none"> • Cable (PVC or PUR) • Mini Quick-Disconnect • Micro Quick-Disconnect • Pico Quick-Disconnect 	<ul style="list-style-type: none"> • Mini QD • Micro QD
<ul style="list-style-type: none"> • NEMA 1, 2, 3, 3R, 4, 4X, 6, 6P, 12, 13, IP67 (IEC529) PTFE coated housing 		<ul style="list-style-type: none"> • Varies by product 	<ul style="list-style-type: none"> • NEMA 1, 2, 3, 4, 6, 6P, 12 and 13, IP67 (IEC529), 1200 psi (8270 kPa) washdown • IP69K (some models)
<ul style="list-style-type: none"> • See page 2-97 	<ul style="list-style-type: none"> • See page 2-104 	<ul style="list-style-type: none"> • See page 2-113 	<ul style="list-style-type: none"> • See page 2-129

Inductive Proximity Sensors

Quick Selection Guide

Specifications	 <p>871F Flat Pack & Block</p>	 <p>871L & 872L Limit Switch Style</p>	 <p>802PR Limit Switch Style</p>	 <p>871FM Miniature Flat Pack</p>
Description	Flat Pack Style <ul style="list-style-type: none"> Plastic body Block Style <ul style="list-style-type: none"> Aluminum body 	Limit Switch Style <ul style="list-style-type: none"> Plastic body/17-position head 	Limit Switch Style <ul style="list-style-type: none"> Glass-reinforced polyester housing 	Miniature Flat Pack Style <ul style="list-style-type: none"> Plastic body
Features	<ul style="list-style-type: none"> Cable, conduit, or QD styles Short-circuit protection Overload protection Transient noise protection False pulse protection Reverse polarity protection (DC models) 	<ul style="list-style-type: none"> 17 sensing head positions (1 top, 16 side) Conduit or QD styles Short-circuit protection Overload protection Transient noise protection False pulse protection Reverse polarity protection Selectable normally open or normally closed output 	<ul style="list-style-type: none"> Multiple sensing directions Cable, conduit, or QD styles Short-circuit protection (AC/DC models) Overload protection (AC/DC models) Transient noise protection False pulse protection Hazardous location models are available 	<ul style="list-style-type: none"> Cable or QD styles Short-circuit protection (DC models) Overload protection (DC models) Transient noise protection False pulse protection Reverse polarity protection (DC models)
Diameter	Flat Pack Style <ul style="list-style-type: none"> 80 x 80 x 40 mm Block Style <ul style="list-style-type: none"> 50 x 50 x 40 mm 40 x 50 x 100 mm 	<ul style="list-style-type: none"> 40 x 40 x 120 mm 	<ul style="list-style-type: none"> 42 x 41 x 109 mm 	<ul style="list-style-type: none"> 5 x 5 x 15 mm 8 x 8 x 37 mm 28 x 16 x 11 mm 25 x 50 x 10 mm 31 x 18 x 10 mm
Available Models	<ul style="list-style-type: none"> Complementary Output DC 4-Wire Flat Pack 2-138 DC Weld Field Immune Flat Pack 2-141 2-Wire AC/DC Flat Pack 2-146 Weld Field Immune 2-Wire AC/DC Flat Pack 2-148 DC 3-Wire Block 2-150 	<ul style="list-style-type: none"> DC 3-Wire 2-154 AC 2-Wire 2-156 AC/DC 2-Wire 2-156 	<ul style="list-style-type: none"> AC/DC 2-Wire 2-160 Hazardous Location AC/DC 2-Wire 2-165 AC 2-Wire (High Output) 2-167 Hazardous Location AC 2-Wire (High Output) 2-171 	<ul style="list-style-type: none"> DC 3-Wire 2-176 AC 2-Wire 2-179
Connections	Flat Pack Style <ul style="list-style-type: none"> Cable Mini QD Micro QD Block Style <ul style="list-style-type: none"> Micro QD Cable 	<ul style="list-style-type: none"> Mini QD Micro QD Conduit/Terminal 	<ul style="list-style-type: none"> Cable (STO or ToughLink™) Mini QD Micro QD Conduit/Terminal 	<ul style="list-style-type: none"> Cable (PVC) Pico QD
Enclosure	<ul style="list-style-type: none"> NEMA 1, 2, 3, 4, 6, 6P, 12 and 13, IP67 (IEC529), 1200 psi (8270 kPa) washdown IP69K (some models) 	<ul style="list-style-type: none"> NEMA 3, 4, 6, 12, 13, IP67 (IEC529) Polyloy 	<ul style="list-style-type: none"> NEMA 1, 2, 3, 4, 4X, 12, 13, IP65 (IEC529) Self extinguishing glass-reinforced polyester body 	<ul style="list-style-type: none"> NEMA 4, IP67 (IEC529) Plastic
Additional Info	<ul style="list-style-type: none"> See page 2-137 	<ul style="list-style-type: none"> See page 2-153 	<ul style="list-style-type: none"> See page 2-159 	<ul style="list-style-type: none"> See page 2-173



 871P Can Sensors	 871D WorldClamp	 871D Cylinder Position	 871R & 871S Ring & Slot Sensors	
Specifications				
Description	Can Sensor Style • Stainless steel housing/plastic face	On-Clamp Cylinder Position Style • Power clamp and gripper style	In-port Cylinder Position Style • Ceramic face/stainless steel probe assembly	Ring and Slot Style • Plastic and metal housing
Features	<ul style="list-style-type: none"> • Short-circuit protection • Overload protection • Transient noise protection • False pulse protection • Reverse polarity protection (DC models) • Stainless steel housing 	<ul style="list-style-type: none"> • Superior LED visibility • Weld-field immune • Shielded construction • Short-circuit protection • Overload protection • Transient noise protection • False pulse protection • Reverse polarity protection (DC models) 	<ul style="list-style-type: none"> • Stainless steel probe with ceramic face • Low profile housing can be rotated 304° after installation without breaking pressure seal • Shielded construction • Weld-field immune • Short-circuit protection • Overload protection • Transient noise protection • False pulse protection • Reverse polarity protection (DC models) 	<ul style="list-style-type: none"> • Cable or micro QD style • Short-circuit protection • Reverse polarity protection
Diameter	<ul style="list-style-type: none"> • 76 x 38 x 59 mm • 140 x 44.5 x 59 mm 	<ul style="list-style-type: none"> • 47 x 18 x 18 mm • 55 x 35 x 19 mm • 47 x 18 x 24 mm 	• 64 x 48 x 37 mm installed	<ul style="list-style-type: none"> • 12, 20, 50, and 100 mm • 30 mm
Available Models	<ul style="list-style-type: none"> • Short-Range AC 2-Wire Inductive Can . . . 2-182 • Long-Range AC 2-Wire Inductive Can . . . 2-182 • Short-Range DC 4-Wire Inductive Can . . . 2-184 • Long-Range DC 4-Wire Inductive Can . . . 2-184 • Motion DC 4-Wire Inductive Can . . . 2-186 	<ul style="list-style-type: none"> • DC 4-wire 2-190 • AC/DC 5-wire 2-192 	<ul style="list-style-type: none"> • DC 3-wire 2-196 • AC/DC 2-wire 2-198 	<ul style="list-style-type: none"> • 871R DC 3-Wire Ring Style 2-202 • 871S DC 3-Wire Slot Style 2-205
Connections	<ul style="list-style-type: none"> • Cable (PVC) • Mini QD 	• Micro QD	<ul style="list-style-type: none"> • Mini QD • Micro QD 	<ul style="list-style-type: none"> • Cable (PVC) • Micro QD
Enclosure	• NEMA 1, 3, 4, 4X, 6, 6P, 12, 13, IP67 (IEC529), 1200 psi (8270 kPa) washdown	• IP67	• NEMA 1, 2, 3, 3R, 4, 6, 12, 13, IP67 (IEC529)	• NEMA 4 IP67 (IEC529)
Additional Info	• See page 2-181	• See page 2-189	• See page 2-195	• See page 2-201

Weld Field Immune Proximity Sensors

871ZT Weld Field Immune Tubular page 2-104
871Z Weld Field Immune Tubular page 2-97
871ZC Weld Field Immune Tubular page 2-107
871D WorldClamp™ page 2-192
871D Cylinder Position Sensor page 2-195
871P Weld Field Immune VersaCube page 2-129
871F Weld Field Immune Puck Style page 2-148

Hazardous Location Proximity Sensors

871TM 2-Wire DC Intrinsically Safe page 2-36
871C NAMUR Intrinsically Safe page 2-124
802PR Hazardous Location page 2-159

Ferrous/Nonferrous Selective Proximity Sensors

871TM Ferrous Selective page 2-28
871T Ferrous Selective page 2-90
871TM Nonferrous Selective page 2-28

Extended Temperature Range Proximity Sensors

871C Extended Temperature page 2-117
Other extended temperature range models available as special order items. Contact your local Rockwell Automation sales office or Allen-Bradley distributor for details.

Active Face: Portion of the sensor from which the electromagnetic field or ultrasonic pulse emanates.

Axial Approach: The approach of the target with its center maintained on the reference axis.

Complementary Outputs: (N.O. & N.C.) A proximity sensor that features both normally open and normally closed outputs, which can be used simultaneously.

Correction Factors: Suggested multiplication factors taking into account variations in the target material composition. When figuring actual sensing distance this factor should be multiplied with the nominal sensing distance.

Current Consumption: The current consumed by the proximity switch when the output device is in the off condition.

Damping Material: Material which causes a decrease in the strength of the electromagnetic or electrical field produced by the sensing coil.

Differential Travel (Hysteresis): The distance between the operating point and the release point. See Hysteresis.

Dual Output: Sensor which has two outputs which may be complementary or may be of a single type (i.e. two normally open or two normally closed).

Effective Operating Distance: (Sr) The operating distance of an individual proximity switch measured at stated temperature, voltage, and mounting condition.

False Pulse: An undesired change in the state of the output of the proximity switch that lasts for more than two milliseconds.

Flush Mounting: A shielded proximity sensor which can be flush mounted in metal up to the plane of the active sensing face.

Free Zone: The area around the proximity switch which must be kept free from any damping material.

Hysteresis: The difference, in percentage (%), of the nominal sensing distance between the operate (switch on) and release point (switch off) when the target is moving away from the sensors active face. Without sufficient hysteresis a proximity sensor will "chatter" (continuously switch on and off) when there is significant vibration applied to the target or sensor.

Isolated Output: An output that is optically separated from the input and other output and independent of the other output to a specified level.

Isolation Voltage: Maximum rated voltage between isolated outputs or input and output.

Lateral Approach: The approach of the target perpendicular to the reference axis.

Leakage Current: Current which flows through the output when the output is in an "off" condition or de-energized. This current is necessary to supply power to the electronics of the sensor.

LED (Light Emitting Diode): Semi-conductor that generates monochromatic light when current flows in the conductive direction. An LED is the standard Light Source for most photoelectric sensors.

Maximum Inrush Current: The maximum current level at which the proximity sensor can be operated for a short period of time.

Maximum Load Current: The maximum current level at which the proximity sensor can be continuously operated.

Minimum Load Current: The minimum amount of current required by the sensor to maintain reliable operation.

Nonferrous Metal: Any metal which does not contain iron.

Normally Closed: Output opens when an object is detected in the active switching area.

Normally Open: Output closes when an object is detected in the active switching area.

NPN: The sensor switches the load to the negative terminal. The load should be connected between the sensor output and positive terminal.

Operating Distance, Assured: Between 0 and 81% of the rated operating distance for inductive proximity switches.

Operating Distance, Rated: The operating distance specified by the manufacturer and used as a reference value. Also known as nominal sensing distance.

PNP: The sensor switches the load to the positive terminal. The load should be connected between the sensor output and negative terminal.

Programmable Output: (N.O. or N.C.) Output which can be changed from N.O. to N.C. or N.C. to N.O. by way of a switch or jumper wire. Also known as selectable output.

Repeatability: The variation of the effective operating distance measured at room temperature and constant supply voltage. It is expressed as a percentage of the sensing distance.

Residual Voltage: The voltage across the sensor output while energized and carrying maximum load current.

Response Time: The sum of the time needed for a string of electronic circuits to translate a change in light into a change of output status.

Reverse Polarity Protection: A circuit that uses a diode to avoid damage to the control in case the polarity of the power supply is accidentally reversed.

Ripple: The variance between peak-to-peak values in DC voltage. It is expressed in percentage of rated voltage.

Sensing Distance: The distance at which an approaching target activates (changes state of) the proximity output.

Sensing Range: The sensing range is the distance within which the sensor will detect a target under fluctuations of temperature and voltage.

Shielded: Sensor which can be flush mounted in metal up to the plane of the active sensing face.

Short Circuit Protection: (SCP) Sensor protected from damage when a shorted condition exists for an indefinite or defined period of time.

Sinking: See NPN.

Sourcing: See PNP.

Switching Frequency: The maximum number of times per second the sensor can change state (ON and OFF) usually expressed in Hertz (Hz). As measured in DIN EN 50010.

Target: Object which activates the sensor.

Three-Wire Proximity Switch: An AC or DC proximity sensor with three leads, two of which supply power and a third that switches the load.

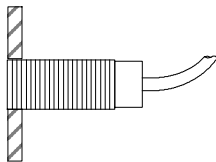
Two-Wire Proximity Switch: A proximity sensor which switches a load connected in series to the power supply. Power for the proximity switch is obtained through the load at all times.

Unshielded: Sensors which have longer sensing distances and a wider magnetic field but are sensitive to surrounding metal.

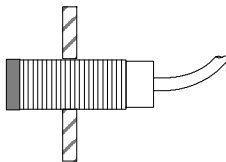
Voltage Drop: The maximum voltage drop across a conducting sensor.

Weld Field Immunity: (WFI) The ability of a sensor not to false trigger in the presence of strong electromagnetic fields.

Shielded



Unshielded



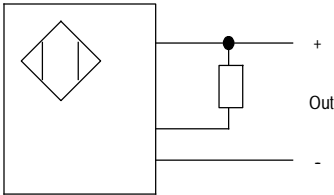
Normally Open



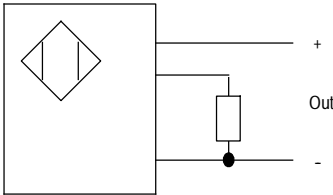
Normally Closed



NPN



PNP

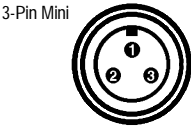
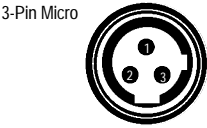
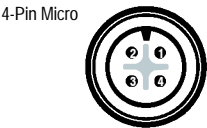


DC ———

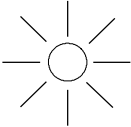
AC/DC

AC

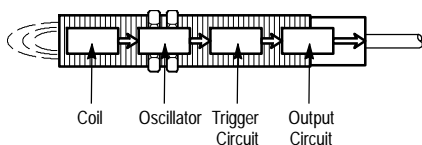
Connectors



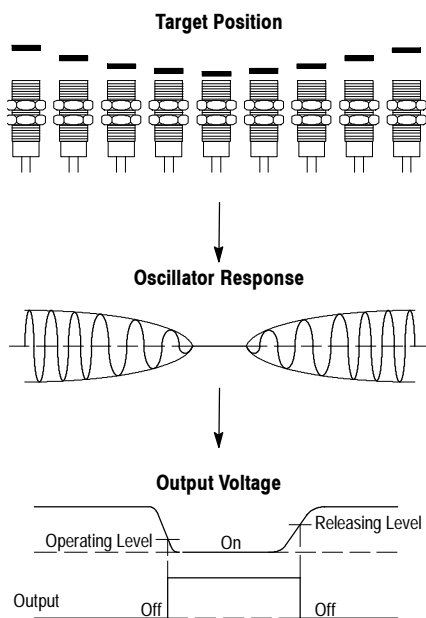
LED



Principles of Operation for Inductive Proximity Sensors

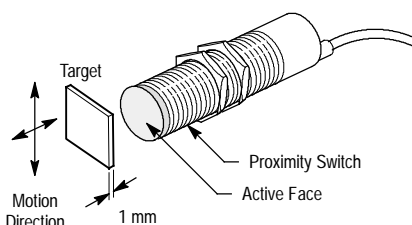


Inductive proximity sensors are designed to operate by generating an electromagnetic field and detecting the eddy current losses generated when ferrous and nonferrous metal target objects enter the field. The sensor consists of a coil on a ferrite core, an oscillator, a trigger-signal level detector and an output circuit. As a metal object advances into the field, eddy currents are induced in the target. The result is a loss of energy and a smaller amplitude of oscillation. The detector circuit then recognizes a specific change in amplitude and generates a signal which will turn the solid-state output "ON" or "OFF."



A metal target approaching an inductive proximity sensor (above) absorbs energy generated by the oscillator. When the target is in close range, the energy drain stops the oscillator and changes the output state.

Standard Target for Inductive Proximity Sensors



The active face of an inductive proximity switch is the surface where a high-frequency electro-magnetic field emerges.

A standard target is a mild steel square, one mm thick, with side lengths equal to the diameter of the active face or three times the nominal switching distance, whichever is greater.

Target Correction Factors for Inductive Proximity Sensors

To determine the sensing distance for materials other than the standard mild steel, a correction factor is used. The composition of the target has a large effect on sensing distance of inductive proximity sensors. If a target constructed from one of the materials listed is used, multiply the nominal sensing distance by the correction factor listed in order to determine the nominal sensing distance for that target. Note that ferrous-selective sensors will not detect brass, aluminum or copper, while nonferrous selective sensors will not detect steel or ferrous-type stainless steels.

The correction factors listed below can be used as a general guideline. Common materials and their specific correction factors are listed on each product specification page.

$$(\text{Nominal Sensing Range}) \times (\text{Correction Factor}) = \text{Sensing Range.}$$

Correction Factors	
Target Material	Approximate Correction Factor
Mild Steel	1.0
Stainless Steel	0.85
Brass	0.50
Aluminum	0.45
Copper	0.40

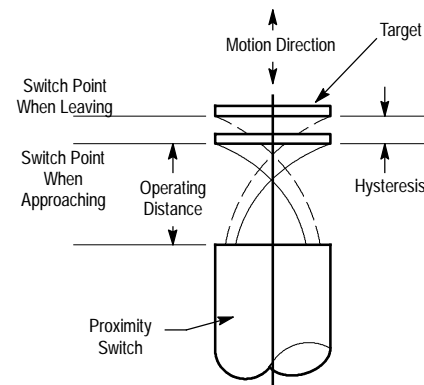
The size and shape of the target may also affect the sensing distance. The following should be used as a general guideline when correcting for the size and shape of a target:

- Flat targets are preferable
- Rounded targets may reduce the sensing distance
- Nonferrous materials usually reduce the sensing distance for all-metal sensing models
- Targets smaller than the sensing face typically reduce the sensing distance
- Targets larger than the sensing face may increase the sensing distance
- Foils may increase the sensing distance

Hysteresis (Differential Travel)

The difference between the operate and the release points is called hysteresis or differential travel. The amount of target travel required for release after operation must be accounted for when selecting target and sensor locations. Hysteresis is needed to help prevent chattering (turning on and off rapidly) when the sensor is subjected to shock and vibration or when the target is stationary at the nominal sensing distance.

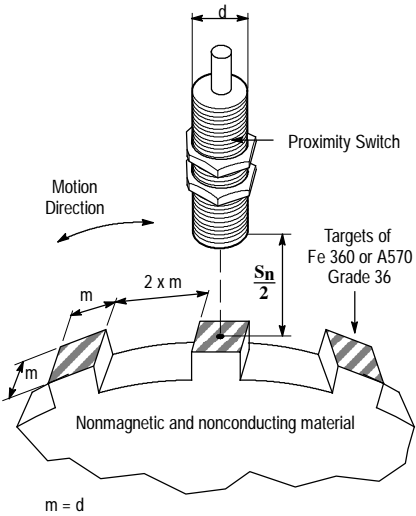
Vibration amplitudes must be smaller than the hysteresis band to avoid chatter.



Introduction

Switching Frequency

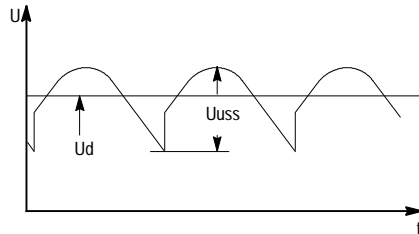
The switching frequency is the maximum speed at which a sensor will deliver discrete individual pulses as the target enters and leaves the sensing field. This value is always dependent on target size, distance from sensing face, speed of target and switch type. This indicates the maximum possible number of switching operations per second. The measuring method for determining switching frequency with standard targets is specified by IEC60947-5-2.



Ripple

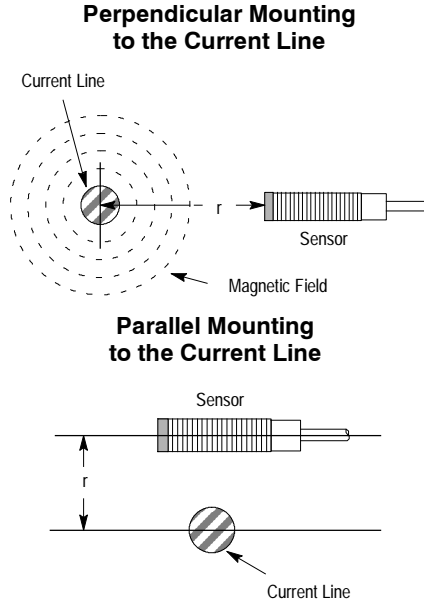
Ripple is the alternating voltage superimposed on the DC voltage (peak to peak) in %.

For the operation of DC voltage switches, a filtered DC voltage with a ripple of 10% maximum is required (according to DIN 41755).



Mounting Considerations for Weld Field Immune Proximities

Reliable operation is dependent on the strength of the magnetic field and the distance between the current line and the sensor.



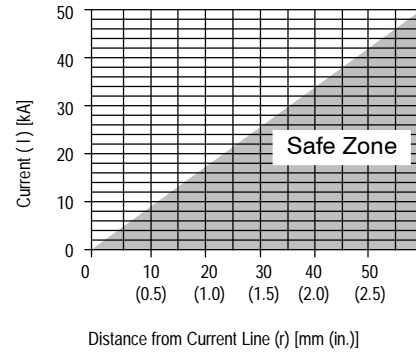
Use the following chart or formulas to determine the spacing requirements between the current line and proximity sensor. Select a distance that falls within the safe zone.

- $H = \frac{I}{2\pi r}$
- $B = \frac{H}{0.796}$
- Gauss = $10 \times B$

where:

- I = welding current (in kA),
- H = field strength (in kA/m),
- B = flux (in mT), and
- r = distance between sensor and current carrying lines (in meters).

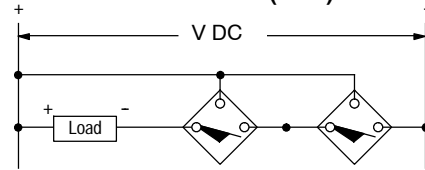
Weld Field Immunity



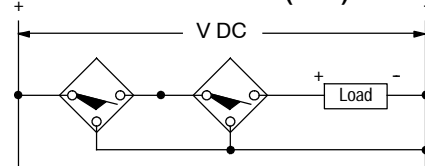
Series Connected Sensors

Sensors can be connected in series with a load. For proper operation, the load voltage must be less than or equal to the minimum supply voltage minus the voltage drops across the series-connected proximity sensors.

Wiring Diagram for Series Connected Current Sink Sensors (NPN)



Wiring Diagram for Series Connected Current Source Sensors (PNP)

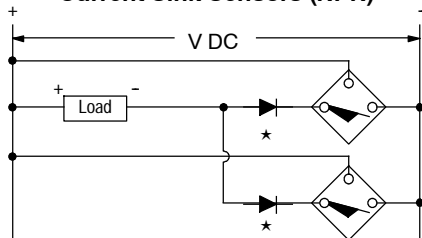


Parallel Connected Sensors

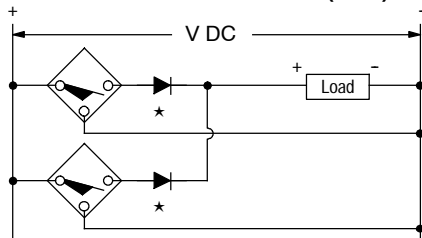
Sensors can be connected in parallel to energize a load. To determine the maximum allowable number of sensors for an application, the sum of the maximum leakage current of the sensors connected in parallel must be less than the maximum OFF-state current of the load device.

Note: Care should be taken when designing parallel proximity circuits. If too much leakage current flows into the load it may cause the solid state input to change state or a small relay not to drop out. Sensors connected in parallel do not provide a higher load current capability.

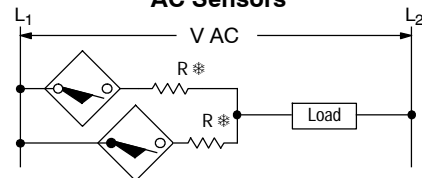
Wiring Diagram for Parallel Connected Current Sink Sensors (NPN)



Wiring Diagram for Parallel Connected Current Source Sensors (PNP)



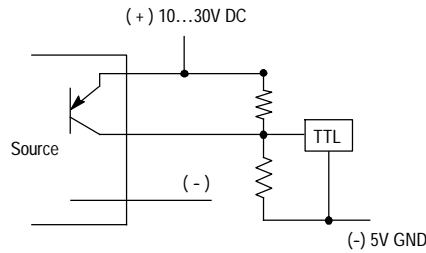
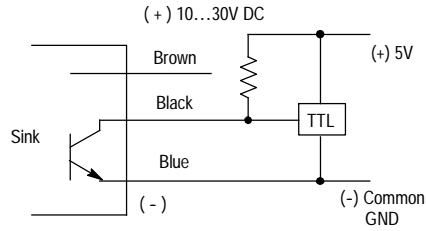
Wiring Diagram for Parallel Connected AC Sensors



★ Add diode as shown to each output to maintain individual output indicator function.

* Add R in series with sensor to maintain minimum voltage when sensor is switching.

TTL Wiring



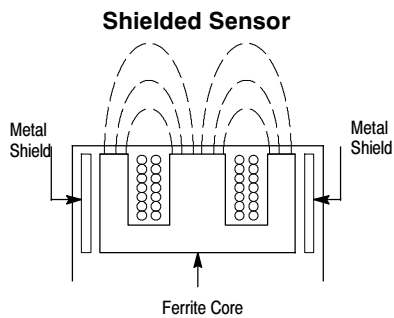
Note: When using sourcing outputs, ground must be floating and cannot be common, or short circuit will result.

PLC Wiring

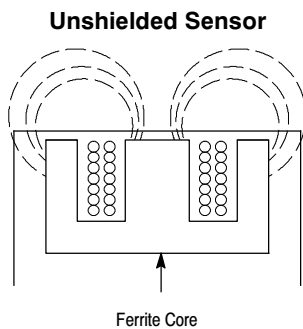
For PLC wiring information for Inductive and Capacitive sensors, refer to publication 871-4.5, June 1996.

Introduction

Shielded vs. Unshielded Inductive Sensors



Shielded construction includes a metal band which surrounds the ferrite core and coil arrangement.



Unshielded sensors do not have this metal band.

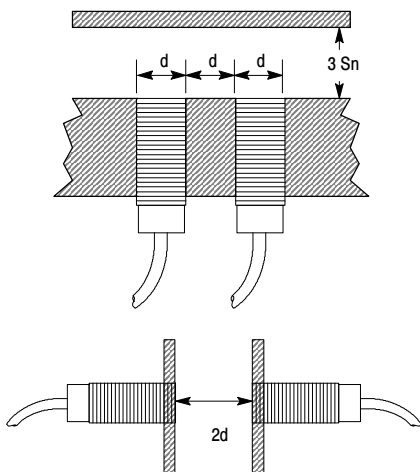
Spacing Between Shielded Sensors (Flush-Mountable) and Nearby Metal Surfaces

Shielded proximity sensors allow the electro-magnetic field to be concentrated to the front of the sensor

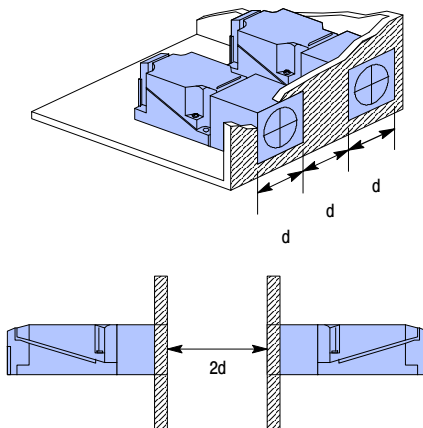
face. Shielded construction allows the proximity to be mounted flush in

surrounding metal without causing a false trigger.

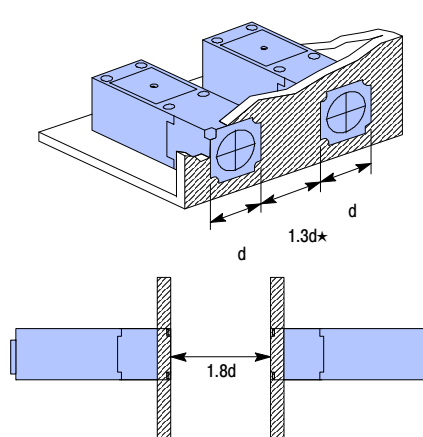
Tubular Style



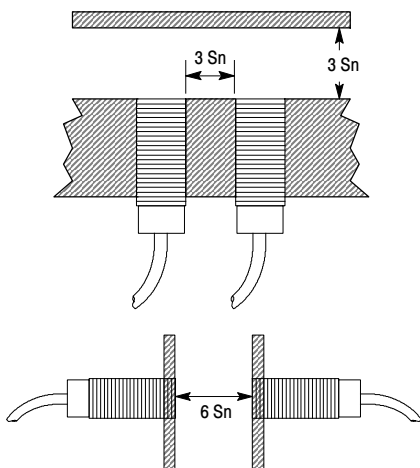
Limit Switch Style (871L and 872L)



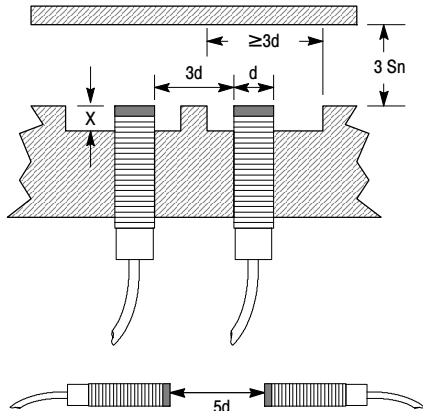
Limit Switch Style (802PR)



Tubular Style Extended Sensing (872C)



Tubular Style Long Range Sensing (872C)



Housing Diameter	Dimension X
6.5 mm	1 mm
12 mm	2 mm
18 mm	4 mm
30 mm	6 mm

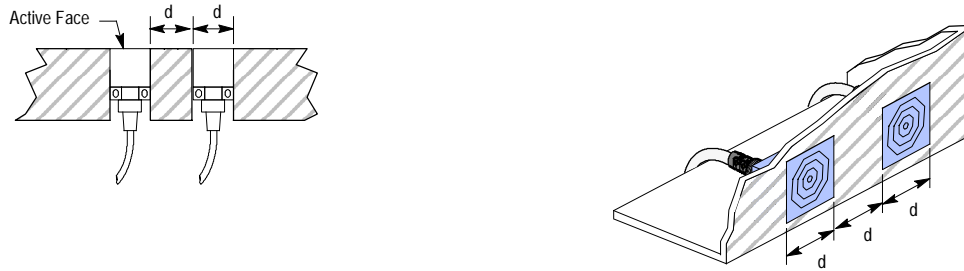
d = diameter or width of active sensing face
Sn = nominal sensing distance

* 802PR-LB or 802PR-XB can be mounted side by side.

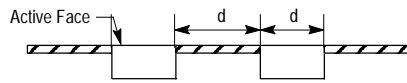


Spacing Between Shielded Sensors (Flush-Mountable) and Nearby Metal Surfaces (continued)

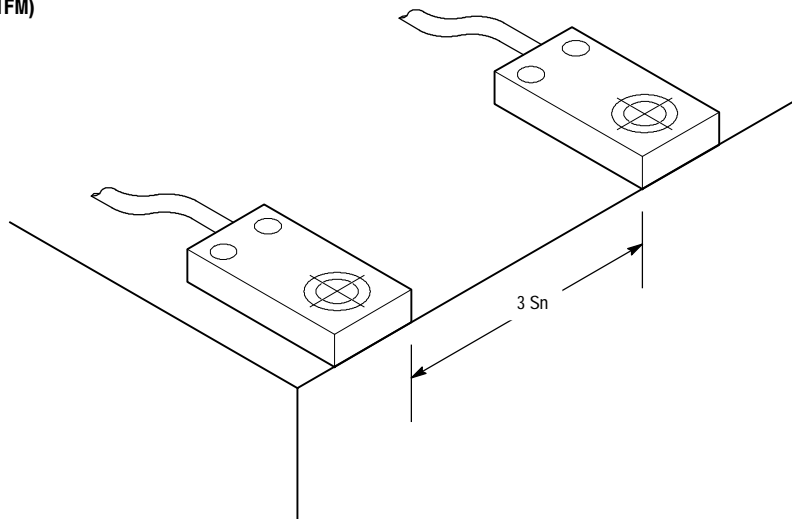
Cube Style (871P VersaCube)



Flat Pack Style (871F)



Miniature Flat Pack Style (871FM)



d = diameter or width of active sensing face
 S_n = nominal sensing distance

Introduction

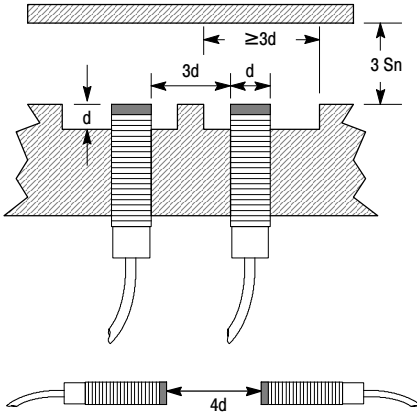
Spacing Between Unshielded Sensors (Nonflush-Mountable) and Nearby Metal Surfaces

Longer sensing distances can be obtained by using an unshielded sensor. Unshielded proximity sensors

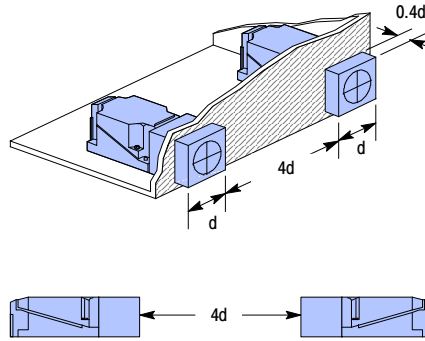
require a metal-free zone around the sensing face. Metal immediately opposite the sensing face should be no

closer than three times the rated nominal sensing distance of the sensor.

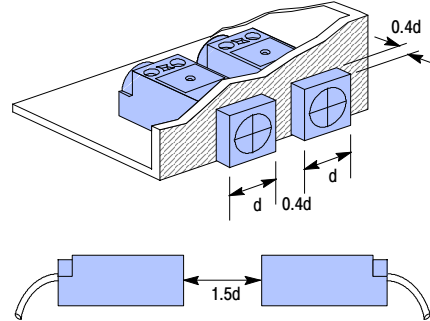
Tubular Style



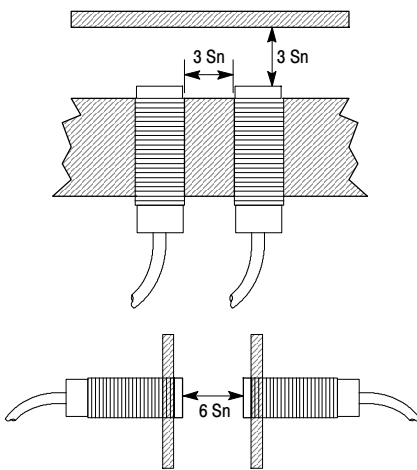
Limit Switch Style (871L and 872L)



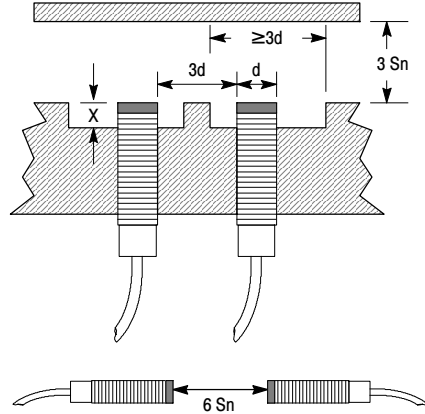
Limit Switch Style (802PR)



Tubular Style Extended Sensing (872C)



Tubular Style Long Range Sensing (872C)

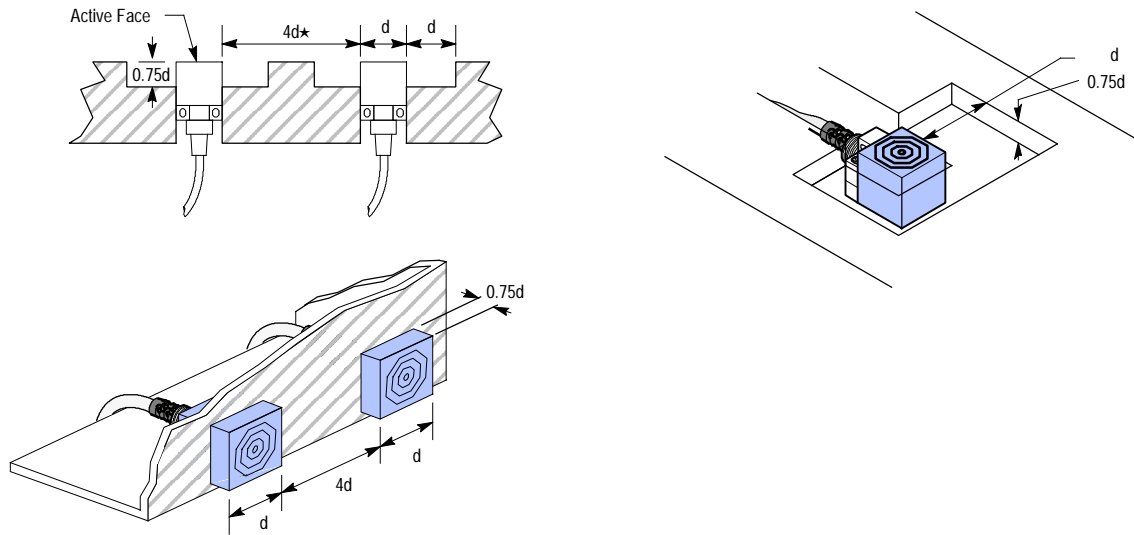


Housing Diameter	Dimension X
8 mm	8 mm
12 mm	13 mm
18 mm	20 mm
30 mm	35 mm

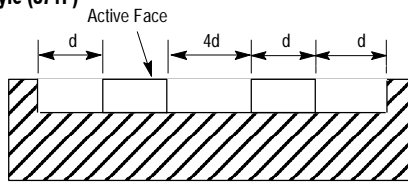


Spacing Between Unshielded Sensors (Nonflush-Mountable) and Nearby Metal Surfaces (continued)

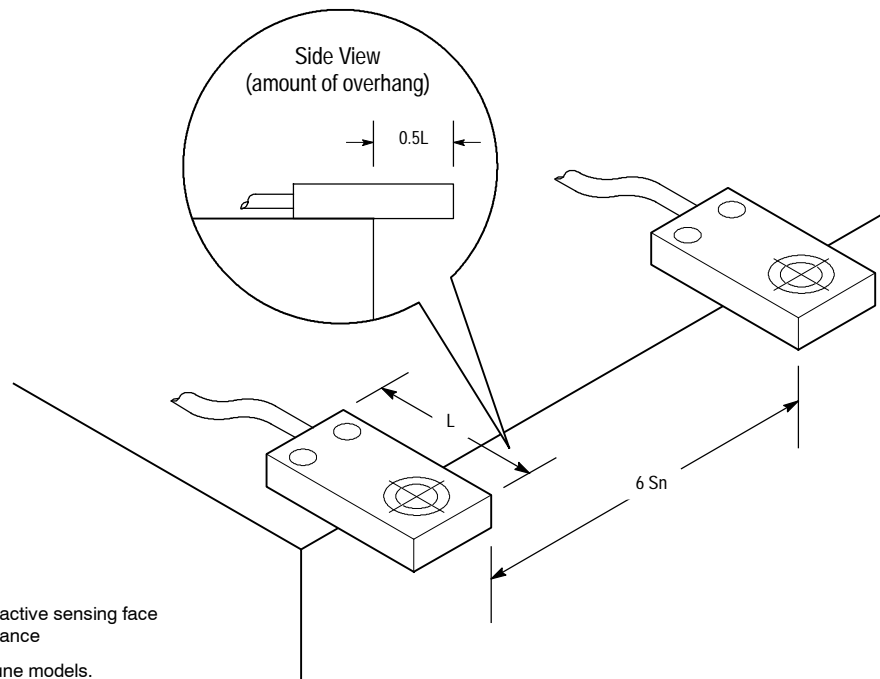
Cube Style (871P VersaCube)



Flat Pack Style (871F)



Miniature Flat Pack Style (871FM)

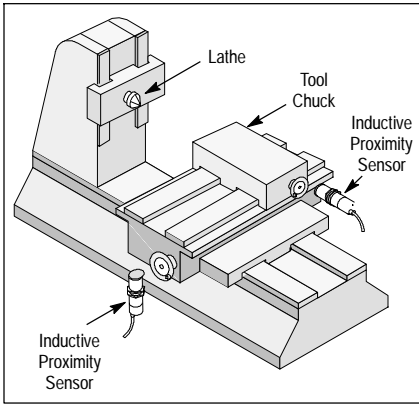


d = diameter or width of active sensing face
 S_n = nominal sensing distance

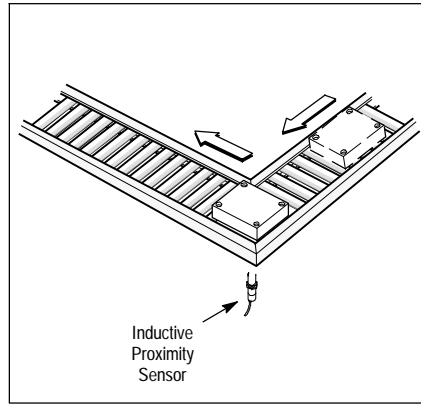
★ $3d$ for Weld Field Immune models.

Applications

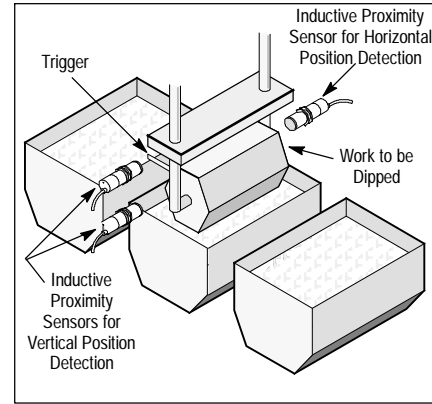
Machine Tools



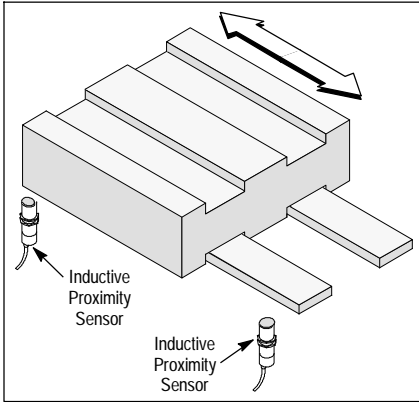
Plating Line



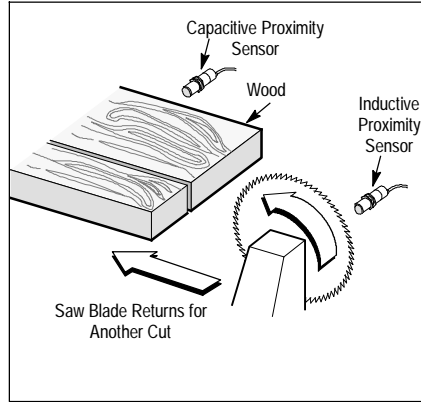
Plating Line



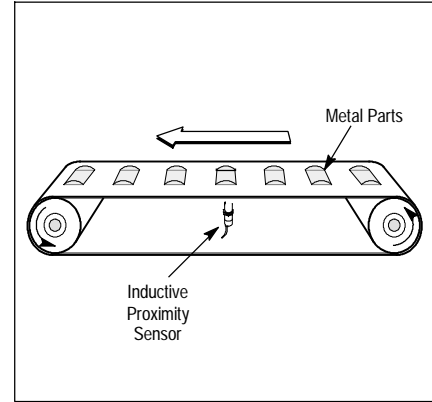
Grinding Machines



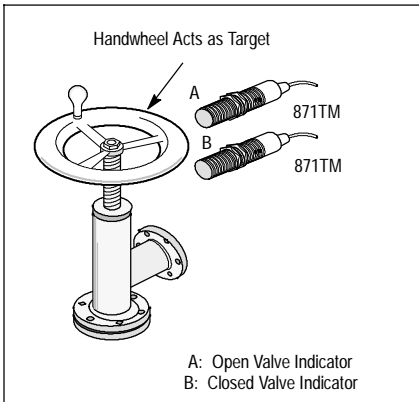
Wood Industry

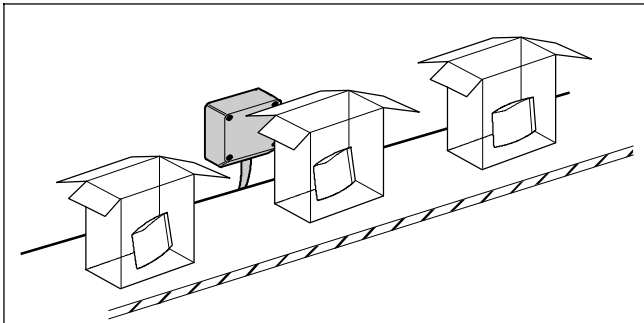


Conveyor Belts

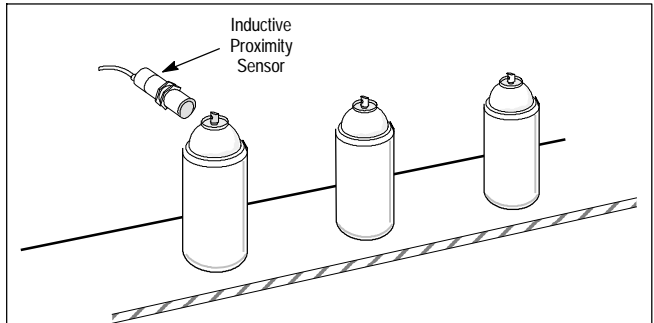


Petroleum Industry— Valve Position



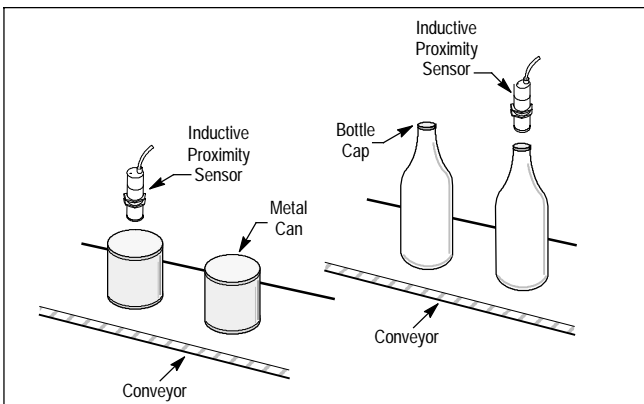


Inductive proximity sensor used to detect a foil seasoning bag inside of a cardboard container.

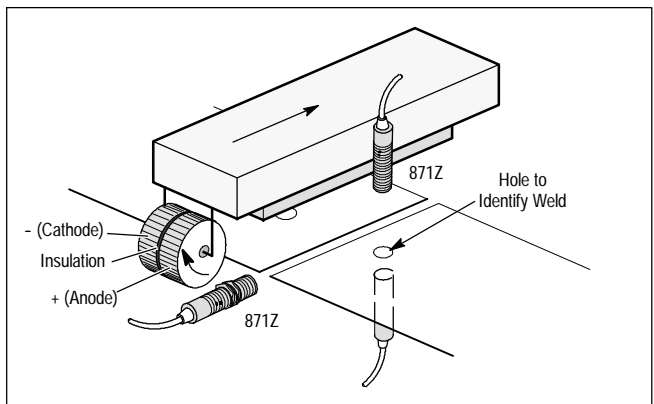


Ferrous selective inductive proximity sensor used to sort ferrous and nonferrous can tops.

Food Industry



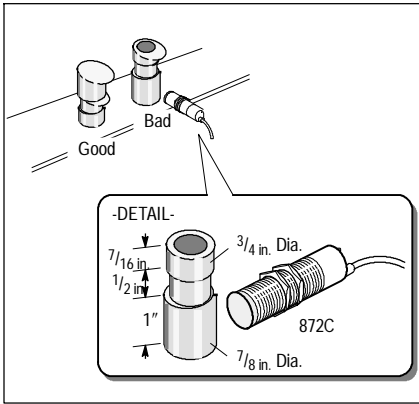
Stainless Steel Sheet Welder



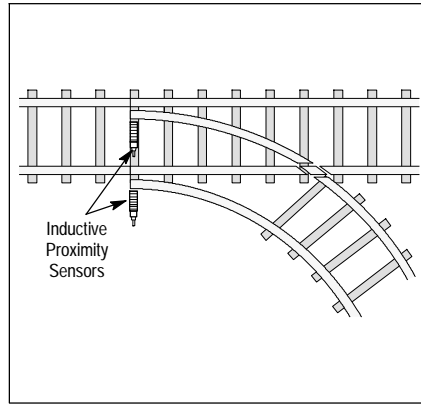
Inductive Proximity Sensors

Applications

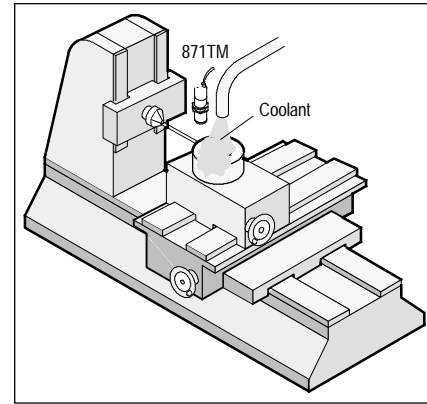
On Line Parts Sorting



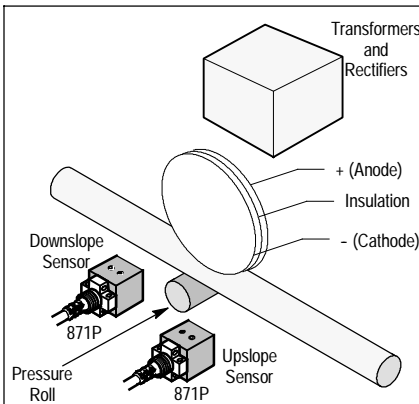
Railroad Yard Position Sensing



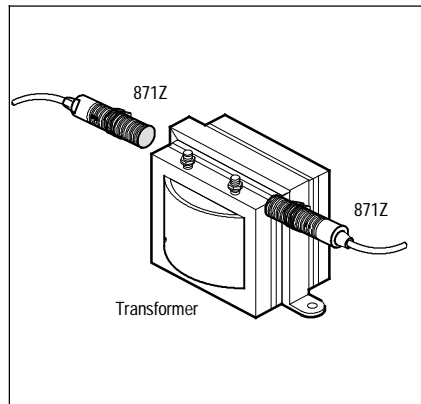
Coolant Resistant Sensing



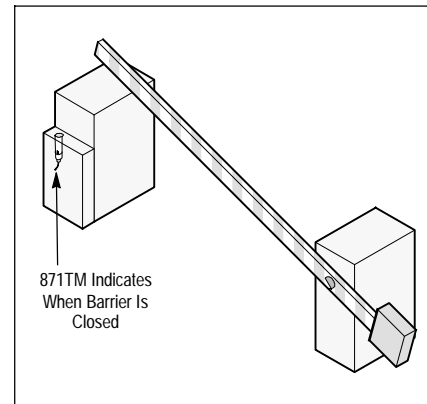
Up and Downslope Control of Continuous Tube Welder



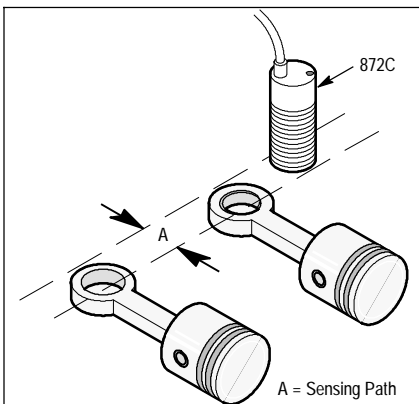
Nut Placement on Transformer



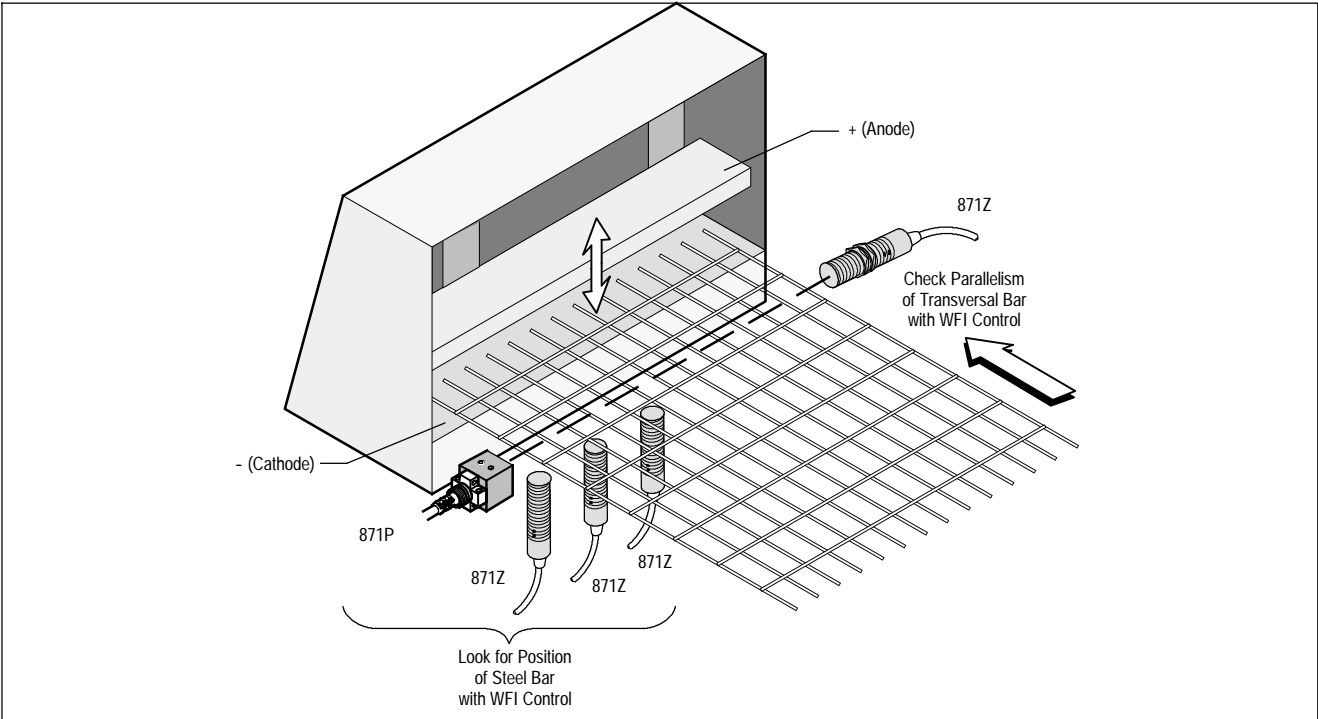
Closed Barrier Indicator



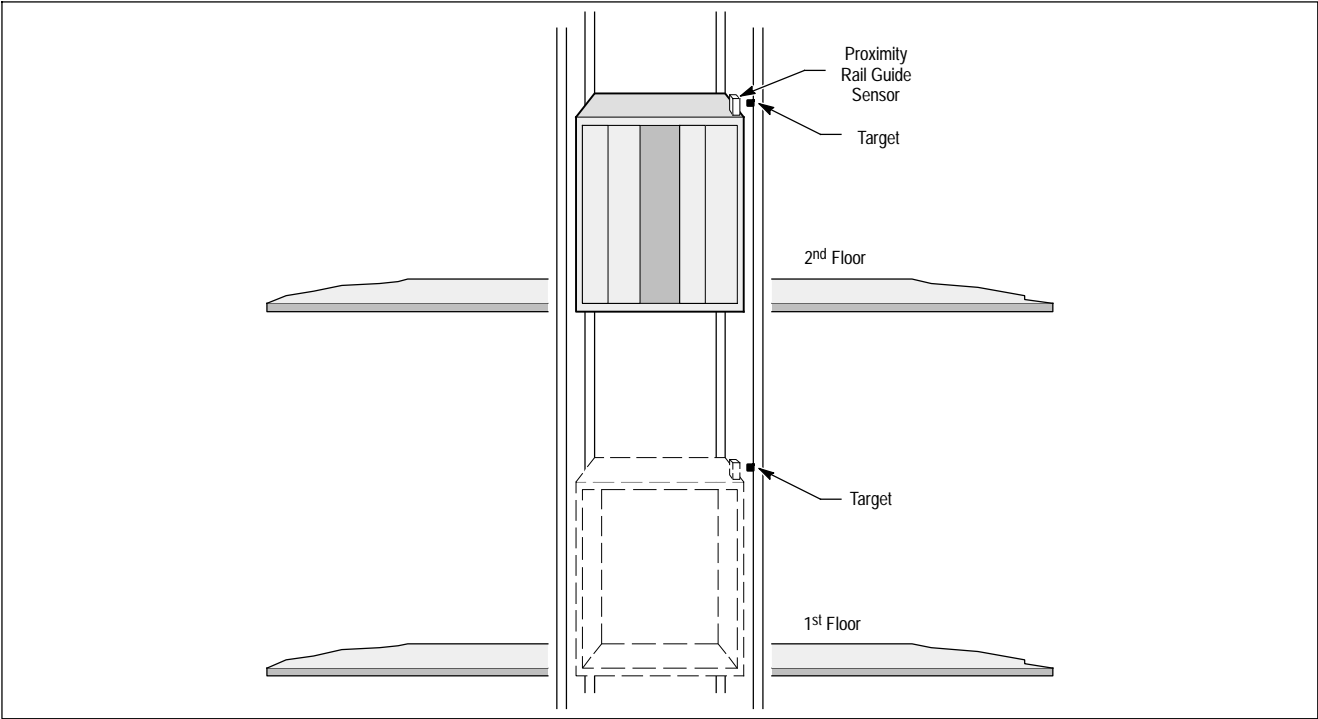
Detect Presence of Bushing in Piston



Control Presence of Mild Steel Bars in Grate Welding



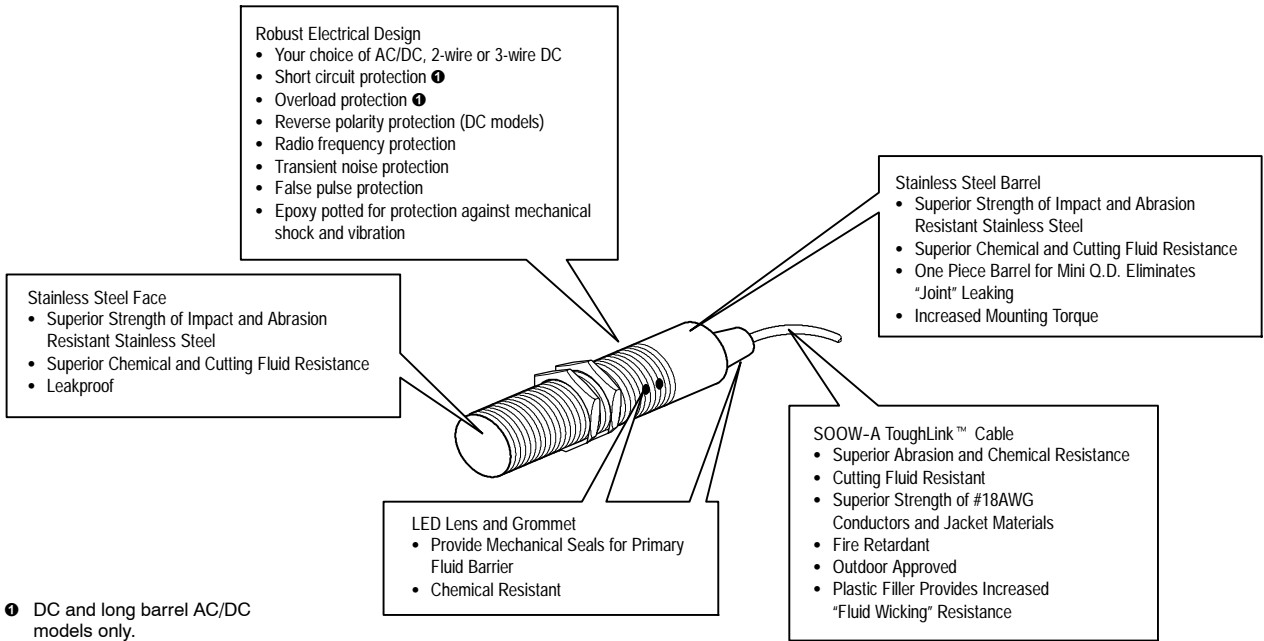
Elevator Positioning



Rockwell Automation produces rail guide inductive proximity sensors for the positioning of elevator cars. These sensors offer increased accuracy and longer life when compared to typical mechanical switches. They are a cost-effective solution for lowering your repair costs and downtime. Contact your local Rockwell Automation sales office or Allen-Bradley distributor for a proximity sensor tailored to your requirements!

Applications

Top 23 Reasons to Use the 871TM



① DC and long barrel AC/DC models only.



Description

Designed to reduce your downtime, the Bulletin 871TM is an excellent choice for harsh-environment applications because it stands up to conditions that standard plastic face sensors cannot tolerate. Each sensor is housed by a stainless steel face and barrel which make the front of the sensor leakproof and significantly improve resistance to chemicals, cutting fluid, oils and abrasion. Mechanical seals are provided at all barrel openings. Full epoxy encapsulation provides protection against shock, vibration, and contamination. The electronic circuitry is equipped with transient noise, false pulse, reverse polarity, short-circuit and overload protection.

In addition to standard all-metal sensing models, the 871TM is available in ferrous and nonferrous selective versions that differentiate between iron-based and other metals as well as extended range models for increased sensing distance. For some metals, nonferrous selective sensors can have up to four times the sensing distance of their all-metal sensing equivalents.

Although most carry a NEMA 6P enclosure rating, one style of 871TM is designed particularly for use under temporary submersion and in other extremely wet environments. Its cable grommet is fused directly to the cable jacketing for superior sealing. LEDs have been eliminated to reduce points of possible fluid ingress.

871TM sensors are also available in high- and low-temperature models. Consult your local Rockwell Automation sales office or Allen-Bradley distributor for details.

DeviceNet™ 871TM sensors are also available. These sensors are designed to be connected directly to DeviceNet networks. These models have built-in advanced features and diagnostics such as autobaud, timing options, analog output capability, target too close, target too far, motion detection and teach and learn capabilities.

The Bulletin 871TM is available with Rockwell Automation/Allen-Bradley exclusive ToughLink™ cable, which exceeds SOOW-A ratings and reduces cable failure due to cracking, wearing, melting, or breaking. Other connection options include a PVC cable, mini quick-disconnect, micro quick-disconnect, and EAC micro quick-disconnect.

Features

- Stainless steel face and barrel
- Full mechanical seals (all-metal sensing models)
- ToughLink™ or PVC cable styles
- Mini, micro or EAC micro quick-disconnect styles
- Short circuit protection ❶
- Overload protection ❶
- Transient noise protection
- False pulse protection
- Reverse polarity protection (DC models)
- Radio frequency interference protection
- UL Listed, CSA Certified, and CE Marked for all applicable directives (most models)

Styles

DC 3-Wire	page 2-22
DC 3-Wire Extended Sensing	page 2-25
DC 3-Wire Ferrous Selective	page 2-28
DC 3-Wire Nonferrous Selective	page 2-28
DC 3-Wire Submersible	page 2-31
DC 2-Wire	page 2-33
DC 2-Wire Intrinsically Safe	page 2-36
AC/DC 2-Wire	page 2-41
AC/DC 2-Wire PLC Interfacer	page 2-44
DeviceNet™ Sensors	page 10-12

Accessories

Cordsets	page 8-1
Conduit Adaptors	page 2-209
Mounting Brackets, Spring Return Style	page 2-210
Mounting Brackets, Swivel/Tilt Style	page 2-212
Mounting Brackets, Right Angle Style	page 2-213
Mounting Brackets, Clamp Style	page 2-214
End Caps	page 2-219
Mounting Nuts	page 2-221
Lock Washers	page 2-223

General Information

Torque Chart	page 2-225
Metric/English Conversion Chart	page 14-6

❶ Not available on PLC Interfacer models.

871TM 3-Wire DC

Stainless Steel Face/Threaded Short Stainless Steel Barrel



871TM DC Cable Style
12, 18, 30 mm



871TM DC Mini
Quick-Disconnect Style
12, 18, 30 mm



871TM DC Micro
Quick-Disconnect Style
12, 18, 30 mm

Specifications

Load Current	≤200 mA
Capacitive Load	≤1 μF
Leakage Current	≤10 mA
Operating Voltage	10...30V DC
Voltage Drop	≤1V DC at 200 mA
Repeatability	≤10% at constant temperature
Hysteresis	10% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Reverse Polarity Protection	Incorporated
Short Circuit Protection	Incorporated (trigger at 340 mA typical)
Overload Protection	Incorporated
Certifications	UL Listed, CSA Certified, and CE Marked for all applicable directives
Enclosure	NEMA 1, 2, 3, 3R, 4, 4X, 6, 6P, 12, 13; IP67 (IEC529) all models; 1200 psi (8270 kPa) washdown; stainless steel face and barrel; ToughLink™ and micro connector versions are also rated IP69K (IEC 529)
Connections	Cable: 2 m (6.5 ft) length A2-3-conductor PVC C2-3-conductor #22AWG ToughLink H2-3-conductor #18 AWG ToughLink Quick-Disconnect: 4-pin mini style 4-pin micro style
LED	Red: Output Energized
Operating Temperature [C (F)]	-25...+70° (-13...+158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.9...1.0
Brass	0.3...0.5
Aluminum	0.1...0.4
Aluminum ≤0.020 Thick	0.9...1.1
Copper	0.4...0.6

Features

- 3-wire operation
- 3-conductor or 4-pin connection
- 10...30V DC
- Short circuit, overload, false pulse, reverse polarity, and transient noise protection
- Normally open or normally closed output
- UL Listed, CSA Certified, and CE Marked for all applicable directives

Product Selection

Barrel Dia.	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.			
						PVC Cable	ToughLink™ Cable	Mini QD Style	Micro QD Style
12 mm	2 (0.08)	Y	N.O.	NPN	75	871TM-DH2NN12-A2	871TM-DH2NN12-C2	871TM-DH2NN12-N4	871TM-DH2NN12-D4
				PNP		871TM-DH2NP12-A2	871TM-DH2NP12-C2	871TM-DH2NP12-N4	871TM-DH2NP12-D4
	N	NPN		70	871TM-DH4NN12-A2	871TM-DH4NN12-C2	871TM-DH4NN12-N4	871TM-DH4NN12-D4	
		PNP			871TM-DH4NP12-A2	871TM-DH4NP12-C2	871TM-DH4NP12-N4	871TM-DH4NP12-D4	
	2 (0.08)	Y	N.C.	NPN	75	871TM-DH2CN12-A2	871TM-DH2CN12-C2	871TM-DH2CN12-N4	871TM-DH2CN12-D4
				PNP		871TM-DH2CP12-A2	871TM-DH2CP12-C2	871TM-DH2CP12-N4	871TM-DH2CP12-D4
	4 (0.16)	N		NPN	70	871TM-DH4CN12-A2	871TM-DH4CN12-C2	871TM-DH4CN12-N4	871TM-DH4CN12-D4
				PNP		871TM-DH4CP12-A2	871TM-DH4CP12-C2	871TM-DH4CP12-N4	871TM-DH4CP12-D4
18 mm	5 (0.20)	Y	N.O.	NPN	60	871TM-DH5NN18-A2	871TM-DH5NN18-H2	871TM-DH5NN18-N4	871TM-DH5NN18-D4
				PNP		871TM-DH5NP18-A2	871TM-DH5NP18-H2	871TM-DH5NP18-N4	871TM-DH5NP18-D4
	N	NPN		40	871TM-DH8NN18-A2	871TM-DH8NN18-H2	871TM-DH8NN18-N4	871TM-DH8NN18-D4	
		PNP			871TM-DH8NP18-A2	871TM-DH8NP18-H2	871TM-DH8NP18-N4	871TM-DH8NP18-D4	
	5 (0.20)	Y	N.C.	NPN	60	871TM-DH5CN18-A2	871TM-DH5CN18-H2	871TM-DH5CN18-N4	871TM-DH5CN18-D4
				PNP		871TM-DH5CP18-A2	871TM-DH5CP18-H2	871TM-DH5CP18-N4	871TM-DH5CP18-D4
	8 (0.31)	N		NPN	40	871TM-DH8CN18-A2	871TM-DH8CN18-H2	871TM-DH8CN18-N4	871TM-DH8CN18-D4
				PNP		871TM-DH8CP18-A2	871TM-DH8CP18-H2	871TM-DH8CP18-N4	871TM-DH8CP18-D4
30 mm	10 (0.39)	Y	N.O.	NPN	40	871TM-DH10NN30-A2	871TM-DH10NN30-H2	871TM-DH10NN30-N4	871TM-DH10NN30-D4
				PNP		871TM-DH10NP30-A2	871TM-DH10NP30-H2	871TM-DH10NP30-N4	871TM-DH10NP30-D4
	N	NPN		30	871TM-DH15NN30-A2	871TM-DH15NN30-H2	871TM-DH15NN30-N4	871TM-DH15NN30-D4	
		PNP			871TM-DH15NP30-A2	871TM-DH15NP30-H2	871TM-DH15NP30-N4	871TM-DH15NP30-D4	
	10 (0.39)	Y	N.C.	NPN	40	871TM-DH10CN30-A2	871TM-DH10CN30-H2	871TM-DH10CN30-N4	871TM-DH10CN30-D4
				PNP		871TM-DH10CP30-A2	871TM-DH10CP30-H2	871TM-DH10CP30-N4	871TM-DH10CP30-D4
	15 (0.59)	N		NPN	30	871TM-DH15CN30-A2	871TM-DH15CN30-H2	871TM-DH15CN30-N4	871TM-DH15CN30-D4
				PNP		871TM-DH15CP30-A2	871TM-DH15CP30-H2	871TM-DH15CP30-N4	871TM-DH15CP30-D4
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))								889N-F4AFC-6F	889D-F4AC-2

QD Cordsets and Accessories

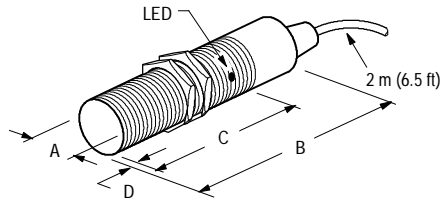
Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
End Caps	2-219, 2-220
Mounting Nuts	2-221...2-222

871TM 3-Wire DC

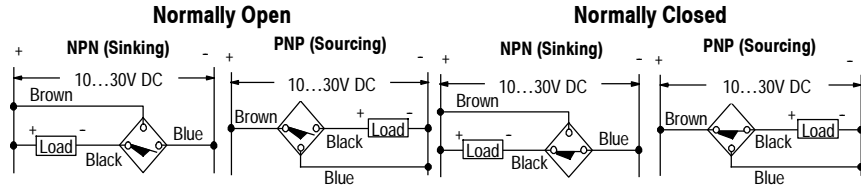
Stainless Steel Face/Threaded Short Stainless Steel Barrel

Approximate Dimensions [mm (in.)]

Cable Style

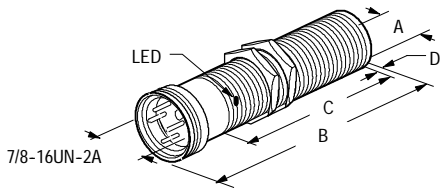


Wiring Diagrams

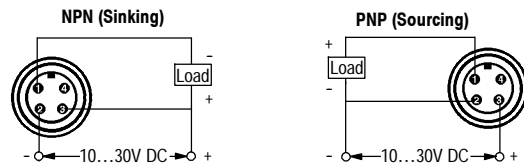


Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	49.8 (1.96)	26.4 (1.04)	2.5 (0.10)
	N			19.5 (0.77)	9.4 (0.37)
M18 X 1	Y	18.0 (0.71)	55.4 (2.18)	41.7 (1.64)	2.5 (0.10)
	N			14.5 (0.57)	14.5 (0.57)
M30 X 1.5	Y	30.0 (1.18)	57.9 (2.28)	41.9 (1.65)	2.5 (0.10)
	N			39.4 (1.55)	18.0 (0.71)

Mini QD Style

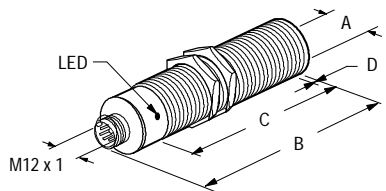


Normally Open or Normally Closed

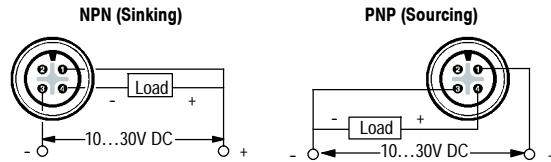


Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	63.5 (2.50)	25.4 (1.00)	2.5 (0.10)
	N			18.5 (0.73)	9.4 (0.37)
M18 X 1	Y	18.0 (0.71)	56.1 (2.21)	35.1 (1.38)	2.5 (0.10)
	N			29.2 (1.15)	14.5 (0.57)
M30 X 1.5	Y	30.0 (1.18)	68.1 (2.68)	41.9 (1.65)	2.5 (0.10)
	N			39.4 (1.55)	18.0 (0.71)

Micro QD Style



Normally Open or Normally Closed



Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	61.0 (2.40)	26.4 (1.04)	2.5 (0.10)
	N			28 (1.10)	9.4 (0.37)
M18 X 1	Y	18.0 (0.71)	65.0 (2.56)	41.7 (1.64)	2.5 (0.10)
	N			14.5 (0.57)	14.5 (0.57)
M30 X 1.5	Y	30.0 (1.18)	66.3 (2.61)	41.9 (1.65)	2.5 (0.10)
	N			39.4 (1.55)	18.0 (0.71)

871TM 3-Wire DC Extended Sensing

Stainless Steel Face/Threaded Stainless Steel Barrel

871TM DC Cable Style
8 mm871TM DC Micro
Quick-Disconnect Style
12 mm871TM DC Micro
Quick-Disconnect Style
18 mm871TM DC Micro
Quick-Disconnect Style
30 mm**Specifications**

Load Current	≤200 mA
Capacitive Load	≤1 μF
Leakage Current	≤0.1 mA
Operating Voltage	10...30V DC
Voltage Drop	≤2.0V DC at 200 mA
Repeatability	≤5% at constant temperature
Hysteresis	10% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Reverse Polarity Protection	Incorporated
Short Circuit Protection	Incorporated (trigger at 340 mA typical)
Overload Protection	Incorporated
Certifications	cULus Listed and CE Marked for all applicable directives
Enclosure	IP67
Connections	Cable: 2 m (6.5 ft) length PUR Quick Disconnect: 4-pin micro style 3-pin pico style
LED	Yellow: Output energized/360° LED visibility; flashing LED indicates target located between 80...100% of rated sensing distance
Operating Temperature [C (F)]	-25...+70° (-13...+158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel (1 mm thick)	0.1
Brass	1.2
Aluminum	1.0
Copper	0.8

Features

- 3-wire operation
- 3-conductor, 4-pin connection
- 10...30V DC
- Short circuit, overload, false pulse, reverse polarity, and transient noise protection
- Normally open or normally closed output
- Equal sensing for both steel and aluminum
- cULus Listed and CE Marked for all applicable directives

IMPORTANT

Due to the extended sensing capabilities of these products, special mounting/installation considerations may be necessary, please refer to publication 871TM-UM001A-EN-P.

871TM 3-Wire DC Extended Sensing

Stainless Steel Face/Threaded Stainless Steel Barrel

Product Selection

Barrel Dia.	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Max Switching Frequency [Hz]	Cat. No.		
						PUR Cable Style	Micro QD Style	Pico QD Style
8 mm	3 (0.12)	Y	N.O.	NPN	≤ 700	871TM-M3NN8-J2	871TM-M3NN8-D4	871TM-M3NN8-P3
				PNP		871TM-M3NP8-J2	871TM-M3NP8-D4	871TM-M3NP8-P3
	6 (0.23)	N		NPN		871TM-N6NN8-J2	871TM-N6NN8-D4	871TM-N6NN8-P3
				PNP		871TM-N6NP8-J2	871TM-N6NP8-D4	871TM-N6NP8-P3
	3 (0.12)	Y	N.C.	NPN		871TM-M3CN8-J2	871TM-M3CN8-D4	871TM-M3CN8-P3
				PNP		871TM-M3CP8-J2	871TM-M3CP8-D4	871TM-M3CP8-P3
	6 (0.23)	N		NPN		871TM-N6CN8-J2	871TM-N6CN8-D4	871TM-N6CN8-P3
				PNP		871TM-N6CP8-J2	871TM-N6CP8-D4	871TM-N6CP8-P3
Recommended standard QD cordset (-2 = 2 m (6.5 ft) PUR						889D-F4AC-2	889P-F3AB-2	

Barrel Dia.	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Max Switching Frequency [Hz]	Cat. No.	
						PUR Cable Style	Micro QD Style
12 mm	6 (0.23)	Y	N.O.	NPN	400	871TM-M6NN12-A2	871TM-M6NN12-D4
				PNP		871TM-M6NP12-A2	871TM-M6NP12-D4
	10 (0.39)	N		NPN		871TM-N10NN12-A2	871TM-N10NN12-D4
				PNP		871TM-N10NP12-A2	871TM-N10NP12-D4
	6 (0.23)	Y	N.C.	NPN		871TM-M6CN12-A2	871TM-M6CN12-D4
				PNP		871TM-M6CP12-A2	871TM-M6CP12-D4
	10 (0.39)	N		NPN		871TM-N10CN12-A2	871TM-N10CN12-D4
				PNP		871TM-N10CP12-A2	871TM-N10CP12-D4
18 mm	10 (0.39)	Y	N.O.	NPN	200	871TM-M10NN18-A2	871TM-M10NN18-D4
				PNP		871TM-M10NP18-A2	871TM-M10NP18-D4
	20 (0.79)	N		NPN		871TM-N20NN18-A2	871TM-N20NN18-D4
				PNP		871TM-N20NP18-A2	871TM-N20NP18-D4
	10 (0.39)	Y	N.C.	NPN		871TM-M10CN18-A2	871TM-M10CN18-D4
				PNP		871TM-M10CP18-A2	871TM-M10CP18-D4
	20 (0.79)	N		NPN		871TM-N20CN18-A2	871TM-N20CN18-D4
				PNP		871TM-N20CP18-A2	871TM-N20CP18-D4
30 mm	20 (0.79)	Y	N.O.	NPN	80	871TM-M20NN30-A2	871TM-M20NN30-D4
				PNP		871TM-M20NP30-A2	871TM-M20NP30-D4
	40 (1.57)	N		NPN		871TM-N40NN30-A2	871TM-N40NN30-D4
				PNP		871TM-N40NP30-A2	871TM-N40NP30-D4
	20 (0.79)	Y	N.C.	NPN		871TM-M20CN30-A2	871TM-M20CN30-D4
				PNP		871TM-M20CP30-A2	871TM-M20CP30-D4
	40 (1.57)	N		NPN		871TM-N40CN30-A2	871TM-N40CN30-D4
				PNP		871TM-N40CP30-A2	871TM-N40CP30-D4
Recommended Standard QD Cordset (-2 = 2 m (6.5 ft))						889D-F4AC-2	

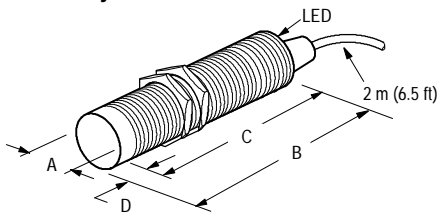
QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
End Caps	2-219, 2-220
Mounting Nuts	2-221...2-222

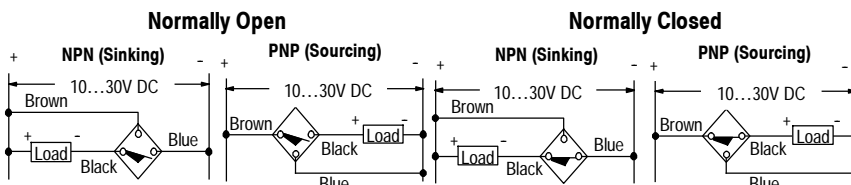
Inductive Proximity Sensors
871TM 3-Wire DC Extended Sensing
 Stainless Steel Face/Threaded Stainless Steel Barrel

Approximate Dimensions [mm (in.)]

Cable Style

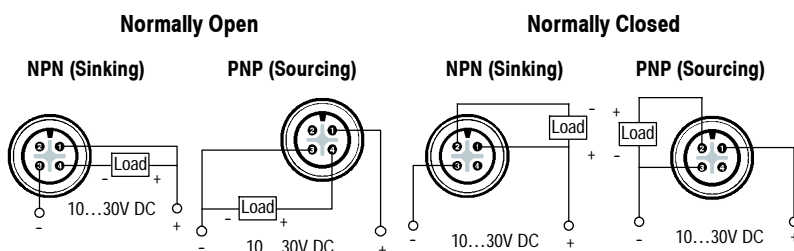
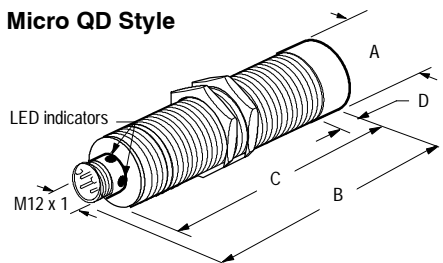


Wiring Diagrams



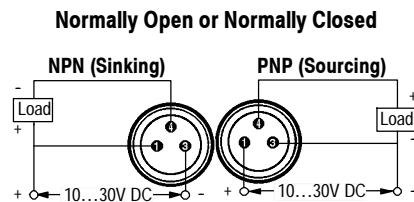
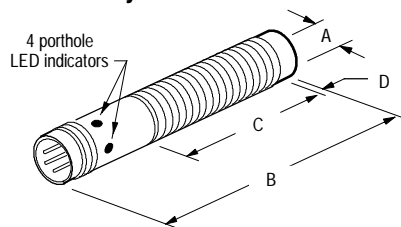
Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M8 X 1	Y	8.0 (0.31)	45 (1.76)	45 (1.76)	—
	N			41 (1.61)	4 (0.16)
M12 X 1	Y	12.0 (0.47)	50 (1.96)	50 (1.96)	—
	N			45 (1.77)	5 (0.19)
M18 X 1	Y	18.0 (0.71)		50 (1.96)	—
	N			43 (1.69)	7 (0.27)
M30 X 1.5	Y	30.0 (1.18)	50 (1.96)	—	
	N		40 (1.57)	10 (0.39)	

Micro QD Style



Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M8 X 1	Y	8.0 (0.31)	66 (2.59)	46 (1.81)	—
	N			42 (1.65)	4 (0.16)
M12 X 1	Y	12.0 (0.47)	60 (2.36)	41 (1.61)	—
	N			36 (1.42)	5 (0.20)
M18 X 1	Y	18.0 (0.71)	63.5 (2.5)	42.5 (1.67)	—
	N			35.5 (1.40)	7 (0.28)
M30 X 1.5	Y	30.0 (1.18)	63.5 (2.5)	42.5 (1.67)	—
	N			32.5 (1.28)	10 (0.39)

Pico QD Style



Thread Size	Smooth Diameter	Shielded	[mm (in.)]			
			A	B (max)	C (min)	D (max)
M8 X 1	—	Y	8.0 (0.31)	60 (2.35)	45.5 (1.79)	—
		N			41.5 (1.63)	4.0 (0.16)

871TM 3-Wire DC Ferrous or Nonferrous Selective

Stainless Steel Face/Threaded Stainless Steel Barrel



871TM DC Cable Style
12, 18, 30 mm



871TM DC Mini
Quick-Disconnect Style
12, 18, 30 mm



871TM DC Micro
Quick-Disconnect Style
12, 18, 30 mm

Specifications

Load Current	≤200 mA
Capacitive Load	≤1 μF
Leakage Current	≤10 mA
Operating Voltage	10...30 V DC
Voltage Drop	≤1V DC at 200 mA
Repeatability	≤10% at constant temperature
Hysteresis	10% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Reverse Polarity Protection	Incorporated
Short Circuit Protection	Incorporated (trigger at 340 mA typical)
Overload Protection	Incorporated
Certifications	UL Listed, CSA Certified, and CE Marked for all applicable directives
Enclosure	NEMA 1, 2, 3, 3R, 4, 4X, 6, 6P, 12, 13 IP67 (IEC529) all models; 1200 psi (8270 kPa) washdown; stainless steel face and barrel; ToughLink™ and micro connector versions are also rated IP69K (IEC 529)
Connections	Cable: 2 m (6.5 ft) length A2-3-conductor PVC C2-3-conductor #22 AWG ToughLink™ H2-3-conductor #18 AWG ToughLink Quick-Disconnect: 4-pin mini style 4-pin micro style
LEDs	Red: Output Energized Green: Power/Short Circuit (flashing)—18 mm models only
Operating Temperature [C (F)]	-25...+70° (-13...+158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Features

- 3-wire operation
- 3-conductor or 4-pin connection
- 10...30V DC
- Ferrous or nonferrous selective sensing
- Short circuit, overload, false pulse, reverse polarity, and transient noise protection
- Normally open or normally closed output
- UL Listed, CSA Certified, and CE Marked for all applicable directives

Correction Factors

Target Material	Correction Factor	
	Ferrous Selective	Nonferrous Selective
Steel	1.0	0.0
Stainless Steel	0...1.0❶	0...1.0❶
Brass	0.0	1.0
Aluminum	0.0	1.0
Aluminum >0.003 Thick	0.0	1.0
Copper	0.0	1.0

❶ Variation due to differences in alloy composition.



Inductive Proximity Sensors

871TM 3-Wire DC Ferrous or Nonferrous Selective

Stainless Steel Face/Threaded Stainless Steel Barrel

Product Selection

Barrel Dia. [mm]	Nominal Sensing Distance [mm (in.)]	Shield	Output Config.	Switching Freq. [Hz]	Target Type	Cat. No.				
						PVC Cable	ToughLink™ Cable	Mini QD	Micro QD	
12	1 (0.04)	Yes	N.O.	PNP	25	Ferrous	871TM-DF1NP12-A2	871TM-DF1NP12-C2	871TM-DF1NP12-N4	871TM-DF1NP12-D4
				NPN			—	871TM-DF1NN12-C2	871TM-DF1NN12-N4	871TM-DF1NN12-D4
			N.C.	PNP	—	—	871TM-DF1CP12-N4	871TM-DF1CP12-D4		
				NPN	—	—	871TM-DF1CN12-N4	871TM-DF1CN12-D4		
18	3 (0.12)		N.O.	PNP	10	Ferrous	—	871TM-DF3NP18-H2	871TM-DF3NP18-N4	871TM-DF3NP18-D4
				NPN			—	871TM-DF3NN18-H2	871TM-DF3NN18-N4	—
	N.C.		PNP	—	—	871TM-DF3CP18-N4	871TM-DF3CP18-D4			
			NPN	—	—	—	—			
5 (0.20)	N.O.	20	PNP	Nonferrous	871TM-DN5NP18-A2	871TM-DN5NP18-H2	871TM-DN5NP18-N4	871TM-DN5NP18-D4		
					N.C.	—	—	—	871TM-DN5CP18-D4	
30	10 (0.39)	N.O.	PNP	15	Nonferrous	871TM-DN10NP30-A2	871TM-DN10NP30-H2	871TM-DN10NP30-N4	871TM-DN10NP30-D4	
						N.C.	—	—	—	871TM-DN10CP30-D4
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))								889N-F4AFC-6F	889D-F4AC-2	

QD Cordsets and Accessories

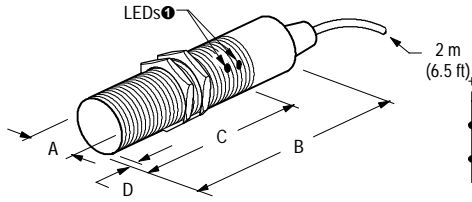
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871TM 3-Wire DC Ferrous or Nonferrous Selective

Stainless Steel Face/Threaded Stainless Steel Barrel

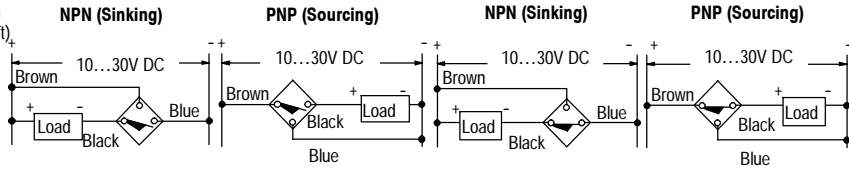
Approximate Dimensions [mm (in.)]

Cable Style

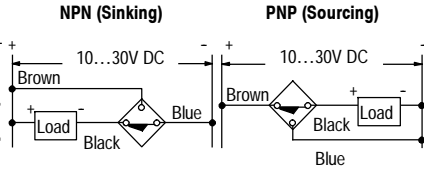


Wiring Diagrams

Normally Open



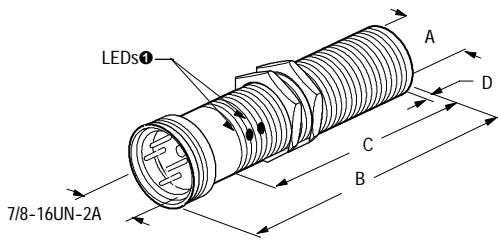
Normally Closed



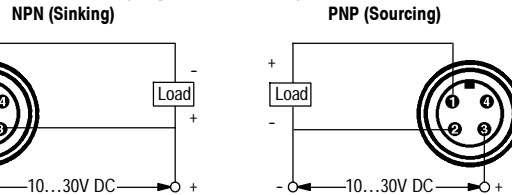
Available for 18 mm models only

Thread Size	Shielded	Target Type	[mm (in.)]			
			A	B	C	D
M12 X 1	Y	Ferrous	12.0 (0.47)	51.0 (2.01)	27.5 (1.08)	—
M18 X 1		Ferrous	18.0 (0.71)	76.8 (3.02)	65.0 (2.56)	—
		Nonferrous	18.0 (0.71)	74.7 (2.94)	60.0 (2.36)	2.5 (0.10)
M30 X 1.5		Nonferrous	30.0 (1.18)	77.5 (3.05)	63.0 (2.48)	2.5 (0.10)

Mini QD Style

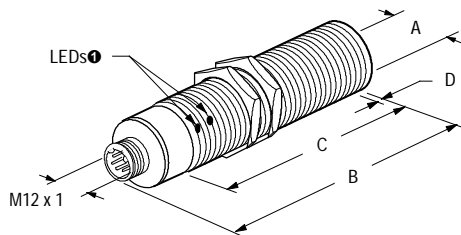


Normally Open or Normally Closed

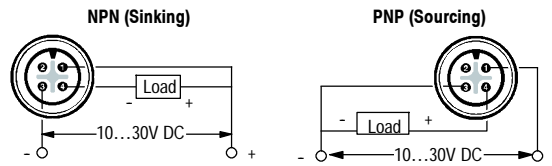


Thread Size	Shielded	Target Type	[mm (in.)]			
			A	B	C	D
M12 X 1	Y	Ferrous	12.0 (0.47)	61.3 (2.45)	30.4 (1.20)	—
M18 X 1		Ferrous	18.0 (0.71)	78.5 (3.14)	60.0 (2.40)	—
		Nonferrous	18.0 (0.71)	76.6 (3.02)	54.9 (2.16)	2.5 (0.10)
M30 X 1.5		Nonferrous	30.0 (1.18)	86.0 (3.39)	63.5 (2.50)	2.5 (0.10)

Micro QD Style



Normally Open or Normally Closed



Available for 18 mm models only

Thread Size	Shielded	Target Type	[mm (in.)]			
			A	B	C	D
M12 X 1	Y	Ferrous	12.0 (0.47)	62.3 (2.45)	30.4 (1.20)	0.9 (0.04)
M18 X 1		Ferrous	18.0 (0.71)	85.0 (3.35)	65.5 (2.58)	2.0 (0.08)
		Nonferrous	18.0 (0.71)	84.3 (3.32)	60.0 (2.36)	2.5 (0.10)
M30 X 1.5	Y	Nonferrous	30.0 (1.18)	85.5 (3.37)	63.0 (2.48)	2.5 (0.10)





871TM DC Cable Style
18 mm

Specifications

Load Current	≤200 mA
Capacitive Load	≤ 1μF
Leakage Current	≤10 mA
Operating Voltage	10...30V DC
Voltage Drop	≤1V DC at 200 mA
Repeatability	≤1% at constant temperature
Hysteresis	10% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Reverse Polarity Protection	Incorporated
Short Circuit Protection	Incorporated (trigger at 340 mA typical)
Overload Protection	Incorporated
Certifications	cULus Listed and CE Marked for all applicable directives
Enclosure	NEMA 1, 2, 3, 3R, 4, 4X, 6, 6P, 12, 13; IP68 (IEC529) and IP69K (IEC 529); 1200 psi (8270 kPa) washdown; stainless steel face and barrel;
Connections	Cable: 5 m (16.4 ft) length 3-conductor #18 AWG ToughLink
LED	None
Operating Temperature [C (F)]	-25...+70° (-13...+158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Features

- 3-wire operation
- 3-conductor or 4-pin connection
- 10...30V DC
- Short circuit, overload, false pulse, reverse polarity and transient noise protection
- Normally open or normally closed output
- cULus Listed and CE Marked for all applicable directives

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.9...1.0
Brass	0.3...0.5
Aluminum	0.1...0.4
Aluminum ≤0.020 Thick	0.9...1.1
Copper	0.4...0.6

Inductive Proximity Sensors

871TM 3-Wire DC Submersible

Stainless Steel Face/Threaded Short Stainless Steel Barrel

Product Selection

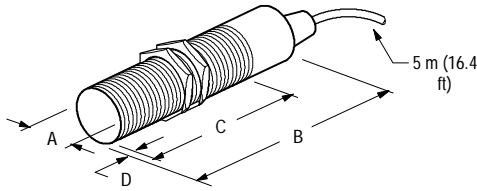
Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No. Cable Style	
18 mm	5 (0.20)	Y	N.O.	NPN	60	871TM-DX14
				PNP		871TM-DX15
	8 (0.31)	N	N.O.	NPN	40	871TM-DX16
				PNP		871TM-DX09
	5 (0.20)	Y	N.C.	NPN	60	871TM-DX17
				PNP		871TM-DX18
	8 (0.31)	N	N.C.	NPN	40	871TM-DX19
				PNP		871TM-DX20

QD Cordsets and Accessories

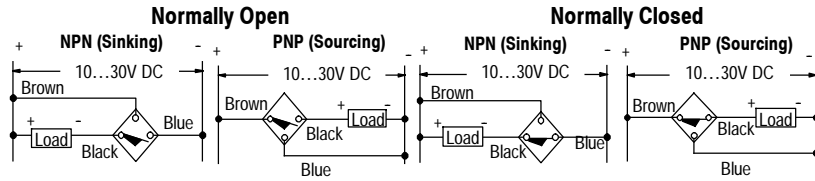
Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
End Caps	2-219, 2-220
Mounting Nuts	2-221...2-222

Approximate Dimensions [mm (in.)]

Cable Style



Wiring Diagrams



Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M18 X 1	Y	18.0 (0.71)	55.4 (2.18)	41.7 (1.64)	2.5 (0.10)
	N				14.5 (0.57)



871TM DC Cable Style
12, 18, 30 mm



871TM DC Mini
Quick-Disconnect Style
12, 18, 30 mm



871TM DC Micro
Quick-Disconnect Style
12, 18, 30 mm

Specifications

Load Current	≤25 mA
Minimum Load Current	2 mA
Leakage Current	≤0.9 mA
Operating Voltage	10...30V DC
Voltage Drop	≤8V
Repeatability	10% typical
Hysteresis	10% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Reverse Polarity Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
Certifications	UL Listed, CSA Certified and CE Marked for all applicable directives
Enclosure	NEMA 1, 2, 3, 3R, 4, 4X, 6P, 12, 13; IP67 (IEC 529) all models; 1200 psi (8270 kPa) washdown; stainless steel face and barrel; ToughLink™ and micro connector versions are also rated IP69K (IEC 529)
Connections	Cable: 2 m (6.5 ft) length A2—2-conductor #22 AWG PVC C2—2-conductor #22 AWG ToughLink H2—2-conductor #18 AWG ToughLink Quick-Disconnect: 4-pin mini style 4-pin micro style
LED	Red: Output energized
Operating Temperature [C (F)]	-25...+70° (-13...+158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Features

- 2-wire operation
- 2-conductor or 4-pin connection
- 10...30V DC
- Normally open or normally closed output
- Short circuit, overload, false pulse, reverse polarity, and transient noise protection
- UL Listed, CSA Certified and CE Marked for all applicable directives

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.9...1.0
Brass	0.3...0.5
Aluminum	0.1...0.4
Aluminum ≤0.020 Thick	0.9...1.1
Copper	0.4...0.6

871TM 2-Wire DC

Stainless Steel Face/Threaded Short Stainless Steel Barrel

Product Selection

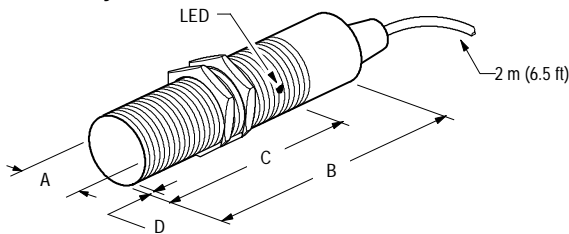
Barrel Dia.	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.			
					PVC Cable	ToughLink™ Cable	Mini QD Style	Micro QD Style
12 mm	2 (0.08)	Y	N.O.	75	871TM-DH2NE12-A2	871TM-DH2NE12-C2	871TM-DH2NE12-N4	871TM-DH2NE12-D4
	4 (0.16)	N			871TM-DH4NE12-A2	871TM-DH4NE12-C2	871TM-DH4NE12-N4	871TM-DH4NE12-D4
	2 (0.08)	Y	N.C.	70	871TM-DH2CE12-A2	871TM-DH2CE12-C2	871TM-DH2CE12-N4	871TM-DH2CE12-D4
	4 (0.16)	N			871TM-DH4CE12-A2	871TM-DH4CE12-C2	871TM-DH4CE12-N4	871TM-DH4CE12-D4
18 mm	5 (0.20)	Y	N.O.	60	871TM-DH5NE18-A2	871TM-DH5NE18-H2	871TM-DH5NE18-N4	871TM-DH5NE18-D4
	8 (0.31)	N			871TM-DH8NE18-A2	871TM-DH8NE18-H2	871TM-DH8NE18-N4	871TM-DH8NE18-D4
	5 (0.20)	Y	N.C.	40	871TM-DH5CE18-A2	871TM-DH5CE18-H2	871TM-DH5CE18-N4	871TM-DH5CE18-D4
	8 (0.31)	N			871TM-DH8CE18-A2	871TM-DH8CE18-H2	871TM-DH8CE18-N4	871TM-DH8CE18-D4
30 mm	10 (0.39)	Y	N.O.	40	871TM-DH10NE30-A2	871TM-DH10NE30-H2	871TM-DH10NE30-N4	871TM-DH10NE30-D4
	15 (0.59)	N			871TM-DH15NE30-A2	871TM-DH15NE30-H2	871TM-DH15NE30-N4	871TM-DH15NE30-D4
	10 (0.39)	Y	N.C.	30	871TM-DH10CE30-A2	871TM-DH10CE30-H2	871TM-DH10CE30-N4	871TM-DH10CE30-D4
	15 (0.59)	N			871TM-DH15CE30-A2	871TM-DH15CE30-H2	871TM-DH15CE30-N4	871TM-DH15CE30-D4
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))							889N-F4AFC-6F	889D-F4AC-2

QD Cordsets and Accessories

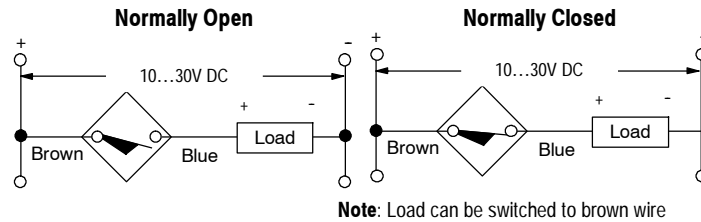
Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
End Caps	2-219, 2-220
Mounting Nuts	2-221...2-222

Approximate Dimensions [mm (in.)]

Cable Style



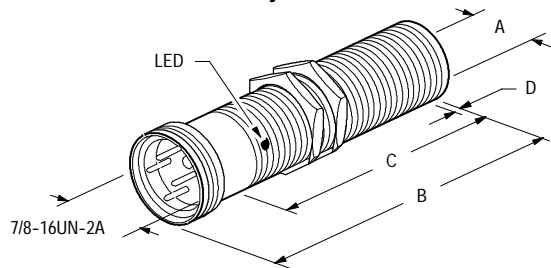
Wiring Diagrams



Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	49.8 (1.96)	26.4 (1.04)	2.5 (0.10)
	N			19.5 (0.77)	9.4 (0.37)
M18 X 1	Y	18.0 (0.71)	55.4 (2.18)	41.7 (1.64)	2.5 (0.10)
	N				14.5 (0.57)
M30 X 1.5	Y	30.0 (1.18)	57.9 (2.28)	41.9 (1.65)	2.5 (0.10)
	N				39.4 (1.55)

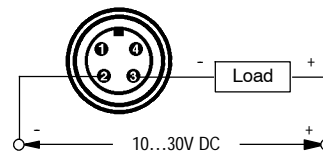
Approximate Dimensions [mm (in.)] (continued)

Mini Quick-Disconnect Style



Wiring Diagrams

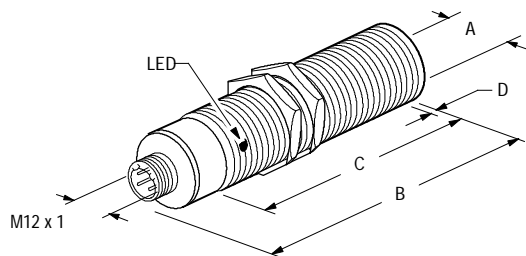
Normally Open or Normally Closed



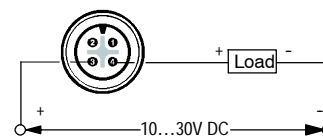
Note: Load can be switched to pin 2.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	63.5 (2.50)	25.4 (1.00)	2.5 (0.10)
	N			18.5 (0.73)	9.4 (0.37)
M18 X 1	Y	18.0 (0.71)	56.1 (2.21)	35.1 (1.38)	2.5 (0.10)
	N			29.2 (1.15)	14.5 (0.57)
M30 X 1.5	Y	30.0 (1.18)	68.1 (2.68)	41.9 (1.65)	2.5 (0.10)
	N			39.4 (1.55)	18.0 (0.71)

Micro Quick-Disconnect Style



Normally Open or Normally Closed



Note: Load can be switched to pin 3.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	61.0 (2.40)	26.4 (1.04)	2.5 (0.10)
	N			19.6 (0.77)	9.4 (0.37)
M18 X 1	Y	18.0 (0.71)	65.0 (2.56)	41.7 (1.64)	2.5 (0.10)
	N				14.5 (0.57)
M30 X 1.5	Y	30.0 (1.18)	66.3 (2.61)	41.9 (1.65)	2.5 (0.10)
	N			39.4 (1.55)	18.0 (0.71)

871TM Intrinsically Safe, 2-Wire DC

Stainless Steel Face and Barrel



871TM Intrinsically Safe
Cable Style



871TM Intrinsically Safe
Micro Quick-Disconnect Style

Description

These special 871TM models are approved as Intrinsically Safe for use in hazardous areas. These special models are designed for use in Division 1, 2; Class I, II, III; Groups A, B, C, D, E, F, G areas when used in conjunction with an appropriate Intrinsically Safe approved zener diode barrier. Recommended barriers are available from Rockwell Automation/Allen-Bradley. These approved units can also be used in Division 2 locations without a barrier.

Features

- 2-wire operation
- 2-conductor or 4-pin connection
- 10...31.5V DC
- Normally open output
- Short circuit, overload, false pulse, transient noise, and reverse polarity protection
- FM and CSA entity approved
- UL Listed for use in non-hazardous locations

Specifications

Outputs	N.O.
Load Current, Max.	25 mA
Load Current, Min.	2 mA
Leakage Current	≤1.0 mA
Operating Voltage	10...31.5V DC
Voltage Drop	≤8V DC
Repeatability	10% typical
Hysteresis	10% typical
Protection Type	False pulse, transient noise, reverse polarity, short circuit, overload
Certifications	FM and CSA Approved for: -Class I, II, III; Divisions 1, 2; Groups A, B, C, D, E, F, G when used in conjunction with an approved intrinsic safety barrier -Class I, II, III; Division 2; Groups A, B, C, D, E, F, G without intrinsic safety barrier UL Listed for use in non-hazardous locations (See control drawing 75001-437 for approval details and wiring diagrams)★
Enclosure Type Rating	NEMA 1, 2, 3, 3R, 4, 4X, 6, 6P, 12, 13; IP67 (IEC 529) all models; 1200 psi (8270 kPa) washdown; stainless steel face and barrel; ToughLink™ and micro connector versions are also rated IP69K (IEC 529)
Connection Type	Cable: 2 m (6.5 ft) length, A2 - 2 conductor #22 AWG PVC, C2 - 2 conductor #22 AWG ToughLink, H2 - 2 conductor #18 AWG ToughLink; Quick Disconnect: 4-pin micro style
Indicator LEDs	Red: Output Energized
Operating Temperature [C (F)]	-25...+70 ° (-13...+158 °)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

★ See page 2-39.

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.9...1.0
Brass	0.3...0.5
Aluminum	0.1...0.4
Aluminum ≤0.020 Thick	0.9...1.1
Copper	0.4...0.6

Entity Parameters

Sensor			Barrier	
V_{max}	31.5V	≥	V_t	
I_{max}	130 mA	≥	I_t	
P_{max}	1.25 W	≥	P_t	
C_i	0 μF	≤	C_a	
L_i	0 mH	≤	L_a	

ATTENTION



Operating parameters must be adhered to.



Inductive Proximity Sensors
871TM Intrinsically Safe, 2-Wire DC
Stainless Steel Face and Barrel

Product Selection

Barrel Dia.	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.		
					PVC Cable	ToughLink™ Cable	Micro QD Style
12 mm	2 (0.08)	Y	N.O.	75	871TM-DR2NE12-A2	871TM-DR2NE12-C2	871TM-DR2NE12-D4
	4 (0.16)	N			871TM-DR4NE12-A2	871TM-DR4NE12-C2	871TM-DR4NE12-D4
18 mm	5 (0.20)	Y		60	871TM-DR5NE18-A2	871TM-DR5NE18-H2	871TM-DR5NE18-D4
	8 (0.31)	N			871TM-DR8NE18-A2	871TM-DR8NE18-H2	871TM-DR8NE18-D4
30 mm	10 (0.39)	Y		40	871TM-DR10NE30-A2	871TM-DR10NE30-H2	871TM-DR10NE30-D4
	15 (0.59)	N			871TM-DR15NE30-A2	871TM-DR15NE30-H2	871TM-DR15NE30-D4
Recommended Standard QD Cordset (-2 = 2 m (6.5 ft))							889D-F4LC-2 ①

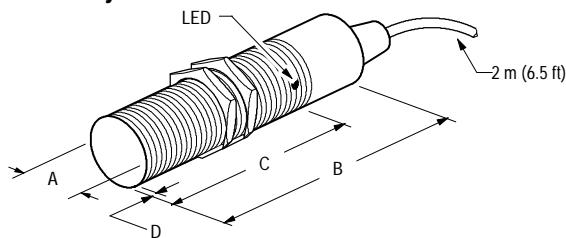
① Intrinsically Safe wiring labels 897H-L1 or 897H-L2 must be applied every 7.6 m (25 ft).

QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Zener Diode Barriers	NO TAG
Intrinsically Safe Wiring Labels	12-8

Approximate Dimensions [mm (in.)]

Cable Style



Wiring Diagrams

See pages 2-39 and 2-40.

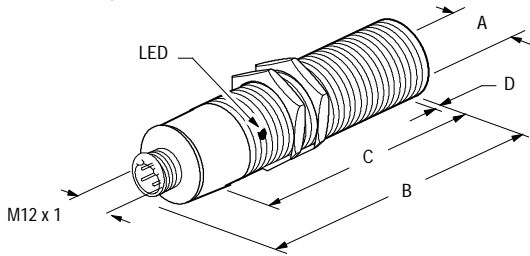
Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 x 1	Y	12.0 (0.47)	72.1 (2.84)	38.4 (1.51)	2.5 (0.10)
	N			31.5 (1.24)	9.4 (0.37)
M18 x 1	Y	18.0 (0.71)	74.7 (2.94)	60.0 (2.36)	2.5 (0.10)
	N			48.2 (1.90)	14.4 (0.56)
M30 x 1.5	Y	30.0 (1.18)	77.2 (3.04)	61.3 (2.41)	2.5 (0.10)
	N			41.6 (1.64)	17.9 (0.70)

871TM Intrinsically Safe, 2-Wire DC

Stainless Steel Face and Barrel

Approximate Dimensions [mm (in.)]

Micro QD Style

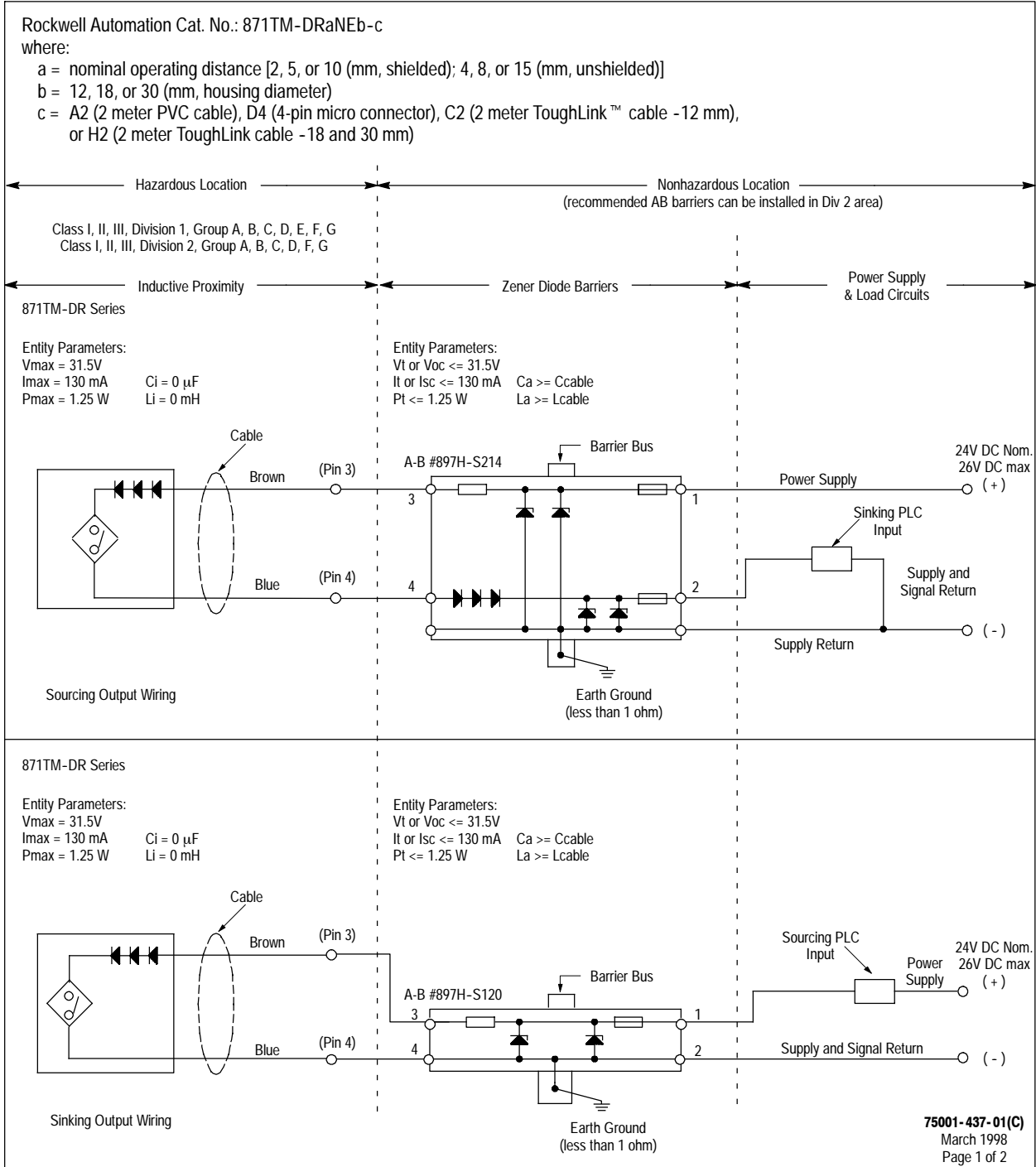


Wiring Diagrams

See pages 2-39 and 2-40.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 x 1	Y	12.0 (0.47)	72.1 (2.84)	38.4 (1.51)	2.5 (0.10)
	N			31.5 (1.24)	9.4 (0.37)
M18 x 1	Y	18.0 (0.71)	74.7 (2.94)	60.0 (2.36)	2.5 (0.10)
	N			48.2 (1.90)	14.4 (0.56)
M30 x 1.5	Y	30.0 (1.18)	77.2 (3.04)	61.3 (2.41)	2.5 (0.10)
	N			41.6 (1.64)	17.9 (0.70)

Inductive Proximity Sensors
Division 1 Installation Wiring Diagrams



ATTENTION



Operating parameters must be adhered to.

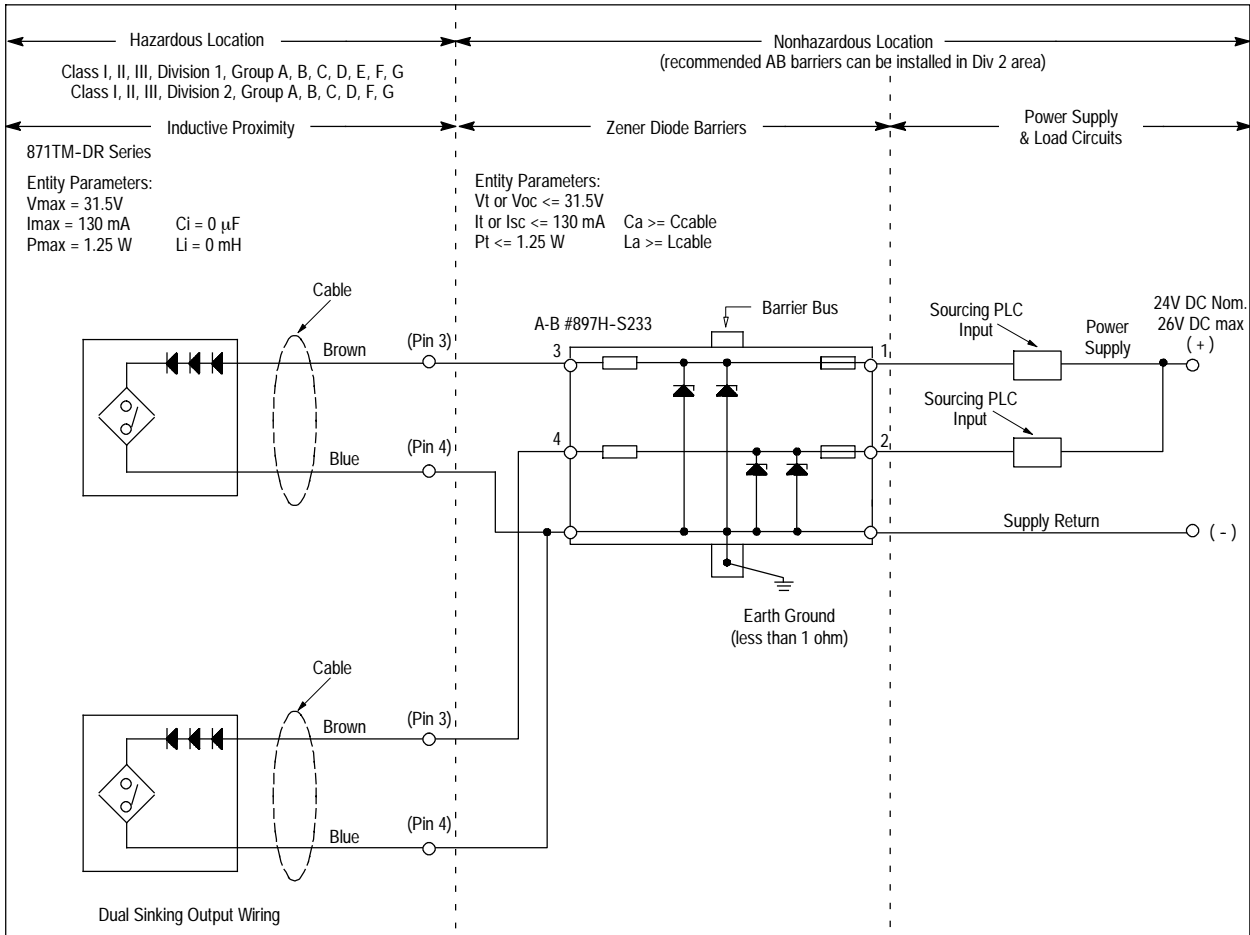
Inductive Proximity Sensors

871TM Intrinsically Safe, 2-Wire DC

Stainless Steel Face and Barrel

Inductive Proximity Sensors

Division 1 Installation Wiring Diagrams (continued)



Factory Mutual Installation Notes:

- 1 Installation must be in accordance with the National Electrical Code® (NFPA 70, Article 504), ANSI/ISA-RP12.6, and the manufacturer's instructions.
- 2 If the electrical parameters of the cable used are unknown, the following values may be used: Capacitance - 60 pF/ft.; Inductance - 0.20 μH/ft.
- 3 The wiring between each Inductive Proximity Sensor and its corresponding channel of the dual-channel barrier is a separate intrinsically safe circuit. Each of the two separate intrinsically safe circuits shall be in separate cables or shall be separated from each other as specified in NEC 504-30. The supply return conductors may be connected at the barrier's grounding terminal.
- 4 The Barrier bus must be insulated from other grounded metal. Use DIN Rail Mounting Kit, Rockwell Automation #64-136.
- 5 The maximum nonhazardous location voltage must not exceed 250V AC or DC.
- 6 Barriers are not required for Division 2 (31.5V DC max.). Division 2 applications must be installed in accordance with the NEC.
- 7 **WARNING:** Substitution of components may impair Intrinsic Safety.
- 8 No revision to drawing without prior FMRC approval.

Canadian Standards Association Installation Notes:

- 1 Installation must be in accordance with the Canadian Electrical Code (Part I), ANSI/ISA-RP12.6, and the manufacturer's instructions.
- 2 If the electrical parameters of the cable used are unknown, the following values may be used: Capacitance - 60 pF/ft.; Inductance - 0.20 μH/ft.
- 3 The wiring between each Inductive Proximity Sensor and its corresponding channel of the dual-channel barrier is a separate intrinsically safe circuit. Each of the two separate intrinsically safe circuits shall be in separate cables or shall be separated from each other as specified in CEC. The supply return conductors may be connected at the barrier's grounding terminal.
- 4 The Barrier bus must be insulated from other grounded metal. Use DIN Rail Mounting Kit, Allen-Bradley #64-136.
- 5 The maximum nonhazardous location voltage must not exceed 250V AC or DC.
- 6 Barriers are not required for Division 2 (31.5V DC max.). Division 2 applications must be installed in accordance with the CEC.
- 7 In Division 2 applications without barriers observe the following warnings:
WARNING: EXPLOSION HAZARD. Do not disconnect equipment unless power has been switched off or the area is known to be nonhazardous.
- 8 **WARNING:** Substitution of components may impair Intrinsic Safety.
- 9 No revision to drawing without prior CSA approval.

75001-437-01(C)
 March 1998
 Page 2 of 2

ATTENTION



These parameters must be adhered to.



871TM AC/DC Cable Style
12, 18, 30 mm



871TM AC/DC Mini
Quick-Disconnect Style
12, 18, 30 mm



871TM AC/DC Micro
Quick-Disconnect Style
12, 18, 30 mm



871TM AC/DC EAC Micro
Quick-Disconnect Style
12 mm

Specifications

	12 mm	18 & 30 mm
Load Current	5...200 mA	5...250 mA
Inrush Current (1 cycle)	≤2 A	≤4 A
Leakage Current	≤1.9 mA @ 120V AC	
Operating Voltage	20...250V AC/DC	
Voltage Drop	≤10V @ 5...200 mA	≤10V @ 5...250 mA
Repeatability	≤10% at constant temperature	
Hysteresis	7% typical	
False Pulse Protection	Incorporated	
Transient Noise Protection	Incorporated	
Short-Circuit Protection	Trigger @ 5 A typical	Trigger @ 8 A typical
Overload Protection	Trigger @ 260 mA typical	Trigger @ 320 mA typical
Certifications	UL Listed, CSA Certified and CE Marked for all applicable directives	
Enclosure	NEMA 1, 2, 3, 3R, 4, 4X, 6, 6P, 12, 13 IP67 (IEC 529) all models; 1200 psi (8270 kPa) washdown; stainless steel face and barrel; ToughLink™ and micro connector versions are also rated IP69K (IEC 529)	
Connections	Cable: 2 m (6.5 ft) length A2—2-conductor #22 AWG PVC C2—2-conductor #22 AWG ToughLink H2—3-conductor #18 AWG ToughLink Quick-Disconnect: 3-pin mini style 3-pin micro style 4-pin EAC micro style	
LEDs	Red: Output energized Green: Power Short circuit: Red and green flashing	
Operating Temperature [C (F)]	-25...+70° (-13...+158°)	
Shock	30 g, 11 ms	
Vibration	55 Hz, 1 mm amplitude, 3 planes	

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.9...1.0
Brass	0.3...0.5
Aluminum	0.1...0.4
Aluminum ≤0.020 Thick	0.9...1.1
Copper	0.4...0.6

Features

- 2-wire operation
- 2-conductor, 3-conductor, 3-pin or 4-pin connection
- 20...250V AC/DC
- Normally open or normally closed output
- Short-circuit, false pulse, overload, and transient noise protection
- UL Listed, CSA Certified and CE Marked for all applicable directives

Inductive Proximity Sensors

871TM 2-Wire AC/DC

Stainless Steel Face/Threaded Stainless Steel Barrel

Product Selection

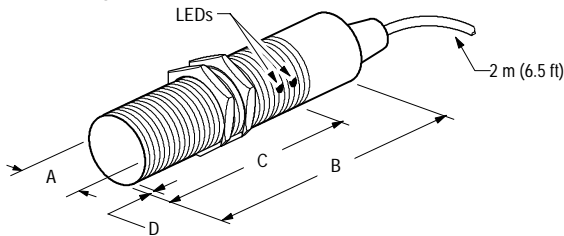
Barrel Dia.	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.				
					PVC Cable	ToughLink™ Cable	Mini QD Style	Micro QD Style	EAC Micro QD Style
12 mm	3 (0.12)	Y	N.O.	35	871TM-B3N12-A2	871TM-B3N12-C2	871TM-B3N12-N3	871TM-B3N12-R3	—
			N.C.	30	871TM-B3C12-A2	871TM-B3C12-C2	871TM-B3C12-N3	871TM-B3C12-R3	—
	4 (0.16)	N	N.O.	20	871TM-B4N12-A2	871TM-B4N12-C2	871TM-B4N12-N3	871TM-B4N12-R3	871TM-B4N12-B4
			N.C.	15	871TM-B4C12-A2	871TM-B4C12-C2	871TM-B4C12-N3	871TM-B4C12-R3	—
18 mm	5 (0.20)	Y	N.O.	20	871TM-B5N18-A2	871TM-B5N18-H2	871TM-B5N18-N3	871TM-B5N18-R3	—
			N.C.	15	871TM-B5C18-A2	871TM-B5C18-H2	871TM-B5C18-N3	871TM-B5C18-R3	—
	8 (0.31)	N	N.O.	15	871TM-B8N18-A2	871TM-B8N18-H2	871TM-B8N18-N3	871TM-B8N18-R3	—
			N.C.	12	871TM-B8C18-A2	871TM-B8C18-H2	871TM-B8C18-N3	871TM-B8C18-R3	—
30 mm	10 (0.39)	Y	N.O.	15	871TM-B10N30-A2	871TM-B10N30-H2	871TM-B10N30-N3	871TM-B10N30-R3	—
			N.C.	12	871TM-B10C30-A2	871TM-B10C30-H2	871TM-B10C30-N3	871TM-B10C30-R3	—
	15 (0.59)	N	N.O.	12	871TM-B15N30-A2	871TM-B15N30-H2	871TM-B15N30-N3	871TM-B15N30-R3	—
			N.C.	10	871TM-B15C30-A2	871TM-B15C30-H2	871TM-B15C30-N3	871TM-B15C30-R3	—
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))							889N-F3AFC-6F	889R-F3ECA-2	889B-F3AC-2

QD Cordsets and Accessories

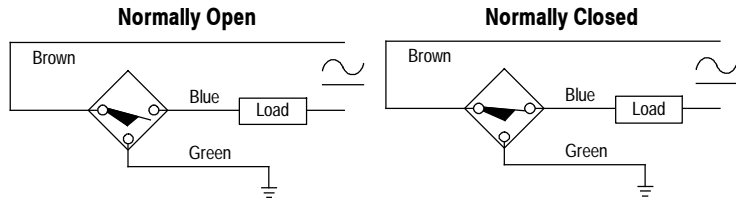
Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
End Caps	2-219, 2-220
Mounting Nuts	2-221...2-222

Approximate Dimensions [mm (in.)]

Cable Style



Wiring Diagrams



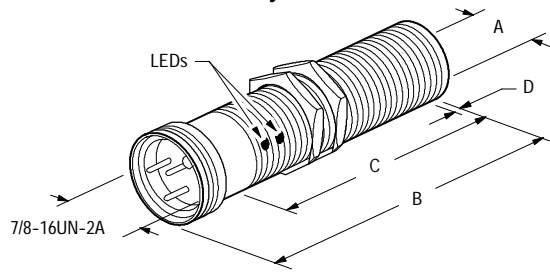
Note 1: No green wire on 12 mm and on sensors with PVC cable (-A2). Attach housing to ground.

Note 2: Load can be switched to brown wire.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 x 1	Y	12.0 (0.47)	72.1 (2.84)	38.4 (1.51)	2.5 (0.10)
	N			31.5 (1.24)	9.4 (0.37)
M18 x 1	Y	18.0 (0.71)	74.7 (2.94)	60.0 (2.36)	2.5 (0.10)
	N			48.2 (1.90)	14.4 (0.56)
M30 x 1.5	Y	30.0 (1.18)	77.2 (3.04)	61.3 (2.41)	2.5 (0.10)
	N			41.6 (1.64)	17.9 (0.70)

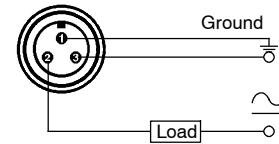
Approximate Dimensions [mm (in.)] (continued)

Mini Quick-Disconnect Style



Wiring Diagrams

Normally Open or Normally Closed

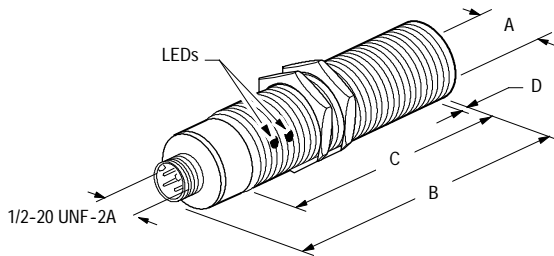


Note 1: No ground pin on 12 mm. Attach housing to ground.

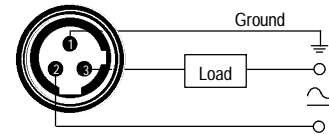
Note 2: Load can be switched to pin 3.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	85.6 (3.37)	37.8 (1.49)	2.5 (0.10)
	N			31.7 (1.25)	9.4 (0.37)
M18 X 1	Y	18.0 (0.71)	76.6 (3.02)	54.9 (2.16)	2.5 (0.10)
	N			43.1 (1.70)	14.4 (0.56)
M30 X 1.5	Y	30.0 (1.18)	86.4 (3.40)	61.3 (2.41)	2.5 (0.10)
	N			41.6 (1.64)	17.9 (0.70)

Micro Quick-Disconnect Style



Normally Open or Normally Closed

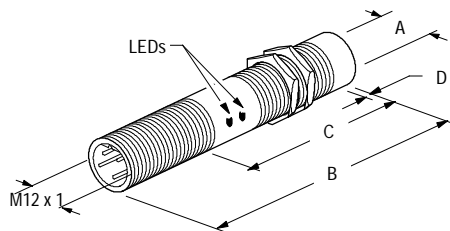


Note 1: No ground pin on 12 mm. Attach housing to ground.

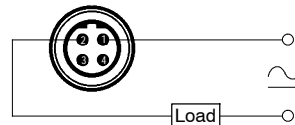
Note 2: Load can be switched to pin 2.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	87.3 (3.44)	38.4 (1.51)	2.5 (0.10)
	N			31.5 (1.24)	9.4 (0.37)
M18 X 1	Y	18.0 (0.71)	84.3 (3.32)	60.0 (2.36)	2.5 (0.10)
	N			48.2 (1.90)	14.4 (0.56)
M30 X 1.5	Y	30.0 (1.18)	85.7 (3.37)	61.3 (2.41)	2.5 (0.10)
	N			30.0 (1.18)	85.7 (3.37)

EAC Micro Quick-Disconnect Style



Normally Open



Note 1: No ground pin. Attach housing to ground.

Note 2: Load can be switched to pin 2.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	N	12.0 (0.47)	83.0 (3.27)	31.7 (1.25)	9.4 (0.37)

871TM 2-Wire AC/DC PLC Interfacer

Stainless Steel Face/Threaded Short Stainless Steel Barrel



871TM AC/DC Cable Style
12, 18, 30 mm



871TM AC/DC Mini
Quick-Disconnect Style
12, 18, 30 mm



871TM AC/DC Micro
Quick-Disconnect Style
12, 18, 30 mm



871TM AC/DC EAC Micro
Quick-Disconnect Style
12 mm

Specifications

Load Current	2...25 mA
Leakage Current	≤0.9 mA at 24V DC ≤1.7 mA at 20...120V AC/DC; ≤2.5 mA at 121...250V AC/DC
Operating Voltage	20...250V AC/DC
Voltage Drop	≤8V at 25 mA DC ≤10V at 25 mA AC
Repeatability	10% typical
Hysteresis	10% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Radio Frequency Protection	10V per meter Frequency range 20...1000MHz
Certifications	UL Listed, CSA Certified and CE Marked for all applicable directives
Enclosure	NEMA 1, 2, 3, 3R, 4, 4X, 6, 6P, 12, 13, IP67 (IEC 529) all models; 1200 psi (8270 kPa) washdown; stainless steel face and barrel; ToughLink™ and micro connector versions are also rated IP69K (IEC 529)
Connections	Cable: 2 m (6.5 ft) length A2—2-conductor #22 AWG PVC C2—2-conductor #22 AWG ToughLink H2—2-conductor #18 AWG ToughLink Quick-Disconnect: 3-pin mini style 3-pin micro style 4-pin EAC micro style
LED	Red: Output energized
Operating Temperature [C (F)]	-25...+70° (-13...+158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.8...1.0
Brass	0.4...0.7
Aluminum	0.4...0.7
Copper	0.2...0.5

Features

- Designed for low load current PLC, I/O, and PC applications
- 2-wire operation
- 2-conductor, 3-pin or 4-pin connection
- 20...250V AC/DC
- Normally open or normally closed output
- False pulse, transient noise, and radio frequency protection
- UL Listed, CSA Certified, and CE Marked for all applicable directives

871TM 2-Wire AC/DC PLC Interfacer

Stainless Steel Face/Threaded Short Stainless Steel Barrel

Product Selection

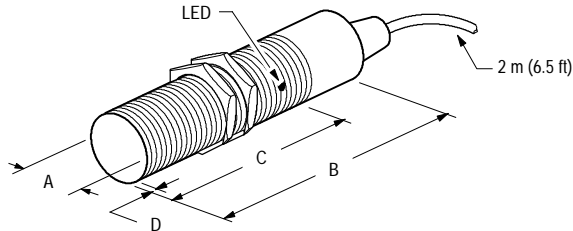
Barrel Dia. [mm]	Nominal Sensing Distance [mm (in.)]	Shield	Output Config.	Switching Freq. [Hz]	Cat. No.				
					PVC Cable	ToughLink™ Cable	Mini QD Style	Micro QD Style	EAC Micro QD Style
12	2 (0.08)	Yes	N.O.	75	871TM-BH2N12-A2	871TM-BH2N12-C2	871TM-BH2N12-N3	871TM-BH2N12-R3	871TM-BH2N12-B4
	4 (0.16)	No		35	871TM-BH4N12-A2	871TM-BH4N12-C2	871TM-BH4N12-N3	871TM-BH4N12-R3	—
	2 (0.08)	Yes	N.C.	75	—	—	—	871TM-BH2C12-R3	—
	4 (0.16)	No		35	—	—	—	871TM-BH4C12-R3	—
18	5 (0.20)	Yes	N.O.	65	871TM-BH5N18-A2	871TM-BH5N18-H2	871TM-BH5N18-N3	871TM-BH5N18-R3	—
	8 (0.31)	No		30	871TM-BH8N18-A2	871TM-BH8N18-H2	871TM-BH8N18-N3	871TM-BH8N18-R3	—
	5 (0.20)	Yes	N.C.	65	—	—	—	871TM-BH5C18-R3	—
	8 (0.31)	No		30	—	—	—	871TM-BH8C18-R3	—
30	10 (0.39)	Yes	N.O.	45	871TM-BH10N30-A2	871TM-BH10N30-H2	871TM-BH10N30-N3	871TM-BH10N30-R3	—
	15 (0.59)	No		20	871TM-BH15N30-A2	871TM-BH15N30-H2	871TM-BH15N30-N3	871TM-BH15N30-R3	—
	10 (0.39)	Yes	N.C.	45	871TM-BH10C30-A2	871TM-BH10C30-H2	871TM-BH10C30-N3	871TM-BH10C30-R3	—
	15 (0.59)	No		20	871TM-BH15C30-A2	871TM-BH15C30-H2	871TM-BH15C30-N3	871TM-BH15C30-R3	—
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))							889N-F3AFC-6F	889R-F3ECA-2	889B-F3AC-2

QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
End Caps	2-219, 2-220
Mounting Nuts	2-221...2-222

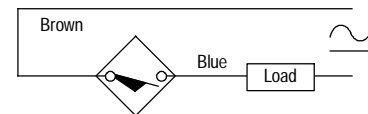
Approximate Dimensions [mm (in.)]

Cable Style



Wiring Diagrams

Normally Open



Note 1: Attach housing to ground.
Note 2: Load can be switched to brown wire.

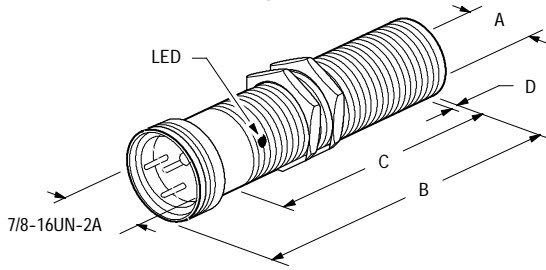
Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	49.8 (1.96)	26.4 (1.04)	2.5 (0.10)
	N			19.5 (0.77)	9.4 (0.37)
M18 X 1	Y	18.0 (0.71)	55.4 (2.18)	41.7 (1.64)	2.5 (0.10)
	N			—	14.5 (0.57)
M30 X 1.5	Y	30.0 (1.18)	57.9 (2.28)	41.9 (1.65)	2.5 (0.10)
	N			39.4 (1.55)	18.0 (0.71)

871TM 2-Wire AC/DC PLC Interfacer

Stainless Steel Face/Threaded Short Stainless Steel Barrel

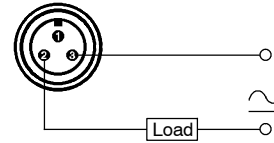
Approximate Dimensions [mm (in.)] (continued)

Mini Quick-Disconnect Style



Wiring Diagrams

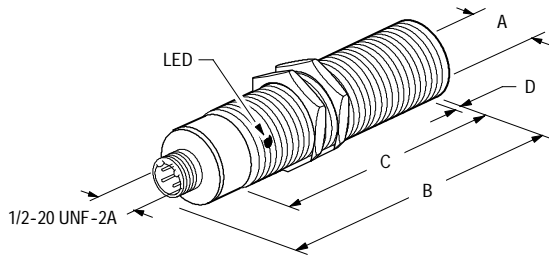
Normally Open



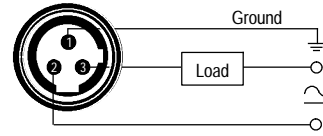
Note 1: Attach housing to ground.
Note 2: Load can be switched to pin 3.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	63.5 (2.50)	25.4 (1.00)	2.5 (0.10)
	N			18.5 (0.73)	9.4 (0.37)
M18 X 1	Y	18.0 (0.71)	56.1 (2.21)	35.1 (1.38)	2.5 (0.10)
	N			29.2 (1.15)	14.5 (0.57)
M30 X 1.5	Y	30.0 (1.18)	68.1 (2.68)	41.9 (1.65)	2.5 (0.10)
	N			39.4 (1.55)	18.0 (0.71)

Micro Quick-Disconnect Style



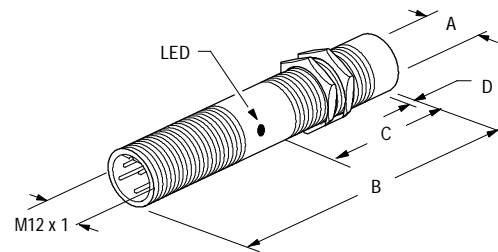
Normally Open



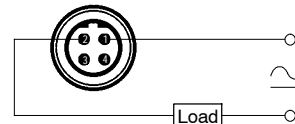
Note 1: Attach housing to ground.
Note 2: Load can be switched to pin 2.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	61.0 (2.40)	26.4 (1.04)	2.5 (0.10)
	N			19.6 (0.77)	9.4 (0.37)
M18 X 1	Y	18.0 (0.71)	65.0 (2.56)	41.7 (1.64)	2.5 (0.10)
	N			39.4 (1.55)	14.5 (0.57)
M30 X 1.5	Y	30.0 (1.18)	66.3 (2.61)	41.9 (1.65)	2.5 (0.10)
	N			39.4 (1.55)	18.0 (0.71)

EAC Micro Quick-Disconnect Style



Normally Open



Note 1: No ground pin. Attach housing to ground.
Note 2: Load can be switched to pin 2.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	61.0 (2.40)	26.4 (1.04)	2.5 (0.10)



Description

Bulletin 872C WorldProx inductive proximity sensors are self-contained, general purpose, solid-state devices designed to sense the presence of ferrous and nonferrous metal objects without touching them.

The switch body consists of a plastic face and a nickel-plated brass barrel. 3-Wire DC models offer an optional stainless steel or plastic switch body, both with a plastic face. It meets NEMA 1, 2, 3, 4, 6P, 12, 13 and IP67 (IEC529) enclosure standards. The electronic circuitry is fully potted for protection against shock, vibration, and contamination.

All models have a 360° visible LED. Cable models have a translucent end cap which glows when the LED indicator is on, and is visible from almost every angle. Quick-disconnect models have a four porthole LED design for better visibility from most angles. In addition to making installation easier, 360° visibility may facilitate troubleshooting.

These sensors are available in 6.5, 8, 12, 18 and 30 mm diameters. Connection options for 3-wire sensors include PVC or PUR cable jacket and mini, micro, and pico quick-disconnect style. Three-wire DC cable style sensors are available with 2, 5, or 10 m PVC or PUR cables (2 m PVC is standard).

Features

- Threaded nickel-plated brass barrel (optional stainless steel barrel)
- Threaded plastic barrel (3-wire DC only)
- 360° visible LED
- Cable or quick-disconnect styles
- Short circuit protection
- Overload protection
- Transient noise protection
- False pulse protection
- Reverse polarity protection
- cULus Listed and CE Marked for all applicable directives

Styles

DC 3-Wire	page 2-48
DC 3-Wire Short Barrel	page 2-52
DC 3-Wire Extended Sensing	page 2-56
DC 3-Wire Short Barrel with Extended Sensing	page 2-60
DC 3-Wire Long Range Sensing	page NEW
DC 3-Wire Plastic Barrel	page 2-64
DC 3-Wire Plastic Barrel with Extended Sensing	page NEW
DC 2-Wire	page 2-67
DC 2-Wire QuadroPlex	page 2-70
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AC 2-Wire	page 2-74
AC 2-Wire Extended Sensing	page 2-77
AC/DC 2-Wire	page 2-80
AC/DC 2-Wire Relay Output	page 2-83

QD Cordsets and Accessories

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Mounting Bracket, Swivel/Tilt Style	page 2-212
Mounting Bracket, Right Angle Style	page 2-213
Mounting Bracket, Clamp Style	page 2-214
End Caps	page 2-220
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Lock Washers	page 2-223

General Information

Torque Chart	page 2-225
Metric/English Conversion Chart	page 14-6



Inductive Proximity Sensors

872C/872CT WorldProx™ 3-Wire DC

Plastic Face/ Threaded Nickel-Plated Brass or Stainless Steel Barrel



DC Micro Quick-Disconnect Style
8, 12, 18, and 30 mm



DC Pico Quick-Disconnect Style
6.5, 8, 12, and 18 mm



DC Mini Quick-Disconnect Style
18 & 30 mm



DC Cable Style
6.5, 8, 12, 18, and 30 mm



Pigtail Cable with Integral Micro QD Connector
8, 12, 18, and 30 mm

Features

- 3-wire operation
- 3-conductor PVC or PUR cable jacket (PVC standard)
- 3- or 4-pin connection for pico, micro, and mini connectors
- PVC and PUR cable available in 2, 5, and 10 m cable lengths (2 m standard)
- Pigtail cable in PVC with integral micro QD connector available in 0.2, 0.5, and 1.0 m cable lengths
- 10...30V DC
- Normally open or normally closed
- Reverse polarity, short circuit, overload, false pulse, and transient noise protection
- cULus Listed (8, 12, 18, and 30 mm models only) and CE Marked (all models) for all applicable directives

Specifications

Load Current	≤200 mA
Leakage Current	≤10 μA
Operating Voltage	10...30V DC
Voltage Drop	≤1.8V
Repeatability	≤5%
Hysteresis	≤10% typical
Protection Type	False pulse on power, transient noise, reverse polarity, short circuit, and overload
Certifications	cULus Listed and CE Marked for all applicable directives
Enclosure Type Rating	NEMA 1, 2, 3, 4, 6P, 12, 13, IP 67 (IEC 529)
Housing Material	Nickel-plated brass barrel, plastic face (PBT) Optional stainless steel 304 barrel, plastic face (PBT)
Connections	Cable (PVC/PUR): 2 m (6.5 ft), 5 m (16.4 ft), 10 m (32.8 ft) length, 4.4 mm (0.175 in.) diameter; 3-conductor #26 AWG PVC or PUR; Cable (Pigtail): 0.2 m (0.7 ft), 0.5 m (1.6 ft), 1 m (3.3 ft) length, Integral 4-pin micro QD Quick-Disconnect: 4-pin mini, 4-pin micro or 3-pin pico style
LED	Amber: output energized, 360° visibility
Operating Temperature [C (F)], Min	-25...70° (-13...158°)
Shock	30 g, 11 ms half-sine
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factors
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

QD Cordsets and Accessories

Description	Page No.
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Inductive Proximity Sensors
872C/872CT WorldProx™ 3-Wire DC
 Plastic Face/ Threaded Nickel-Plated Brass or Stainless Steel Barrel

Product Selection

Barrel Diameter [mm]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.			
						Cable Style	Mini QD Style	Micro QD Style	Pico QD Style
6.5	2 (0.08)	Yes	N.O.	NPN	2000	872C-MM1NN7-E2	—	—	872C-MM1NN7-P3
				PNP		872C-MM1NP7-E2	—	—	872C-MM1NP7-P3
			N.C.	NPN		872C-MM1CN7-E2	—	—	872C-MM1CN7-P3
				PNP		872C-MM1CP7-E2	—	—	872C-MM1CP7-P3
8	2 (0.08)	Yes	N.O.	NPN	2500	★ 872C-D2NN8-E2	—	★ 872C-D2NN8-D4	★ 872C-D2NN8-P3
				PNP		★ 872C-D2NP8-E2	—	★ 872C-D2NP8-D4	★ 872C-D2NP8-P3
			N.C.	NPN		★ 872C-D2CN8-E2	—	★ 872C-D2CN8-D4	★ 872C-D2CN8-P3
				PNP		★ 872C-D2CP8-E2	—	★ 872C-D2CP8-D4	★ 872C-D2CP8-P3
	3 (0.12)	No	N.O.	NPN		★ 872C-D3NN8-E2	—	★ 872C-D3NN8-D4	★ 872C-D3NN8-P3
				PNP		★ 872C-D3NP8-E2	—	★ 872C-D3NP8-D4	★ 872C-D3NP8-P3
			N.C.	NPN		★ 872C-D3CN8-E2	—	★ 872C-D3CN8-D4	★ 872C-D3CN8-P3
				PNP		★ 872C-D3CP8-E2	—	★ 872C-D3CP8-D4	★ 872C-D3CP8-P3
12	3 (0.12)	Yes	N.O.	NPN	1300	★ 872C-D3NN12-E2	—	★ 872C-D3NN12-D4	★ 872C-D3NN12-P3
				PNP		★ 872C-D3NP12-E2	—	★ 872C-D3NP12-D4	★ 872C-D3NP12-P3
			N.C.	NPN		★ 872C-D3CN12-E2	—	★ 872C-D3CN12-D4	★ 872C-D3CN12-P3
				PNP		★ 872C-D3CP12-E2	—	★ 872C-D3CP12-D4	★ 872C-D3CP12-P3
	4 (0.16)	No	N.O.	NPN		★ 872C-D4NN12-E2	—	★ 872C-D4NN12-D4	★ 872C-D4NN12-P3
				PNP		★ 872C-D4NP12-E2	—	★ 872C-D4NP12-D4	★ 872C-D4NP12-P3
			N.C.	NPN		★ 872C-D4CN12-E2	—	★ 872C-D4CN12-D4	★ 872C-D4CN12-P3
				PNP		★ 872C-D4CP12-E2	—	★ 872C-D4CP12-D4	★ 872C-D4CP12-P3
18	5 (0.2)	Yes	N.O.	NPN	1500	★ 872C-D5NN18-E2	★ 872C-D5NN18-N4	★ 872C-D5NN18-D4	★ 872C-D5NN18-P3
				PNP		★ 872C-D5NP18-E2	★ 872C-D5NP18-N4	★ 872C-D5NP18-D4	★ 872C-D5NP18-P3
			N.C.	NPN		★ 872C-D5CN18-E2	★ 872C-D5CP18-N4	★ 872C-D5CN18-D4	★ 872C-D5CN18-P3
				PNP		★ 872C-D5CP18-E2	★ 872C-D5CP18-N4	★ 872C-D5CP18-D4	★ 872C-D5CP18-P3
	8 (0.31)	No	N.O.	NPN		★ 872C-D8NN18-E2	★ 872C-D8NN18-N4	★ 872C-D8NN18-D4	★ 872C-D8NN18-P3
				PNP		★ 872C-D8NP18-E2	★ 872C-D8NP18-N4	★ 872C-D8NP18-D4	★ 872C-D8NP18-P3
			N.C.	NPN		★ 872C-D8CN18-E2	★ 872C-D8CN18-N4	★ 872C-D8CN18-D4	★ 872C-D8CN18-P3
				PNP		★ 872C-D8CP18-E2	★ 872C-D8CP18-N4	★ 872C-D8CP18-D4	★ 872C-D8CP18-P3
30	10 (0.39)	Yes	N.O.	NPN	1000	★ 872C-D10NN30-E2	★ 872C-D10NN30-N4	★ 872C-D10NN30-D4	—
				PNP		★ 872C-D10NP30-E2	★ 872C-D10NP30-N4	★ 872C-D10NP30-D4	—
			N.C.	NPN		★ 872C-D10CN30-E2	★ 872C-D10CN30-N4	★ 872C-D10CN30-D4	—
				PNP		★ 872C-D10CP30-E2	★ 872C-D10CP30-N4	★ 872C-D10CP30-D4	—
	15 (0.59)	No	N.O.	NPN		★ 872C-D15NN30-E2	★ 872C-D15NN30-N4	★ 872C-D15NN30-D4	—
				PNP		★ 872C-D15NP30-E2	★ 872C-D15NP30-N4	★ 872C-D15NP30-D4	—
			N.C.	NPN		★ 872C-D15CN30-E2	★ 872C-D15CN30-N4	★ 872C-D15CN30-D4	—
				PNP		★ 872C-D15CP30-E2	★ 872C-D15CP30-N4	★ 872C-D15CP30-D4	—
Recommended mating cable, 2 m (6.5 ft). See the <i>On-Machine Connectivity</i> catalog for details and additional lengths.						—	889N-F4AFC-6F	889D-F4AFC-2	889P-F3AB-2

★ Cat. no. listed is for a standard nickel-plated brass barrel. For a stainless steel barrel, add a **T** to the cat. no. **Example:** Cat. No. 872C-D4NN12-E2 becomes Cat. No. 872CT-D4NN12-E2.

Note: Preferred availability designation in table above applies to nickel-plated brass model only.

Cable Options (8, 12, 18, and 30 mm sensors only)

E2 at the end of cat. no. designates PVC cable 2 m in length. Replace **E2** with **E5** or **E10** for 5 or 10 m length.

For polyurethane cable replace **E2** with **J2**, **J5**, or **J10** for 2, 5, or 10 m length.

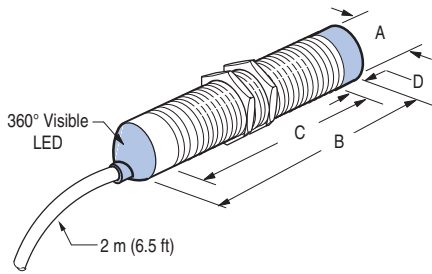
For PVC pigtail cable with integral micro QD style connector (4-pin DC male) replace **E2** with **FD02**, **FD05**, or **FD10** for 0.2, 0.5, or 1.0 m length.

Cable Length	PVC	PUR
2 m	E2	J2
5 m	E5	J5
10 m	E10	J10

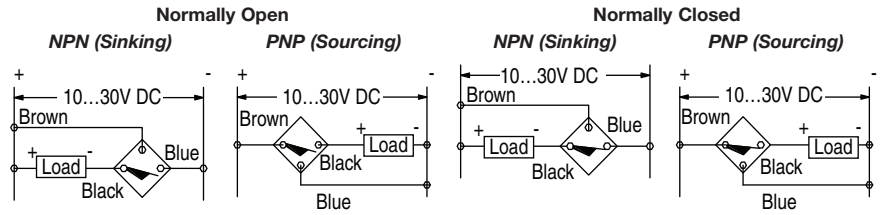
Pigtail Cable Length	PVC
0.2 m	FD02
0.5 m	FD05
1.0 m	FD10

Inductive Proximity Sensors
872C/872CT WorldProx™ 3-Wire DC
 Plastic Face/ Threaded Nickel-Plated Brass or Stainless Steel Barrel

Approximate Dimensions—mm (in)
Cable Style

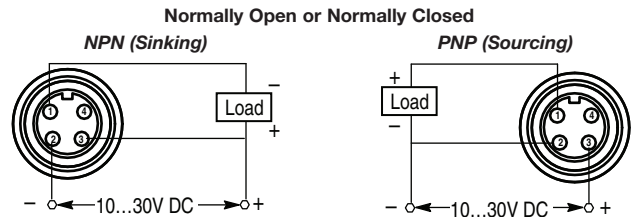
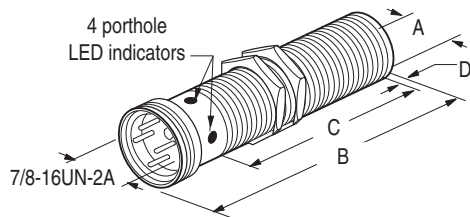


Wiring Diagrams



Thread Size	Barrel Type	Smooth Diameter	Shielded	mm (inches)			
				A	B (max)	C (min)	D (max)
—	Nickel-plated brass	6.5	Y	6.50 (0.26)	33.0 (1.30)	—	—
M8 x 1	Nickel-plated brass and stainless steel	—	Y	8.00 (0.31)	32.8 (1.29)	30.2 (1.19)	—
N			36.8 (1.45)		4.10 (0.16)		
M12 x 1		—	Y	12.0 (0.47)	50.8 (2.00)	46.7 (1.84)	—
N			58.9 (2.32)		8.10 (0.32)		
M18 x 1		—	Y	18.0 (0.71)	50.8 (2.00)	46.7 (1.84)	—
N			63.0 (2.48)		12.2 (0.48)		
M30 x 1		—	Y	30.0 (1.18)	50.8 (2.00)	47.7 (1.88)	—
N			63.0 (2.48)		12.2 (0.48)		

Mini QD Style



Thread Size	Barrel Type	Shielded	mm (inches)			
			A	B (max)	C (min)	D (max)
M18 x 1	Nickel-plated brass and stainless steel	Y	18.0 (0.71)	63.5 (2.50)	35.1 (1.38)	—
		N		75.7 (2.98)		12.2 (0.48)
M30 X 1.5	Nickel-plated brass	Y	30.0 (1.18)	63.5 (2.50)	38.1 (1.50)	—
		N		75.7 (2.98)		12.2 (0.48)
	Stainless steel	Y		64.3 (2.53)	47.8 (1.88)	—
		N		76.5 (3.01)		12.2 (0.48)

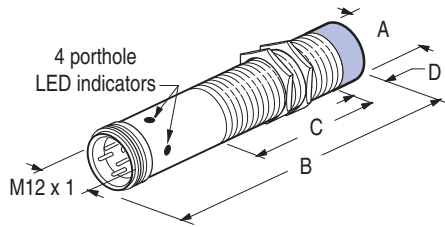


Inductive Proximity Sensors 872C/872CT WorldProx™ 3-Wire DC

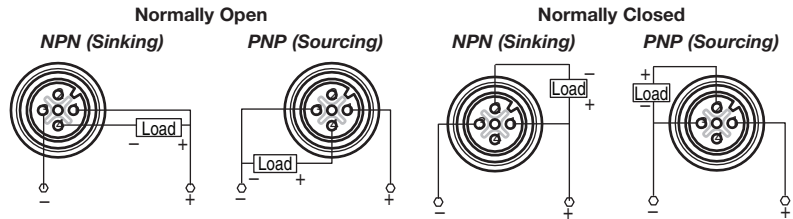
Plastic Face/ Threaded Nickel-Plated Brass or Stainless Steel Barrel

Approximate Dimensions—mm (in)

Micro QD Style

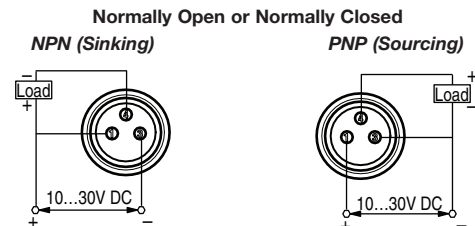
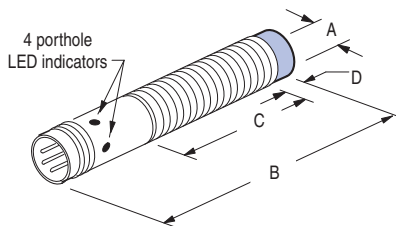


Wiring Diagrams



Thread Size	Barrel Type	Shielded	mm (inches)			
			A	B (max)	C (min)	D (max)
M8 x 1	Nickel-plated brass and stainless steel	Y	8.00 (0.31)	58.7 (2.31)	27.7 (1.09)	—
		N		62.7 (2.47)		4.00 (0.16)
M12 x 1		Y	12.0 (0.47)	64.3 (2.53)	38.1 (1.50)	—
		N		72.4 (2.85)		8.10 (0.32)
M18 x 1		Y	18.0 (0.71)	64.3 (2.53)	38.1 (1.50)	—
		N		76.5 (3.01)		12.2 (0.48)
M30 X 1.5		Y	30.0 (1.18)	64.3 (2.53)	47.75 (1.88)	—
		N		76.5 (3.01)		12.2 (0.48)

Pico QD Style



Thread Size	Barrel Type	Smooth Diameter	Shielded	mm (inches)			
				A	B (max)	C (min)	D (max)
—	Nickel-plated brass	6.5	Y	6.50 (0.26)	49.0 (1.93)	—	—
M8 x 1	Nickel-plated brass and stainless steel	—	Y	8.00 (0.31)	49.5 (1.95)	34.0 (1.34)	—
			N		53.6 (2.11)		4.10 (0.16)
M12 x 1		Y	12.0 (0.47)	63.5 (2.50)	47.5 (1.87)	—	
		N		71.6 (2.82)		8.10 (0.32)	
M18 x 1		Y	18.0 (0.71)	63.5 (2.50)	47.5 (1.87)	—	
		N		75.7 (2.98)		12.2 (0.48)	

Inductive Proximity Sensors
872C/872CT WorldProx™ Short Barrel 3-Wire DC
 Plastic Face/ Threaded Nickel-Plated Brass or Stainless Steel Barrel



DC Micro Quick-Disconnect Style
8, 12, 18, and 30 mm



DC Pico Quick-Disconnect Style
8, 12, and 18 mm



DC Mini Quick-Disconnect Style
18 & 30 mm



DC Cable Style
8, 12, 18, and 30 mm



Pigtail Cable with Integral Micro QD Connector
8, 12, 18, and 30 mm

Features

- 3 wire operation
- 3 conductor PVC or PUR cable jacket (PVC standard)
- 3 or 4 pin connection for pico, micro, and mini connectors
- PVC and PUR cable available in 2, 5, and 10 m cable lengths (2 m standard)
- Pigtail cable in PVC with integral micro QD connector available in 0.2, 0.5, and 1.0 m cable lengths
- 10...30V DC
- Normally open or normally closed
- Reverse polarity, short circuit, overload, false pulse, and transient noise protection
- cULus Listed and CE Marked for all applicable directives

Specifications

Load Current	≤200 mA
Leakage Current	≤10 μA
Operating Voltage	10...30V DC
Voltage Drop	≤1.8V
Repeatability	≤5%
Hysteresis	≤10% typical
Protection Type	False pulse on power, transient noise, reverse polarity, short circuit, and overload
Certifications	UL Listed and CE Marked for all applicable directives
Enclosure Type Rating	NEMA 1, 2, 3, 4, 6P, 12, 13, IP 67 (IEC 529)
Housing Material	Nickel-plated brass barrel, plastic face (PBT); Optional stainless steel 304 barrel, plastic face (PBT)
Connections	Cable (PVC/PUR): 2 m (6.5 ft), 5 m (16.4 ft), 10 m (32.8 ft) length, 4.4 mm (0.175 in.) diameter; 3-conductor #26 AWG PVC or PUR; Cable (Pigtail): 0.2 m (0.7 ft), 0.5 m (1.6 ft), 1 m (3.3 ft) length, Integral 4-pin micro QD Quick-Disconnect: 4-pin mini, 4-pin micro or 3-pin pico style
Status Indicator	Amber: Output energized, 360° visibility
Operating Temperature [C (F)], Min	-25...+70° (-13...+158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factors
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

QD Cordsets and Accessories

Description	Page No.
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
End Caps	2-220
Mounting Nuts	2-221...2-222



Inductive Proximity Sensors
872C/872CT WorldProx™ Short Barrel 3-Wire DC
 Plastic Face/ Threaded Nickel-Plated Brass or Stainless Steel Barrel

Product Selection

Barrel Diameter [mm]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.				
						Cable Style ★	Mini QD Style ★	Micro QD Style ★	Pico QD Style ★	
8	2 (0.08)	Yes	N.O.	NPN	2500	872C-DH2NN8-E2	—	872C-DH2NN8-D4	872C-DH2NN8-P3	
				PNP		872C-DH2NP8-E2	—	872C-DH2NP8-D4	872C-DH2NP8-P3	
			N.C.	NPN		872C-DH2CN8-E2	—	872C-DH2CN8-D4	872C-DH2CN8-P3	
				PNP		872C-DH2CP8-E2	—	872C-DH2CP8-D4	872C-DH2CP8-P3	
			3 (0.12)	No		N.O.	NPN	872C-DH3NN8-E2	—	872C-DH3NN8-D4
	PNP	872C-DH3NP8-E2					—	872C-DH3NP8-D4	872C-DH3NP8-P3	
	N.C.	NPN				872C-DH3CN8-E2	—	872C-DH3CN8-D4	872C-DH3CN8-P3	
		PNP				872C-DH3CP8-E2	—	872C-DH3CP8-D4	872C-DH3CP8-P3	
	12	3 (0.12)				Yes	N.O.	NPN	872C-DH3NN12-E2	—
			PNP	872C-DH3NP12-E2				—	872C-DH3NP12-D4	872C-DH3NP12-P3
N.C.			NPN	872C-DH3CN12-E2	—		872C-DH3CN12-D4	872C-DH3CN12-P3		
			PNP	872C-DH3CP12-E2	—		872C-DH3CP12-D4	872C-DH3CP12-P3		
4 (0.16)			No	N.O.	NPN		872C-DH4NN12-E2	—	872C-DH4NN12-D4	872C-DH4NN12-P3
		PNP			872C-DH4NP12-E2	—	872C-DH4NP12-D4	872C-DH4NP12-P3		
		N.C.		NPN	872C-DH4CN12-E2	—	872C-DH4CN12-D4	872C-DH4CN12-P3		
				PNP	872C-DH4CP12-E2	—	872C-DH4CP12-D4	872C-DH4CP12-P3		
		18		5 (0.2)	Yes	N.O.	NPN	872C-DH5NN18-E2	872C-DH5NN18-N4	872C-DH5NN18-D4
PNP			872C-DH5NP18-E2				872C-DH5NP18-N4	872C-DH5NP18-D4	872C-DH5NP18-P3	
N.C.	NPN		872C-DH5CN18-E2			872C-DH5CN18-N4	872C-DH5CN18-D4	872C-DH5CP18-P3		
	PNP		872C-DH5CP18-E2			872C-DH5CP18-N4	872C-DH5CP18-D4	872C-DH5CN18-P3		
8 (0.32)	No		N.O.			NPN	872C-DH8NN18-E2	872C-DH8NN18-N4	872C-DH8NN18-D4	872C-DH8NN18-P3
				PNP	872C-DH8NP18-E2	872C-DH8NP18-N4	872C-DH8NP18-D4	872C-DH8NP18-P3		
			N.C.	NPN	872C-DH8CN18-E2	872C-DH8CN18-N4	872C-DH8CN18-D4	872C-DH8CN18-P3		
				PNP	872C-DH8CP18-E2	872C-DH8CP18-N4	872C-DH8CP18-D4	872C-DH8CP18-P3		
			30	10 (0.39)	Yes	N.O.	NPN	872C-DH10NN30-E2	872C-DH10NN30-N4	872C-DH10NN30-D4
PNP	872C-DH10NP30-E2						872C-DH10NP30-N4	872C-DH10NP30-D4	—	
N.C.	NPN	872C-DH10CN30-E2				872C-DH10CN30-N4	872C-DH10CN30-D4	—		
	PNP	872C-DH10CP30-E2				872C-DH10CP30-N4	872C-DH10CP30-D4	—		
15 (0.59)	No	N.O.				NPN	872C-DH15NN30-E2	872C-DH15NN30-N4	872C-DH15NN30-D4	—
				PNP	872C-DH15NP30-E2	872C-DH15NP30-N4	872C-DH15NP30-D4	—		
		N.C.		NPN	872C-DH15CN30-E2	872C-DH15CN30-N4	872C-DH15CN30-D4	—		
				PNP	872C-DH15CP30-E2	872C-DH15CP30-N4	872C-DH15CP30-D4	—		
		Recommended mating cable, 2 m (6.5 ft). (See <i>On-Machine Connectivity</i> catalog for details and additional lengths).						—	889N-F4AFC-6F	889D-F4AC-2

★ Cat. no. listed is for a standard nickel-plated brass barrel. For a stainless steel barrel, add a **T** to the cat. no. **Example:** Cat. No. 872C-DH4NP12-E2 becomes Cat. No. 872CT-DH4NP12-E2.

Note: Preferred availability designation in table above applies to nickel-plated brass model only.

Cable Options

E2 at the end of cat. no. designates PVC cable 2 m in length. Replace **E2** with **E5** or **E10** for 5 or 10 m length.

For polyurethane cable replace **E2** with **J2**, **J5**, or **J10** for 2, 5, or 10 m length.

For PVC pigtail cable with integral micro QD style connector (4-pin DC male) replace **E2** with **FD02**, **FD05**, or **FD10** for 0.2, 0.5, or 1.0 m length.

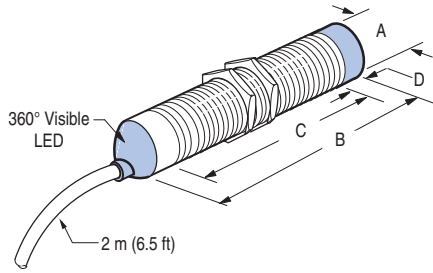
Cable Length	PVC	PUR
2 m	E2	J2
5 m	E5	J5
10 m	E10	J10

Pigtail Cable Length	PVC
0.2 m	FD02
0.5 m	FD05
1.0 m	FD10

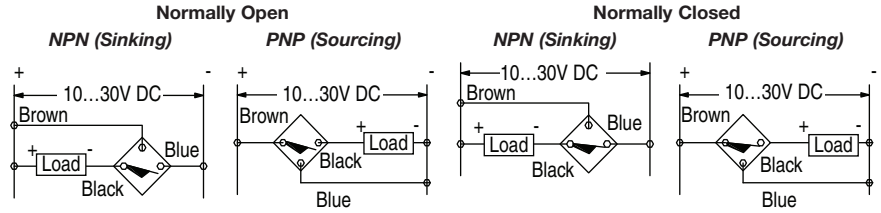
Inductive Proximity Sensors
872C/872CT WorldProx™ Short Barrel 3-Wire DC
 Plastic Face/ Threaded Nickel-Plated Brass or Stainless Steel Barrel

Approximate Dimensions—mm (in)

Cable Style

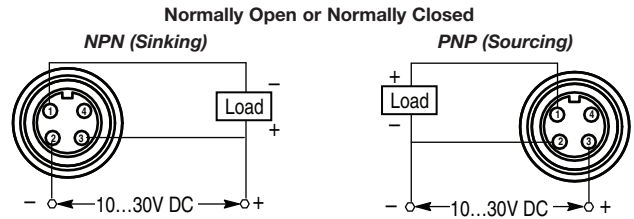
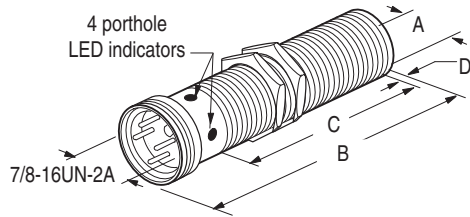


Wiring Diagrams



Thread Size	Barrel Type	Shielded	mm (inches)					
			A	B (max)	C (min)	D (max)		
M8 x 1	Nickel-plated brass and stainless steel	Y	8.00 (0.31)	26.7 (1.05)	24.1 (0.95)	—		
		N		30.7 (1.21)		4.10 (0.16)		
M12 x 1		Y	12.0 (0.47)	34.8 (1.37)		31.8 (1.25)	—	
		N		42.9 (1.69)			8.10 (0.32)	
M18 x 1		Y	18.0 (0.71)	34.8 (1.37)		34.3 (1.35)	—	
		N		47.0 (1.85)			12.2 (0.48)	
M30 x 1		Nickel-plated brass	Y	30.0 (1.18)			34.8 (1.37)	—
			N				47.0 (1.85)	12.2 (0.48)
	Stainless steel	Y	37.3 (1.47)	—				
		N	49.5 (1.95)	12.2 (0.48)				

Mini QD Style



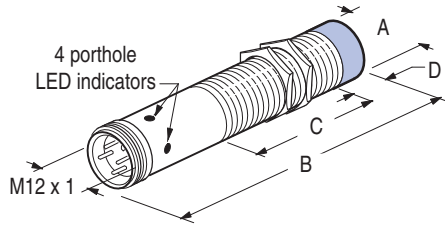
Thread Size	Barrel Type	Shielded	mm (inches)			
			A	B (max)	C (min)	D (max)
M18 x 1	Nickel-plated brass and stainless steel	Y	18.0 (0.71)	47.5 (1.87)	24.2 (0.95)	—
		N		59.7 (2.35)		12.2 (0.48)
M30 X 1.5	Nickel-plated brass	Y	30.0 (1.18)	47.5 (1.87)	26.4 (1.04)	—
		N		59.7 (2.35)		12.2 (0.48)
	Stainless steel	Y	50.8 (2.00)	34.3 (1.35)	—	
		N	63.0 (2.48)		12.2 (0.48)	



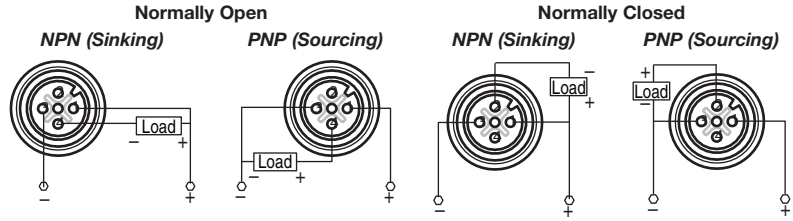
Inductive Proximity Sensors
872C/872CT WorldProx™ Short Barrel 3-Wire DC
 Plastic Face/ Threaded Nickel-Plated Brass or Stainless Steel Barrel

Approximate Dimensions—mm (in)

Micro QD Style

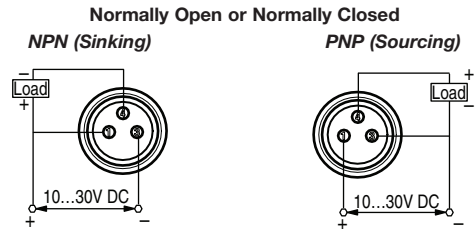
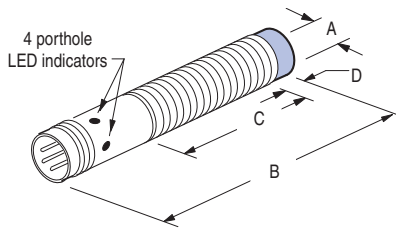


Wiring Diagrams



Thread Size	Barrel Type	Shielded	mm (inches)			
			A	B (max)	C (min)	D (max)
M8 x 1	Nickel-plated brass and stainless steel	Y	8.00 (0.31)	45.2 (1.78)	20.1 (0.79)	—
		N		49.3 (1.94)		4.10 (0.16)
M12 x 1		Y	12.0 (0.47)	48.3 (1.90)	27.4 (1.08)	—
		N		56.4 (2.22)		8.10 (0.32)
M18 x 1	Nickel-plated brass	Y	18.0 (0.71)	49.5 (1.95)	26.4 (1.04)	—
		N		61.7 (2.43)		12.2 (0.48)
	Stainless steel	Y		48.3 (1.90)	31.8 (1.25)	—
		N		60.5 (2.38)		12.2 (0.48)
M30 X 1.5	Nickel-plated brass and stainless steel	Y	30.0 (1.18)	50.8 (2.00)	31.8 (1.25)	—
		N		63.2 (2.49)		12.2 (0.48)

Pico QD Style



Thread Size	Barrel Type	Shielded	mm (inches)			
			A	B (max)	C (min)	D (max)
M8 x 1	Nickel-plated brass and stainless steel	Y	8.00 (0.31)	44.5 (1.75)	29.0 (1.14)	—
		N		48.5 (1.91)		4.10 (0.16)
M12 x 1		Y	12.0 (0.47)	45.2 (1.78)	29.2 (1.15)	—
		N		53.3 (2.10)		8.10 (0.32)
M18 x 1	Nickel-plated brass and stainless steel	Y	18.0 (0.71)	47.5 (1.87)	31.5 (1.24)	—
		N		59.7 (2.35)		12.2 (0.48)

Inductive Proximity Sensors 872C/872CT WorldProx™ Extended Sensing 3-Wire DC

Plastic Face/ Threaded Nickel-Plated Brass or Stainless Steel Barrel



DC Micro Quick-Disconnect Style
8, 12, 18, and 30 mm



DC Pico Quick-Disconnect Style
6.5, 8, 12, and 18 mm



DC Mini Quick-Disconnect Style
18 & 30 mm



DC Cable Style
6.5, 8, 12, 18, and 30 mm



Pigtail Cable with Integral Micro QD Connector
8, 12, 18, and 30 mm

Features

- 3-wire operation
- 3-conductor PVC or PUR cable jacket (PVC standard)
- 3- or 4-pin connection for pico, micro, and mini connectors
- PVC and PUR cable available in 2, 5, and 10 m cable lengths (2 m standard)
- Pigtail cable in PVC with integral micro QD connector available in 0.2, 0.5, and 1.0 m cable lengths
- 10...30V DC
- Normally open or normally closed
- Reverse polarity, short circuit, overload, false pulse, and transient noise protection
- cULus Listed and CE Marked for all applicable directives

Specifications

Load Current	≤200 mA
Leakage Current	≤10 μA
Operating Voltage	10...30V DC
Voltage Drop	≤1.8V
Repeatability	≤5%
Hysteresis	≤10% typical
Protection Type	False pulse on power, transient noise, reverse polarity, short circuit, and overload
Certifications	cULus Listed and CE Marked for all applicable directives
Enclosure Type Rating	NEMA 1, 2, 3, 4, 6P, 12, 13, IP 67 (IEC 529)
Housing Material	Nickel-plated brass barrel, plastic face (PBT) Optional stainless steel 304 barrel, plastic face (PBT)
Connections	Cable (PVC/PUR): 2 m (6.5 ft), 5 m (16.4 ft), 10 m (32.8 ft) length, 4.4 mm (0.175 in.) diameter; 3-conductor #26 AWG PVC or PUR; Cable (Pigtail): 0.2 m (0.7 ft), 0.5 m (1.6 ft), 1 m (3.3 ft) length, Integral 4-pin micro QD Quick-Disconnect: 4-pin mini, 4-pin micro or 3-pin pico style
LED	Amber: output energized, 360° visibility
Operating Temperature [C (F)], Min	-25...+70° (-13...+158°)
Shock	30 g, 11 ms half-sine
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factors
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.5...0.6
Aluminum	0.5...0.6
Copper	0.4...0.5

QD Cordsets and Accessories

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Inductive Proximity Sensors
872C/872CT WorldProx™ Extended Sensing 3-Wire DC
 Plastic Face/ Threaded Nickel-Plated Brass or Stainless Steel Barrel

Product Selection

Barrel Diameter [mm]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.			
						Cable Style ★	Mini QD Style ★	Micro QD Style ★	Pico QD Style ★
8	3 (0.12)	Yes	N.O.	NPN	2500	872C-M3NN8-E2	—	872C-M3NN8-D4	872C-M3NN8-P3
				PNP		872C-M3NP8-E2	—	872C-M3NP8-D4	872C-M3NP8-P3
			N.C.	NPN		872C-M3CN8-E2	—	872C-M3CN8-D4	872C-M3CN8-P3
				PNP		872C-M3CP8-E2	—	872C-M3CP8-D4	872C-M3CP8-P3
	4 (0.16)	No	N.O.	NPN		872C-N4NN8-E2	—	872C-N4NN8-D4	872C-N4NN8-P3
				PNP		872C-N4NP8-E2	—	872C-N4NP8-D4	872C-N4NP8-P3
			N.C.	NPN		872C-N4CN8-E2	—	872C-N4CN8-D4	872C-N4CN8-P3
				PNP		872C-N4CP8-E2	—	872C-N4CP8-D4	872C-N4CP8-P3
12	4 (0.16)	Yes	N.O.	NPN	1300	872C-M4NN12-E2	—	872C-M4NN12-D4	872C-M4NN12-P3
				PNP		872C-M4NP12-E2	—	872C-M4NP12-D4	872C-M4NP12-P3
			N.C.	NPN		872C-M4CN12-E2	—	872C-M4CN12-D4	872C-M4CN12-P3
				PNP		872C-M4CP12-E2	—	872C-M4CP12-D4	872C-M4CP12-P3
	8 (0.31)	No	N.O.	NPN		872C-N8NN12-E2	—	872C-N8NN12-D4	872C-N8NN12-P3
				PNP		872C-N8NP12-E2	—	872C-N8NP12-D4	872C-N8NP12-P3
			N.C.	NPN		872C-N8CN12-E2	—	872C-N8CN12-D4	872C-N8CN12-P3
				PNP		872C-N8CP12-E2	—	872C-N8CP12-D4	872C-N8CP12-P3
18	8 (0.31)	Yes	N.O.	NPN	1500	872C-M8NN18-E2	872C-M8NN18-N4	872C-M8NN18-D4	872C-M8NN18-P3
				PNP		872C-M8NP18-E2	872C-M8NP18-N4	872C-M8NP18-D4	872C-M8NP18-P3
			N.C.	NPN		872C-M8CN18-E2	872C-M8CN18-N4	872C-M8CN18-D4	872C-M8CN18-P3
				PNP		872C-M8CP18-E2	872C-M8CP18-N4	872C-M8CP18-D4	872C-M8CP18-P3
	12 (0.47)	No	N.O.	NPN		872C-N12NN18-E2	872C-N12NN18-N4	872C-N12NN18-D4	872C-N12NN18-P3
				PNP		872C-N12NP18-E2	872C-N12NP18-N4	872C-N12NP18-D4	872C-N12NP18-P3
			N.C.	NPN		872C-N12CN18-E2	872C-N12CN18-N4	872C-N12CN18-D4	872C-N12CN18-P3
				PNP		872C-N12CP18-E2	872C-N12CP18-N4	872C-N12CP18-D4	872C-N12CP18-P3
30	15 (0.59)	Yes	N.O.	NPN	1000	872C-M15NN30-E2	872C-M15NN30-N4	872C-M15NN30-D4	—
				PNP		872C-M15NP30-E2	872C-M15NP30-N4	872C-M15NP30-D4	—
			N.C.	NPN		872C-M15CN30-E2	872C-M15CN30-N4	872C-M15CN30-D4	—
				PNP		872C-M15CP30-E2	872C-M15CP30-N4	872C-M15CP30-D4	—
	20 (0.79)	No	N.O.	NPN		872C-N20NN30-E2	872C-N20NN30-N4	872C-N20NN30-D4	—
				PNP		872C-N20NP30-E2	872C-N20NP30-N4	872C-N20NP30-D4	—
			N.C.	NPN		872C-N20CN30-E2	872C-N20CN30-N4	872C-N20CN30-D4	—
				PNP		872C-N20CP30-E2	872C-N20CP30-N4	872C-N20CP30-D4	—
Recommended mating cable, 2 m (6.5 ft). See the <i>On-Machine Connectivity</i> catalog for details and additional lengths.						—	889N-F4AFC-6F	889D-F4AFC-2	889P-F3AB-2

★ Cat. no. listed is for a standard nickel-plated brass barrel. For a stainless steel barrel, add a **T** to the cat. no. **Example:** Cat. No. 872C-M3NN8-E2 becomes Cat. No. 872CT-M3NN8-E2.

Note: Preferred availability designation in table above applies to nickel-plated brass model only.

Cable Options

E2 at the end of cat. no. designates PVC cable 2 m in length. Replace **E2** with **E5** or **E10** for 5 or 10 m length.

For polyurethane cable replace **E2** with **J2**, **J5**, or **J10** for 2, 5, or 10 m length.

For PVC pigtail cable with integral micro QD style connector (4-pin DC male) replace **E2** with **FD02**, **FD05**, or **FD10** for 0.2, 0.5, or 1.0 m length.

Cable Length	PVC	PUR
2 m	E2	J2
5 m	E5	J5
10 m	E10	J10

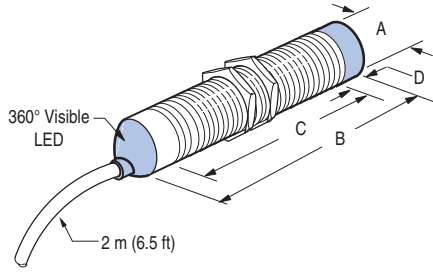
Pigtail Cable Length	PVC
0.2 m	FD02
0.5 m	FD05
1.0 m	FD10

Inductive Proximity Sensors 872C/872CT WorldProx™ Extended Sensing 3-Wire DC

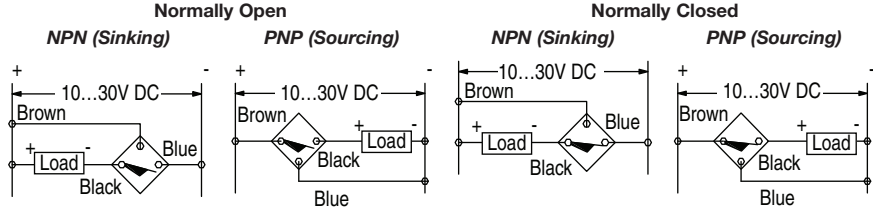
Plastic Face/ Threaded Nickel-Plated Brass or Stainless Steel Barrel

Approximate Dimensions—mm (in)

Cable Style

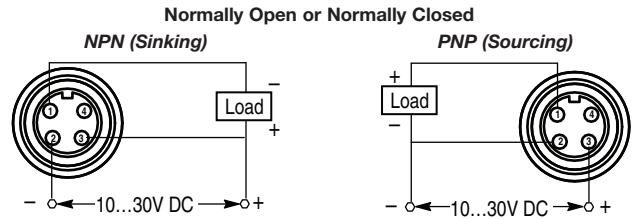
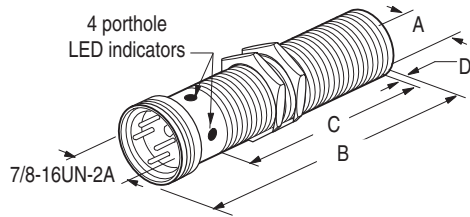


Wiring Diagrams



Thread Size	Barrel Type	Smooth Diameter	Shielded	mm (inches)				
				A	B (max)	C (min)	D (max)	
M8 x 1	Nickel-plated brass and stainless steel	—	Y	8.00 (0.31)	32.8 (1.29)	30.2 (1.19)	—	
			N		36.8 (1.45)		4.10 (0.16)	
M12 x 1		—	Y	12.0 (0.47)	50.8 (2.00)	46.7 (1.84)	—	
			N		58.9 (2.32)		8.10 (0.32)	
M18 x 1		—	—	Y	18.0 (0.71)	50.8 (2.00)	46.7 (1.84)	—
				N		63.0 (2.48)		12.2 (0.48)
M30 x 1		—	—	Y	30.0 (1.18)	50.8 (2.00)	47.7 (1.88)	—
				N		63.0 (2.48)		12.2 (0.48)

Mini QD Style



Thread Size	Barrel Type	Shielded	mm (inches)			
			A	B (max)	C (min)	D (max)
M18 x 1	Nickel-plated brass and stainless steel	Y	18.0 (0.71)	63.5 (2.50)	35.1 (1.38)	—
		N		75.7 (2.98)		12.2 (0.48)
M30 X 1.5	Nickel-plated brass	Y	30.0 (1.18)	63.5 (2.50)	38.1 (1.50)	—
		N		75.7 (2.98)		12.2 (0.48)
	Stainless steel	Y		64.3 (2.53)	47.8 (1.88)	—
		N		76.5 (3.01)		12.2 (0.48)



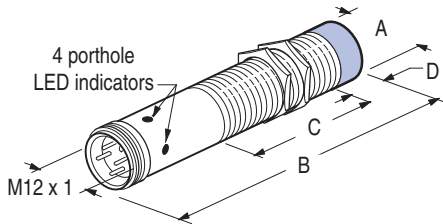
Inductive Proximity Sensors

872C/872CT WorldProx™ Extended Sensing 3-Wire DC

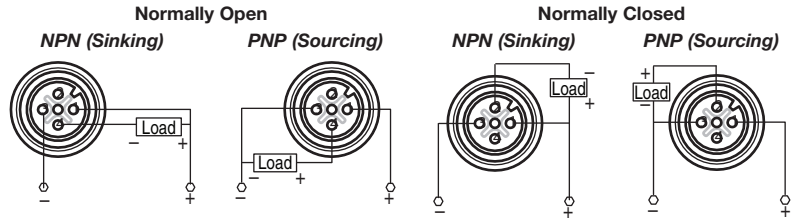
Plastic Face/ Threaded Nickel-Plated Brass or Stainless Steel Barrel

Approximate Dimensions—mm (in)

Micro QD Style

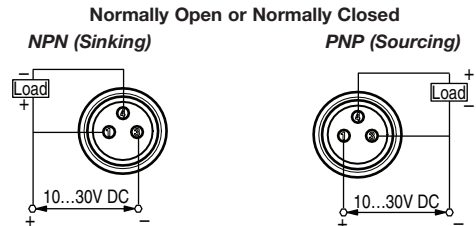
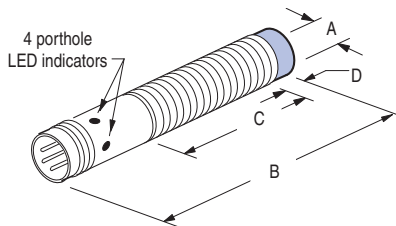


Wiring Diagrams



Thread Size	Barrel Type	Shielded	mm (inches)			
			A	B (max)	C (min)	D (max)
M8 x 1	Nickel-plated brass and stainless steel	Y	8.00 (0.31)	58.7 (2.31)	27.7 (1.09)	—
		N		62.7 (2.47)		4.00 (0.16)
M12 x 1		Y	12.0 (0.47)	64.3 (2.53)	38.1 (1.50)	—
		N		72.4 (2.85)		8.10 (0.32)
M18 x 1		Y	18.0 (0.71)	64.3 (2.53)	38.1 (1.50)	—
		N		76.5 (3.01)		12.2 (0.48)
M30 X 1.5		Y	30.0 (1.18)	64.3 (2.53)	47.75 (1.88)	—
		N		76.5 (3.01)		12.2 (0.48)

Pico QD Style



Thread Size	Barrel Type	Smooth Diameter	Shielded	mm (inches)			
				A	B (max)	C (min)	D (max)
M8 x 1	Nickel-plated brass and stainless steel	—	Y	8.00 (0.31)	49.5 (1.95)	34.0 (1.34)	—
			N		53.6 (2.11)		4.10 (0.16)
M12 x 1		Y	12.0 (0.47)	63.5 (2.50)	47.5 (1.87)	—	
		N		71.6 (2.82)		8.10 (0.32)	
M18 x 1		Y	18.0 (0.71)	63.5 (2.50)	47.5 (1.87)	—	
		N		75.7 (2.98)		12.2 (0.48)	

872C/872CT WorldProx™ Short Barrel Extended Sensing 3-Wire DC

Plastic Face/ Threaded Nickel-Plated Brass or Stainless Steel Barrel



DC Micro Quick-Disconnect Style
8, 12, 18, and 30 mm



DC Pico Quick-Disconnect Style
8, 12, and 18 mm



DC Mini Quick-Disconnect Style
18 & 30 mm



DC Cable Style
8, 12, 18, and 30 mm



Pigtail Cable with Integral Micro QD Connector
8, 12, 18, and 30 mm

Features

- 3 wire operation
- 3 conductor PVC or PUR cable jacket (PVC standard)
- 3 or 4 pin connection for pico, micro, and mini connectors
- PVC and PUR cable available in 2, 5, and 10 m cable lengths (2 m standard)
- Pigtail cable in PVC with integral micro QD connector available in 0.2, 0.5, and 1.0 m cable lengths
- 10...30V DC
- Normally open or normally closed
- Reverse polarity, short circuit, overload, false pulse, and transient noise protection
- cULus Listed and CE Marked for all applicable directives

Specifications

Load Current	≤200 mA
Leakage Current	≤10 μA
Operating Voltage	10...30V DC
Voltage Drop	≤1.8V
Repeatability	≤5%
Hysteresis	≤10% typical
Protection Type	False pulse on power, transient noise, reverse polarity, short circuit, and overload
Certifications	cULus Listed and CE Marked for all applicable directives
Enclosure Type Rating	NEMA 1, 2, 3, 4, 6P, 12, 13, IP 67 (IEC 529)
Housing Material	Nickel-plated brass barrel, plastic face (PBT); Optional stainless steel 304 barrel, plastic face (PBT)
Connections	Cable (PVC/PUR): 2 m (6.5 ft), 5 m (16.4 ft), 10 m (32.8 ft) length, 4.4 mm (0.175 in.) diameter; 3-conductor #26 AWG PVC or PUR; Cable (Pigtail): 0.2 m (0.7 ft), 0.5 m (1.6 ft), 1 m (3.3 ft) length, Integral 4-pin micro QD Quick-Disconnect: 4-pin mini, 4-pin micro or 3-pin pico style
Status Indicator	Amber: Output energized, 360° visibility
Operating Temperature [C (F)], Min	-25...+70° (-13...+158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factors
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

QD Cordsets and Accessories

Description	Page No.
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Inductive Proximity Sensors

872C/872CT WorldProx™ Short Barrel Extended Sensing 3-Wire DC

Plastic Face/ Threaded Nickel-Plated Brass or Stainless Steel Barrel

Product Selection

Barrel Diameter [mm]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.			
						Cable Style★	Mini QD Style★	Micro QD Style★	Pico QD Style★
8	3 (0.12)	Yes	N.O.	NPN	2500	872C-MH3NN8-P3	—	872C-MH3NN8-D4	872C-MH3NN8-P3
				PNP		872C-MH3NP8-E2	—	872C-MH3NP8-D4	872C-MH3NP8-P3
			N.C.	NPN		872C-MH3CN8-E2	—	872C-MH3CN8-D4	872C-MH3CN8-P3
				PNP		872C-MH3CP8-E2	—	872C-MH3CP8-D4	872C-MH3CP8-P3
	4 (0.16)	No	N.O.	NPN		872C-NH4NN8-E2	—	872C-NH4NN8-D4	872C-NH4NN8-P3
				PNP		872C-NH4NP8-E2	—	872C-NH4NP8-D4	872C-NH4NP8-P3
			N.C.	NPN		872C-NH4CN8-E2	—	872C-NH4CN8-D4	872C-NH4CN8-P3
				PNP		872C-NH4CP8-E2	—	872C-NH4CP8-D4	872C-NH4CP8-P3
12	4 (0.16)	Yes	N.O.	NPN	1300	872C-MH4NN12-E2	—	872C-MH4NN12-D4	872C-MH4NN12-P3
				PNP		872C-MH4NP12-E2	—	872C-MH4NP12-D4	872C-MH4NP12-P3
			N.C.	NPN		872C-MH4CN12-E2	—	872C-MH4CN12-D4	872C-MH4CN12-P3
				PNP		872C-MH4CP12-E2	—	872C-MH4CP12-D4	872C-MH4CP12-P3
	8 (0.32)	No	N.O.	NPN		872C-NH8NN12-E2	—	872C-NH8NN12-D4	872C-NH8NN12-P3
				PNP		872C-NH8NP12-E2	—	872C-NH8NP12-D4	872C-NH8NP12-P3
			N.C.	NPN		872C-NH8CN12-E2	—	872C-NH8CN12-D4	872C-NH8CN12-P3
				PNP		872C-NH8CP12-E2	—	872C-NH8CP12-D4	872C-NH8CP12-P3
18	8 (0.32)	Yes	N.O.	NPN	1500	872C-MH8NN18-E2	872C-MH8NN18-N4	872C-MH8NN18-D4	872C-MH8NN18-P3
				PNP		872C-MH8NP18-E2	872C-MH8NP18-N4	872C-MH8NP18-D4	872C-MH8NP18-P3
			N.C.	NPN		872C-MH8CN18-E2	872C-MH8CN18-N4	872C-MH8CN18-D4	872C-MH8CN18-P3
				PNP		872C-MH8CP18-E2	872C-MH8CP18-N4	872C-MH8CP18-D4	872C-MH8CP18-P3
	12 (0.47)	No	N.O.	NPN		872C-NH12NN18-E2	872C-NH12NN18-N4	872C-NH12NN18-D4	872C-NH12NN18-P3
				PNP		872C-NH12NP18-E2	872C-NH12NP18-N4	872C-NH12NP18-D4	872C-NH12NP18-P3
			N.C.	NPN		872C-NH12CN18-E2	872C-NH12CN18-N4	872C-NH12CN18-D4	872C-NH12CN18-P3
				PNP		872C-NH12CP18-E2	872C-NH12CP18-N4	872C-NH12CP18-D4	872C-NH12CP18-P3
30	15 (0.59)	Yes	N.O.	NPN	1000	872C-MH15NN30-E2	872C-MH15NN30-N4	872C-MH15NN30-D4	—
				PNP		872C-MH15NP30-E2	872C-MH15NP30-N4	872C-MH15NP30-D4	—
			N.C.	NPN		872C-MH15CN30-E2	872C-MH15CN30-N4	872C-MH15CN30-D4	—
				PNP		872C-MH15CP30-E2	872C-MH15CP30-N4	872C-MH15CP30-D4	—
	20 (0.79)	No	N.O.	NPN		872C-NH20NN30-E2	872C-NH20NN30-N4	872C-NH20NN30-D4	—
				PNP		872C-NH20NP30-E2	872C-NH20NP30-N4	872C-NH20NP30-D4	—
			N.C.	NPN		872C-NH20CN30-E2	872C-NH20CN30-N4	872C-NH20CN30-D4	—
				PNP		872C-NH20CP30-E2	872C-NH20CP30-N4	872C-NH20CP30-D4	—
Recommended mating cable, 2 m (6.5 ft). (See <i>On-Machine Connectivity</i> catalog for details and additional lengths).						—	889N-F4AFC-6F	889D-F4AC-2	889P-F3AB-2

★ Cat. no. listed is for a standard nickel-plated brass barrel. For a stainless steel barrel, add a **T** to the cat. no. **Example:** Cat. No. 872C-MH3NN8-P3 becomes Cat. No. 872CT-MH3NN8-P3.

Note: Preferred availability designation in table above applies to nickel-plated brass model only.

Cable Options

E2 at the end of cat. no. designates PVC cable 2 m in length. Replace **E2** with **E5** or **E10** for 5 or 10 m length.

For polyurethane cable replace **E2** with **J2**, **J5**, or **J10** for 2, 5, or 10 m length.

For PVC pigtail cable with integral micro QD style connector (4-pin DC male) replace **E2** with **FD02**, **FD05**, or **FD10** for 0.2, 0.5, or 1.0 m length.

Cable Length	PVC	PUR
2 m	E2	J2
5 m	E5	J5
10 m	E10	J10

Pigtail Cable Length	PVC
0.2 m	FD02
0.5 m	FD05
1.0 m	FD10

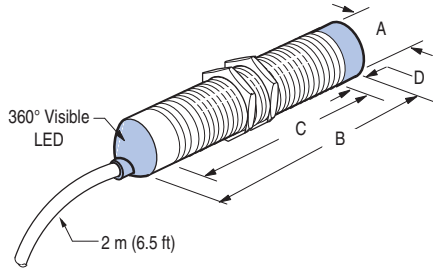
Inductive Proximity Sensors

872C/872CT WorldProx™ Short Barrel Extended Sensing 3-Wire DC

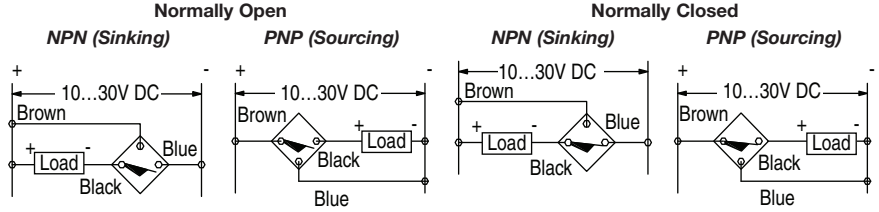
Plastic Face/ Threaded Nickel-Plated Brass or Stainless Steel Barrel

Approximate Dimensions—mm (in)

Cable Style

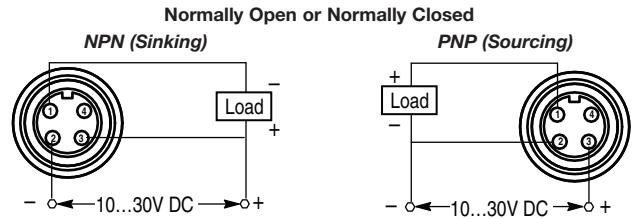
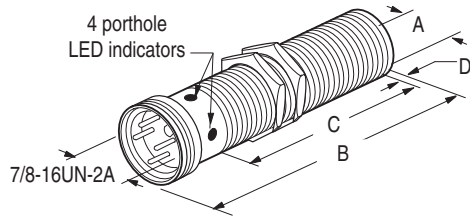


Wiring Diagrams



Thread Size	Barrel Type	Shielded	mm (inches)					
			A	B (max)	C (min)	D (max)		
M8 x 1	Nickel-plated brass and stainless steel	Y	8.00 (0.31)	26.7 (1.05)	24.1 (0.95)	—		
		N		30.7 (1.21)		4.10 (0.16)		
Y		12.0 (0.47)	34.8 (1.37)	8.10 (0.32)				
N			42.9 (1.69)					
M12 x 1	Nickel-plated brass and stainless steel	Y	18.0 (0.71)	34.8 (1.37)	31.8 (1.25)	—		
		N		47.0 (1.85)		12.2 (0.48)		
Y		30.0 (1.18)	34.8 (1.37)	34.3 (1.35)		—		
N			47.0 (1.85)			12.2 (0.48)		
M18 x 1	Nickel-plated brass and stainless steel	Y	30.0 (1.18)		37.3 (1.47)	34.3 (1.35)	—	
		N			49.5 (1.95)		12.2 (0.48)	
M30 x 1		Nickel-plated brass and stainless steel	Y	30.0 (1.18)	37.3 (1.47)		34.3 (1.35)	—
			N		49.5 (1.95)			12.2 (0.48)

Mini QD Style



Thread Size	Barrel Type	Shielded	mm (inches)				
			A	B (max)	C (min)	D (max)	
M18 x 1	Nickel-plated brass and stainless steel	Y	18.0 (0.71)	47.5 (1.87)	24.2 (0.95)	—	
		N		59.7 (2.35)		12.2 (0.48)	
Y		30.0 (1.18)	47.5 (1.87)	26.4 (1.04)		—	
N			59.7 (2.35)			12.2 (0.48)	
M30 X 1.5	Nickel-plated brass and stainless steel	Y	30.0 (1.18)		50.8 (2.00)	34.3 (1.35)	—
		N			63.0 (2.48)		12.2 (0.48)



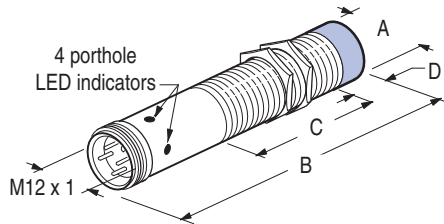
Inductive Proximity Sensors

872C/872CT WorldProx™ Short Barrel Extended Sensing 3-Wire DC

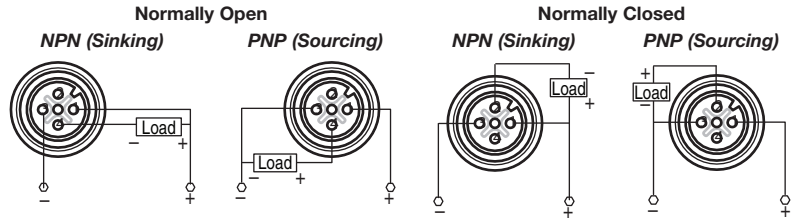
Plastic Face/ Threaded Nickel-Plated Brass or Stainless Steel Barrel

Approximate Dimensions—mm (in)

Micro QD Style

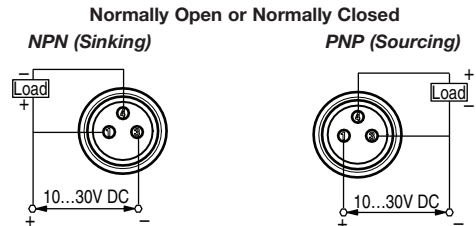
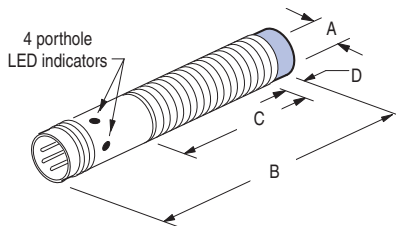


Wiring Diagrams



Thread Size	Barrel Type	Shielded	mm (inches)			
			A	B (max)	C (min)	D (max)
M8 x 1	Nickel-plated brass and stainless steel	Y	8.00 (0.31)	45.2 (1.78)	20.1 (0.79)	—
		N		49.3 (1.94)		4.10 (0.16)
M12 x 1		Y	12.0 (0.47)	48.3 (1.90)	27.4 (1.08)	—
		N		56.4 (2.22)		8.10 (0.32)
M18 x 1	Nickel-plated brass	Y	18.0 (0.71)	49.5 (1.95)	26.4 (1.04)	—
		N		61.7 (2.43)		12.2 (0.48)
	Stainless steel	Y		48.3 (1.90)	31.8 (1.25)	—
		N		60.5 (2.38)		12.2 (0.48)
M30 X 1.5	Nickel-plated brass and stainless steel	Y	30.0 (1.18)	50.8 (2.00)	31.8 (1.25)	—
		N		63.2 (2.49)		12.2 (0.48)

Pico QD Style



Thread Size	Barrel Type	Shielded	mm (inches)			
			A	B (max)	C (min)	D (max)
M8 x 1	Nickel-plated brass and stainless steel	Y	8.00 (0.31)	44.5 (1.75)	29.0 (1.14)	—
		N		48.5 (1.91)		4.10 (0.16)
M12 x 1		Y	12.0 (0.47)	45.2 (1.78)	29.2 (1.15)	—
		N		53.3 (2.10)		8.10 (0.32)
M18 x 1	Nickel-plated brass and stainless steel	Y	18.0 (0.71)	47.5 (1.87)	31.5 (1.24)	—
		N		59.7 (2.35)		12.2 (0.48)

Inductive Proximity Sensors

872C WorldProx™ Long Range Sensing 3-Wire DC

Plastic Face/ Threaded Chrome-Plated Brass Barrel



872C DC Micro Style
6.5, 8, 12, 18, and 30 mm



872C DC Pico Style
6.5 & 8 mm

Features

- Up to three times the sensing range of standard range inductive proximity sensors
- 3- or 4-pin connection for pico and micro connectors
- 10...30V DC
- Normally open output
- IP67 enclosure rating
- Reverse polarity, short circuit, overload, false pulse, and transient noise protection
- cULus Listed and CE Marked for all applicable directives

IMPORTANT

Special mounting and installation considerations may be necessary due to the long-range sensing capabilities of these products. The Introduction and Application section of the catalog should be used as a guideline. Please refer to pages 2-12 and 2-14.

Specifications

Load Current, DC, Max.	≤200 mA
Leakage Current	≤0.1 mA
Operating voltage range	10...30V DC
Sensor Voltage Drop	≤2V
Repeatability	≤5%
Hysteresis	10% typical
Reverse Polarity Protection	Incorporated
Transient Noise Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
False Pulse Protection	Incorporated
Certifications	cULus Listed and CE Marked for all applicable directives
Enclosure Type Rating	NEMA 1, 2, 3, 4, 6P, 12, 13, IP67 (IEC 529) Chrome-plated brass barrel, plastic face (PBT)
Connections	Quick-disconnect: 4-pin micro style 3-pin pico style
LED	Amber: output energized, 360° visibility
Operating Temperature [C (F)]	-25...+70 ° (-13...+158 °)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factors
Steel	1.0
Stainless Steel	0.6...0.8
Brass	0.3...0.6
Aluminum	0.3...0.5
Copper	0.2...0.5

QD Cordsets and Accessories

Description	Page No.
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
End Caps	2-220
Mounting Nuts	2-221...2-222

872C WorldProx™ Long Range Sensing 3-Wire DC

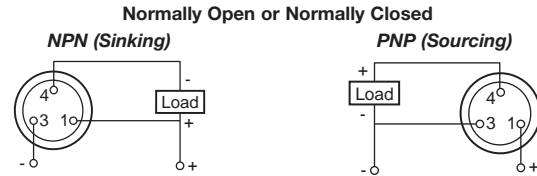
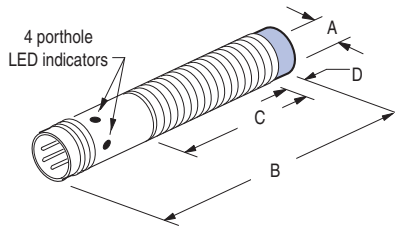
Plastic Face/ Threaded Chrome-Plated Brass Barrel

Product Selection

Barrel Diameter [mm]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency (Hz)	Cat. No.	
						Micro QD Style	Pico QD Style
6.5	3 (0.12)	Yes	N.O.	NPN	1000	872C-M3NN7-D4	872C-M3NN7-P3
				PNP		872C-M3NP7-D4	872C-M3NP7-P3
8	6 (0.23)	No	N.O.	NPN	500	872C-N6NN8-D4	872C-N6NN8-P3
				PNP		872C-N6NP8-D4	872C-N6NP8-P3
12	6 (0.23)	Yes	N.O.	NPN	800	872C-M6NN12-D4	—
				PNP		872C-M6NP12-D4	—
	10 (0.39)	No	N.O.	NPN	400	872C-N10NN12-D4	—
				PNP		872C-N10NP12-D4	—
18	12 (0.47)	Yes	N.O.	NPN	500	872C-M12NN18-D4	—
				PNP		872C-M12NP18-D4	—
	20 (0.79)	No	N.O.	NPN	200	872C-N20NN18-D4	—
				PNP		872C-N20NP18-D4	—
30	22 (0.86)	Yes	N.O.	NPN	200	872C-M22NN30-D4	—
				PNP		872C-M22NP30-D4	—
	40 (1.57)	No	N.O.	NPN	100	872C-N40NN30-D4	—
				PNP		872C-N40NP30-D4	—
Recommended standard QD cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))						889D-F4AC-2	889P-F3AB-2

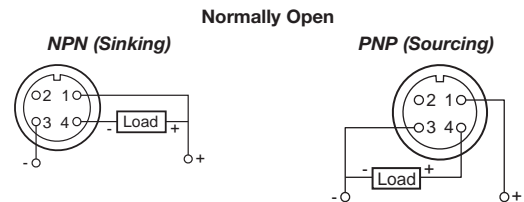
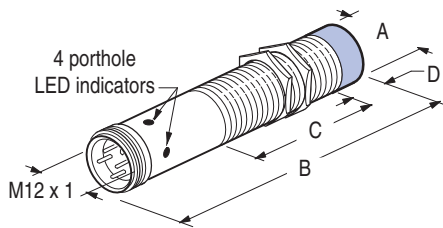
Approximate Dimensions—mm (in)

Pico QD Style



Thread Size	Smooth Diameter [mm]	Shielded	mm (inches)			
			A	B (max)	C (min)	D (max)
—	6.5	Y	6.5 (0.26)	60 (2.36)	—	—
M8 x 1	—	N	8.0 (0.31)	60 (2.36)	41.5 (1.63)	4 (0.15)

Micro QD Style



Thread Size	Smooth Diameter [mm]	Shielded	mm (inches)			
			A	B (max)	C (min)	D (max)
—	6.5	Y	6.5 (0.26)	66 (2.59)	—	—
M8 x 1	—	N	8 (0.31)	66 (2.59)	40 (1.57)	4 (0.15)
M12 x 1	—	Y	12 (0.47)	60 (2.36)	40 (1.57)	—
		N			35.3 (1.38)	5.7 (0.22)
M18 x 1	—	Y	18 (0.71)	63.5 (2.5)	42 (1.65)	—
		N			32 (1.25)	10 (0.39)
M30 X 1.5	—	Y	30 (1.18)	73.5 (2.89)	52 (2.04)	—
		N			42 (1.65)	10 (0.39)



Inductive Proximity Sensors
872CP WorldProx™ 3-Wire DC
 Plastic Face/ Threaded Plastic Barrel



872CP DC Cable Style
 12, 18, and 30 mm



872CP DC Micro Quick Disconnect Style
 12, 18, and 30 mm



Pigtail Cable with Integral Micro QD Connector
 12, 18, and 30 mm

Features

- 3 wire operation
- 3 conductor connection
- 10...30V DC
- Normally open or normally closed output
- Transient noise, short circuit, and reverse polarity protection
- Cable and micro quick disconnect models
- PVC and PUR cable available in 2, 5, and 10 m cable lengths (2 m standard)
- Pigtail cable in PVC with integral micro QD connector available in 0.2, 0.5, and 1.0 m cable lengths
- cULus Listed and CE Marked for all applicable directives

Specifications

Load Current	≤200 mA
Leakage Current	≤10 μA
Operating Voltage	10...30V DC
Voltage Drop	≤1.8V all models
Repeatability	≤5%
Hysteresis	≤10% typical
Protection Type	Transient noise protection, reverse polarity protection, short circuit protection, overload protection, false pulse protection
Certifications	cULus Listed and CE Marked for all applicable directives
Enclosure Type Rating	NEMA 1, 2, 3, 4, 4X, 6P, 12, 13; IP67 (IEC 529)
Housing Material	Plastic barrel (Valox)
Connections	Cable (PVC/PUR): 2 m (6.5 ft), 5 m (16.4 ft), 10 m (32.8 ft) length, 4.4 mm (0.175 in.) diameter 3-conductor #26 AWG PVC or PUR Cable (Pigtail): 0.2 m (0.7 ft), 0.5 m (1.6 ft), 1 m (3.3 ft) length, Integral 4-pin micro QD Quick Disconnect: 4-pin micro style
LED	Amber: output energized, 360° visibility
Operating Temperature [C (F)], Min	-25...+70 ° (-13...+158 °)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factors
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.3...0.4

QD Cordsets and Accessories

Description	Page No.
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Mounting Brackets	2-210...2-214
End Caps	2-220
Mounting Nuts	2-221...2-222



Product Selection

Barrel Diameter [mm]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency (Hz)	Cat. No.	
						Cable Style	Micro QD Style
12	3 (0.12)	Yes	N.O.	NPN	2000	872CP-D3NN12-E2	872CP-D3NN12-D4
				PNP		872CP-D3NP12-E2	872CP-D3NP12-D4
			N.C.	NPN		872CP-D3CN12-E2	872CP-D3CN12-D4
				PNP		872CP-D3CP12-E2	872CP-D3CP12-D4
	4 (0.16)	No	N.O.	NPN		872CP-D4NN12-E2	872CP-D4NN12-D4
				PNP		872CP-D4NP12-E2	872CP-D4NP12-D4
			N.C.	NPN		872CP-D4CN12-E2	872CP-D4CN12-D4
				PNP		872CP-D4CP12-E2	872CP-D4CP12-D4
18	5 (0.2)	Yes	N.O.	NPN	872CP-D5NN18-E2	872CP-D5NN18-D4	
				PNP	872CP-D5NP18-E2	872CP-D5NP18-D4	
			N.C.	NPN	872CP-D5CN18-E2	872CP-D5CN18-D4	
				PNP	872CP-D5CP18-E2	872CP-D5CP18-D4	
	8 (0.31)	No	N.O.	NPN	872CP-D8NN18-E2	872CP-D8NN18-D4	
				PNP	872CP-D8NP18-E2	872CP-D8NP18-D4	
			N.C.	NPN	872CP-D8CN18-E2	872CP-D8CN18-D4	
				PNP	872CP-D8CP18-E2	872CP-D8CP18-D4	
30	10 (0.39)	Yes	N.O.	NPN	872CP-D10NN30-E2	872CP-D10NN30-D4	
				PNP	872CP-D10NP30-E2	872CP-D10NP30-D4	
			N.C.	NPN	872CP-D10CN30-E2	872CP-D10CN30-D4	
				PNP	872CP-D10CP30-E2	872CP-D10CP30-D4	
	15 (0.59)	No	N.O.	NPN	872CP-D15NN30-E2	872CP-D15NN30-D4	
				PNP	872CP-D15NP30-E2	872CP-D15NP30-D4	
			N.C.	NPN	872CP-D15CN30-E2	872CP-D15CN30-D4	
				PNP	872CP-D15CP30-E2	872CP-D15CP30-D4	
Recommended standard QD cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))						—	889D-F4AC-2


Cable Options

E2 at the end of cat. no. designates PVC cable 2 m in length. Replace **E2** with **E5** or **E10** for 5 or 10 m length.

For polyurethane cable replace **E2** with **J2**, **J5**, or **J10** for 2, 5, or 10 m length.

For PVC pigtail cable with integral micro QD style connector (4-pin DC male) replace **E2** with **FD02**, **FD05**, or **FD10** for 0.2, 0.5, or 1.0 m length.

Cable Length	PVC	PUR
2 m	E2	J2
5 m	E5	J5
10 m	E10	J10

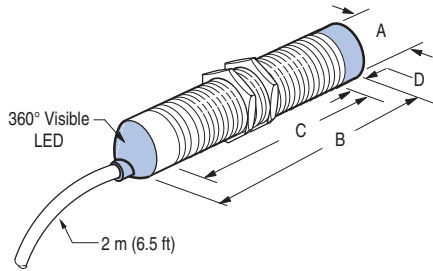
 Pigtail Cable Length	PVC
0.2 m	FD02
0.5 m	FD05
1.0 m	FD10

Inductive Proximity Sensors 872CP WorldProx™ 3-Wire DC

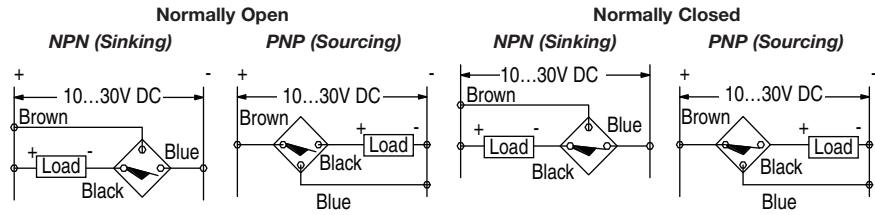
Plastic Face/ Threaded Plastic Barrel

Approximate Dimensions—mm (in)

Cable Style

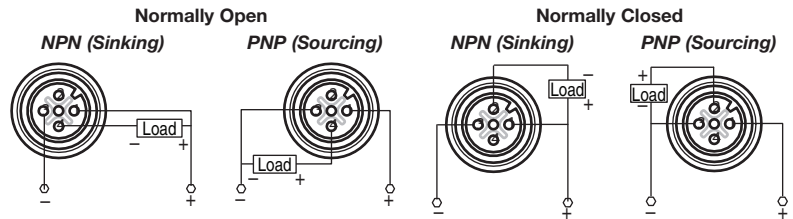
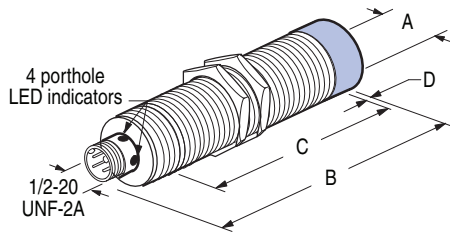


Wiring Diagrams



Thread Size	Shielded	mm (inches)				
		A	B (max)	C (min)	D (max)	
M12 x 1	Y	12.0 (0.47)	51.6 (2.03)	44.7 (1.76)	2.00 (0.08)	
	N			46.2 (1.82)		
M18 x 1	Y	18.0 (0.71)				46.2 (1.82)
	N					
M30 x 1.5	Y	30.0 (1.18)	46.2 (1.82)	2.00 (0.08)		
	N					

Micro QD Style



Thread Size	Shielded	mm (inches)				
		A	B (max)	C (min)	D (max)	
M12 x 1	Y	12.0 (0.47)	64.3 (2.53)	41.4 (1.63)	2.00 (0.08)	
	N			46.2 (1.82)		
M18 x 1	Y	18.0 (0.71)				46.2 (1.82)
	N					
M30 X 1.5	Y	30.0 (1.18)	46.2 (1.82)	2.00 (0.08)		
	N					



Inductive Proximity Sensors
872CP WorldProx™ Extended Sensing 3-Wire DC
 Plastic Face/ Threaded Plastic Barrel



872CP DC Cable Style
12, 18, and 30 mm



872CP DC Micro Quick Disconnect Style
12, 18, and 30 mm



Pigtail Cable with Integral Micro QD Connector
12, 18, and 30 mm

Features

- 3 wire operation
- 3 conductor connection
- 10...30V DC
- Normally open or normally closed output
- Transient noise, short circuit, and reverse polarity protection
- Cable and micro quick disconnect models
- PVC and PUR cable available in 2, 5, and 10 m cable lengths (2 m standard)
- Pigtail cable in PVC with integral micro QD connector available in 0.2, 0.5, and 1.0 m cable lengths
- cULus Listed and CE Marked for all applicable directives

Specifications

Load Current	≤200 mA
Leakage Current	≤10 μA
Operating Voltage	10...30V DC
Voltage Drop	≤1.8V all models
Repeatability	≤5%
Hysteresis	≤10% typical
Protection Type	Transient noise protection, reverse polarity protection, short circuit protection, overload protection, false pulse protection
Certifications	cULus Listed and CE Marked for all applicable directives
Enclosure Type Rating	NEMA 1, 2, 3, 4, 4X, 6P, 12, 13; IP67 (IEC 529)
Housing Material	Plastic barrel (Valox)
Connections	Cable (PVC/PUR): 2 m (6.5 ft), 5 m (16.4 ft), 10 m (32.8 ft) length, 4.4 mm (0.175 in.) diameter 3-conductor #26 AWG PVC or PUR Cable (Pigtail): 0.2 m (0.7 ft), 0.5 m (1.6 ft), 1 m (3.3 ft) length, Integral 4-pin micro QD Quick Disconnect: 4-pin micro style
LED	Amber: output energized, 360° visibility
Operating Temperature [C (F)], Min	-25...+70 ° (-13...+158 °)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factors
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.3...0.4

QD Cordsets and Accessories

Description	Page No.
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Inductive Proximity Sensors

872CP WorldProx™ Extended Sensing 3-Wire DC

Plastic Face/ Threaded Plastic Barrel

Product Selection

Barrel Diameter [mm]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency (Hz)	Cat. No.	
						Cable Style	Micro QD Style
12	4 (0.16)	Yes	N.O.	NPN	2000	872CP-M4NN12-E2	872CP-M4NN12-D4
				PNP		872CP-M4NP12-E2	872CP-M4NP12-D4
			N.C.	NPN		872CP-M4CN12-E2	872CP-M4CN12-D4
				PNP		872CP-M4CP12-E2	872CP-M4CP12-D4
	8 (0.31)	No	N.O.	NPN		872CP-N8NN12-E2	872CP-N8NN12-D4
				PNP		872CP-N8NP12-E2	872CP-N8NP12-D4
			N.C.	NPN		872CP-N8CN12-E2	872CP-N8CN12-D4
				PNP		872CP-N8CP12-E2	872CP-N8CP12-D4
18	8 (0.31)	Yes	N.O.	NPN	872CP-M8NN18-E2	872CP-M8NN18-D4	
				PNP	872CP-M8NP18-E2	872CP-M8NP18-D4	
			N.C.	NPN	872CP-M8CN18-E2	872CP-M8CN18-D4	
				PNP	872CP-M8CP18-E2	872CP-M8CP18-D4	
	12 (0.47)	No	N.O.	NPN	872CP-N12NN18-E2	872CP-N12NN18-D4	
				PNP	872CP-N12NP18-E2	872CP-N12NP18-D4	
			N.C.	NPN	872CP-N12CN18-E2	872CP-N12CN18-D4	
				PNP	872CP-N12CP18-E2	872CP-N12CP18-D4	
30	15 (0.59)	Yes	N.O.	NPN	872CP-M15NN30-E2	872CP-M15NN30-D4	
				PNP	872CP-M15NP30-E2	872CP-M15NP30-D4	
			N.C.	NPN	872CP-M15CN30-E2	872CP-M15CN30-D4	
				PNP	872CP-M15CP30-E2	872CP-M15CP30-D4	
	20 (0.79)	No	N.O.	NPN	872CP-N20NN30-E2	872CP-N20NN30-D4	
				PNP	872CP-N20NP30-E2	872CP-N20NP30-D4	
			N.C.	NPN	872CP-N20CN30-E2	872CP-N20CN30-D4	
				PNP	872CP-N20CP30-E2	872CP-N20CP30-D4	
Recommended standard QD cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))						—	889D-F4AC-2

Cable Options

E2 at the end of cat. no. designates PVC cable 2 m in length. Replace **E2** with **E5** or **E10** for 5 or 10 m length.

For polyurethane cable replace **E2** with **J2**, **J5**, or **J10** for 2, 5, or 10 m length.

For PVC pigtail cable with integral micro QD style connector (4-pin DC male) replace **E2** with **FD02**, **FD05**, or **FD10** for 0.2, 0.5, or 1.0 m length.

Cable Length	PVC	PUR
2 m	E2	J2
5 m	E5	J5
10 m	E10	J10

Pigtail Cable Length	PVC
0.2 m	FD02
0.5 m	FD05
1.0 m	FD10



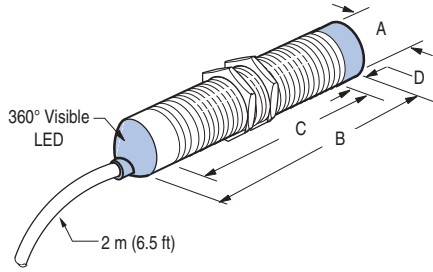
Inductive Proximity Sensors

872CP WorldProx™ Extended Sensing 3-Wire DC

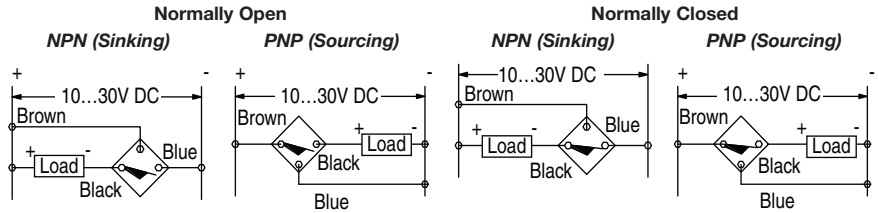
Plastic Face/ Threaded Plastic Barrel

Approximate Dimensions—mm (in)

Cable Style

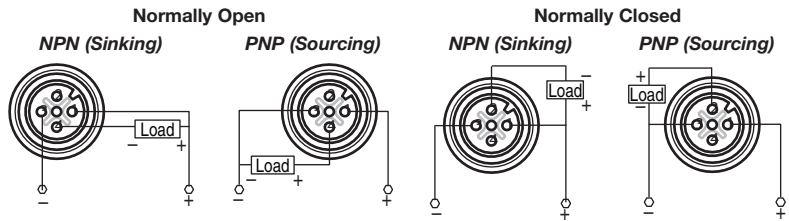
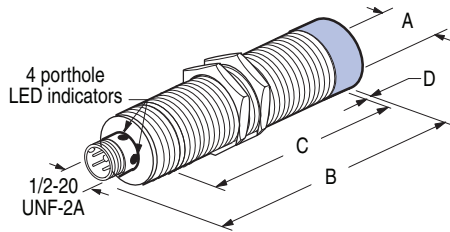


Wiring Diagrams



Thread Size	Shielded	mm (inches)			
		A	B (max)	C (min)	D (max)
M12 x 1	Y	12.0 (0.47)	51.6 (2.03)	44.7 (1.76)	2.0 (0.08)
	N				
M18 x 1	Y	18.0 (0.71)			
	N	18.0 (0.71)			
M30 x 1.5	Y	30.0 (1.18)	46.2 (1.82)		
	N				

Micro QD Style



Thread Size	Shielded	mm (inches)			
		A	B (max)	C (min)	D (max)
M12 x 1	Y	12.0 (0.47)	64.3 (2.53)	41.4 (1.63)	2.00 (0.08)
	N				
M18 x 1	Y	18.0 (0.71)			
	N	18.0 (0.71)			
M30 X 1.5	Y	30.0 (1.18)	46.2 (1.82)		
	N				



872C DC Cable Style
12, 18, 30 mm



872C DC Micro
Quick-Disconnect Style
12, 18, 30 mm

Features

- 2-wire operation
- 2-conductor or 4-pin connection
- 10...30V DC
- Normally open or normally closed output
- Reverse polarity, short circuit, overload, false pulse, and transient noise protection
- cULus Listed and CE Marked for all applicable directives

Specifications

Load Current	≤100 mA
Minimum Load Current	5 mA
Leakage Current	≤0.9 mA
Operating Voltage	10...30V DC
Voltage Drop	≤6V
Repeatability	≤2%
Hysteresis	10% typical
Reverse Polarity Protection	Incorporated
Transient Noise Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
False Pulse Protection	Incorporated
Certifications	cULus Listed and CE Marked for all applicable directives
Enclosure	NEMA 1, 2, 3, 4, 6P, 12, 13 IP67 (IEC529) Nickel-plated brass barrel, plastic face (PBT)
Connections	Cable: 2 m (6.5 ft) length, 4.4 mm (0.175 in.) diameter, 2-conductor #26 AWG PVC Quick-Disconnect: 4-pin micro style
LED	Red: Output energized, 360° visibility
Operating Temperature [C (F)]	-25...+70° (-13...+158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

Inductive Proximity Sensors

872C WorldProx™ 2-Wire DC

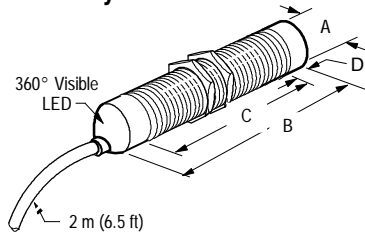
Plastic Face/Threaded Nickel-Plated Brass Barrel

Product Selection

Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.	
					Cable Style	Micro QD Style
12 mm	3 (0.12)	Y	N.O.	2000	872C-D3NE12-A2	872C-D3NE12-D4
			N.C.		872C-D3CE12-A2	872C-D3CE12-D4
	4 (0.16)	N	N.O.		872C-D4NE12-A2	872C-D4NE12-D4
			N.C.		872C-D4CE12-A2	872C-D4CE12-D4
18 mm	5 (0.20)	Y	N.O.	1000	872C-D5NE18-A2	872C-D5NE18-D4
			N.C.		872C-D5CE18-A2	872C-D5CE18-D4
	8 (0.31)	N	N.O.		872C-D8NE18-A2	872C-D8NE18-D4
			N.C.		872C-D8CE18-A2	872C-D8CE18-D4
30 mm	10 (0.39)	Y	N.O.	500	872C-D10NE30-A2	872C-D10NE30-D4
			N.C.		872C-D10CE30-A2	872C-D10CE30-D4
	15 (0.59)	N	N.O.		872C-D15NE30-A2	872C-D15NE30-D4
			N.C.		872C-D15CE30-A2	872C-D15CE30-D4
Recommended standard QD cordset (-2 = 2 m (6.5 ft))						889D-F4AC-2

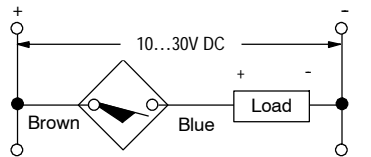
Approximate Dimensions [mm (in.)]

Cable Style

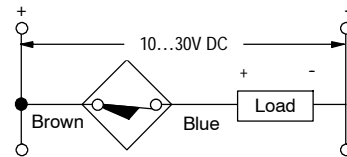


Wiring Diagrams

Normally Open



Normally Closed

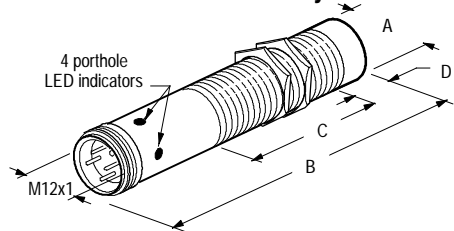


Note: Load can be switched to brown wire.

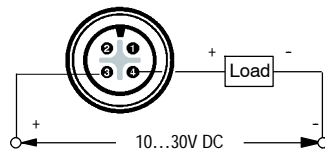
Thread Size	Shielded	[mm (in.)]			
		A	B (max)	C (min)	D (max)
M12 X 1	Y	12 (0.47)	50.8 (2.00)	46.7 (1.84)	—
	N		58.7 (2.31)		7.9 (0.31)
M18 X 1	Y	18 (0.71)	50.8 (2.00)		—
	N		63.0 (2.48)		12.2 (0.48)
M30 X 1.5	Y	30 (1.18)	50.8 (2.00)		—
	N		63.0 (2.48)		12.2 (0.48)

Inductive Proximity Sensors
872C WorldProx™ 2-Wire DC
 Plastic Face/Threaded Nickel-Plated Brass Barrel

Micro Quick-Disconnect Style



Normally Open or Normally Closed



Note: Load can be switched to pin 3.

Thread Size	Shielded	[mm (in.)]			
		A	B (max)	C (min)	D (max)
M12 X 1	Y	12.0 (0.47)	65.0 (2.56)	38.1 (1.50)	—
	N		72.4 (2.85)		7.9 (0.31)
M18 X 1	Y	18.0 (0.71)	65.0 (2.56)		—
	N		76.5 (3.01)		
M30 X 1.5	Y	30.0 (1.18)	65.0 (2.56)	46.7 (1.84)	—
	N		76.5 (3.01)		12.2 (0.48)

872C WorldProx™ QuadroPlex™ 2-Wire DC

Plastic Face/Threaded Nickel-Plated Brass Barrel



872C DC Micro
Quick-Disconnect Style
12, 18, 30 mm

Features

- 2-wire operation
- 4-pin connection
- 10...30V DC
- Normally open or normally closed output
- Short circuit, overload, false pulse, and transient noise protection
- cULus Listed and CE Marked for all applicable directives

Specifications

Barrel Diameter	12 mm	18 mm & 30 mm
Load Current	100 mA	200 mA
Minimum Load Current	5 mA	
Leakage Current	≤1 mA	
Operating Voltage	10...30V DC	
Voltage Drop	≤6V @ 100 mA	≤6.5V @ 200 mA ≤6.0V @ 100 mA
Repeatability	≤10% at constant temperature	
Hysteresis	10% typical	
Transient Noise Protection	Incorporated	
Short Circuit Protection	Incorporated	
Overload Protection	Incorporated	
False Pulse Protection	Incorporated	
Certifications	cULus Listed and CE Marked for all applicable directives	
Enclosure	NEMA 1, 2, 3, 4, 6P, 12, 13 IP67 (IEC529) Nickel-plated brass barrel, plastic face (PBT)	
Connections	Quick-Disconnect: 4-pin micro style	
LED	Red: Output energized, 360° visibility	
Operating Temperature [C (F)]	-25...+70° (-13...+158°)	
Shock	30 g, 11 ms	
Vibration	55 Hz, 1 mm amplitude, 3 planes	

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

QD Cordsets and Accessories

Description	Page Number
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Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
End Caps	2-220
Mounting Nuts	2-221...2-222

Inductive Proximity Sensors
872C WorldProx™ QuadroPlex™ 2-Wire DC
 Plastic Face/Threaded Nickel-Plated Brass Barrel

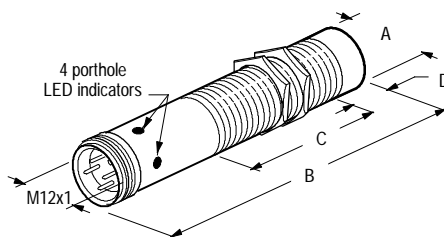
Product Selection

Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.
					Micro QD Style
12 mm	3 (0.12)	Y	N.O. or N.C. ①	2000	872C-M3Q12-D4
	4 (0.16)	N			872C-N4Q12-D4
18 mm	5 (0.20)	Y		1000	872C-M5Q18-D4
	8 (0.31)	N			872C-N8Q18-D4
30 mm	10 (0.39)	Y		500	872C-M10Q30-D4
	15 (0.59)	N			872C-N15Q30-D4
Recommended standard QD cordset (-2 = 2 m (6.5 ft))					889D-F4AC-2

① Depending upon wiring diagram.

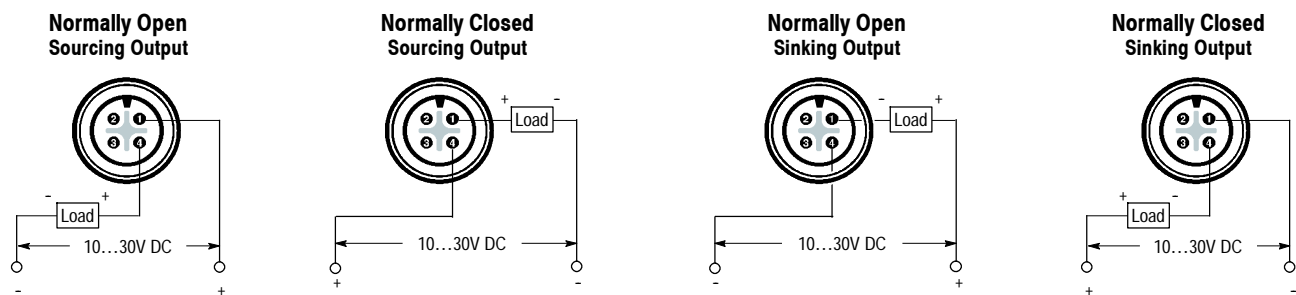
Approximate Dimensions [mm (in.)]

Micro Quick-Disconnect Style



Thread Size	Shielded	[mm (in.)]			
		A	B (max)	C (min)	D (max)
M12 X 1	Y	12.0 (0.47)	65.0 (2.56)	38.1 (1.50)	—
	N		72.4 (2.85)		7.9 (0.31)
M18 X 1	Y	18.0 (0.71)	65.0 (2.56)		—
	N		76.5 (3.01)		12.2 (0.48)
M30 X 1.5	Y	30.0 (1.18)	65.0 (2.56)		—
	N		76.5 (3.01)		12.2 (0.48)

Wiring Diagrams



872C WorldProx™ 4-Wire DC Complementary Output

Plastic Face/Threaded Nickel-Plated Brass Barrel



872C DC Cable Style
12, 18, 30 mm



872C DC Micro
Quick-Disconnect Style
12, 18, 30 mm

Features

- 4-wire operation
- 4-conductor or 4-pin connection
- 10...30V DC
- Complementary normally open and normally closed outputs
- Short circuit, false pulse, reverse polarity, overload and transient noise protection
- UL Listed, cUL Certified and CE Marked for all applicable directives

Specifications

Load Current	≤200 mA
Leakage Current	≤10 mA
Operating Voltage	10...30V DC
Voltage Drop	≤1.6V
Repeatability	≤8%
Hysteresis	≤10% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Reverse Polarity Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
Certifications	UL Listed, cUL Certified and CE Marked for all applicable directives
Enclosure	NEMA 1, 2, 3, 4, 6P, 12, 13, IP67 (IEC 529); Nickel-plated brass barrel
Connections	Cable: 2 m (6.5 ft) length 4-conductor PVC Quick-Disconnect: 4-pin micro style
LED	Red: Output Energized, 360° visibility
Operating Temperature [C (F)]	-25...+70° (-13...+158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	8-2
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Mounting Brackets	2-210...2-214
End Caps	2-220
Mounting Nuts	2-221...2-222

Inductive Proximity Sensors

872C WorldProx™ 4-Wire DC Complementary Output

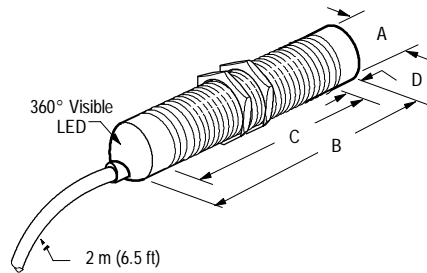
Plastic Face/Threaded Nickel-Plated Brass Barrel

Product Selection

Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.		
						Cable Style	Micro QD Style	
12 mm	3 (0.12)	Y	N.O. and N.C.	PNP	2000	872C-D3BP12-E2	872C-D3BP12-D4	
18 mm	5 (0.20)				1000	872C-D5BP18-E2	872C-D5BP18-D4	
30 mm	10 (0.39)				500	872C-D10BP30-E2	872C-D10BP30-D4	
Recommended standard QD cordset (-2 = 2 m (6.5 ft))							889D-F4AC-2	

Approximate Dimensions [mm (in.)]

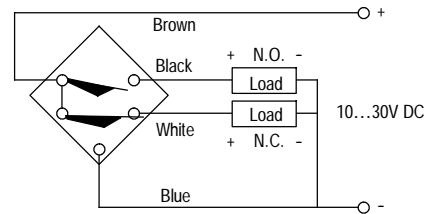
Cable Style



Wiring Diagram

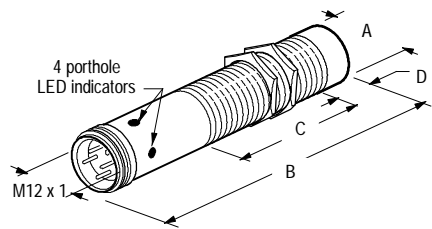
Complementary Normally Open and Normally Closed

PNP (Sourcing)



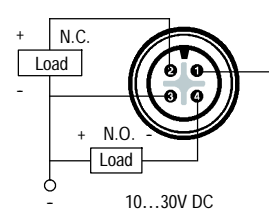
Thread Size	Shielded	[mm (in.)]		
		A	B	C
M12 X 1	Y	12.0 (0.47)	50.8 (2.00)	46.7 (1.84)
M18 X 1	Y	18.0 (0.71)		
M30 X 1.5	Y	30.0 (1.18)		

Micro QD Style



Complementary Normally Open and Normally Closed

PNP (Sourcing)



Thread Size	Shielded	[mm (in.)]		
		A	B	C
M12 X 1	Y	12.0 (0.47)	65.0 (2.56)	38.1 (1.50)
M18 X 1	Y	18.0 (0.71)		48.7 (1.88)
M30 X 1.5	Y	30.0 (1.18)		

872C WorldProx™ 2-Wire AC

Plastic Face/Threaded Nickel-Plated Brass Barrel



872C AC Cable Style
8 mm



872C AC Cable Style
12, 18, 30 mm



872C AC Mini
Quick-Disconnect Style
18, 30 mm



872C AC Micro
Quick-Disconnect Style
12, 18, 30 mm

Features

- 2-wire operation
- 3-conductor or 3-pin connection
- 20...250V AC (20...240V AC for 8 mm)
- Normally open or normally closed output
- False pulse and transient noise protection
- Extended sensing distance on 18 mm unshielded models
- cULus Listed (12, 18, and 30 mm models only) and CE Marked (all models) for all applicable directives

Specifications

	8 mm	12, 18, and 30 mm
Load Current, Max.	100 mA	≤300 mA
Load Current, Min.	5 mA	
Inrush Current	≤2 A	
Leakage Current	≤2 mA	
Operating Voltage	20...240V AC	20...250V AC
Voltage Drop	≤5V	
Repeatability	≤5%	
Hysteresis	≤15% typical	
Protection Type	False pulse, transient noise	
Certifications	cULus Listed (12, 18, and 30 mm models only) and CE Marked (all models) for all applicable directives	
Enclosure Type Rating	NEMA 1, 2, 3, 4, 12, 13; IP67 (IEC 529) Nickel-plated brass barrel	
Connection Type	Cable: 2 m (6.5 ft) length 3-conductor PVC Quick-Disconnect: 3-pin micro style 3-pin mini style	
LED	Red: output energized, 360° visibility	
Operating Temperature [C (F)]	-25...+70 ° (-13...+158 °)	
Shock	30 g, 11 ms	
Vibration	55 Hz, 1 mm amplitude, 3 planes	

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.9
Brass	0.5
Aluminum	0.45
Copper	0.4

QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
End Caps	2-220
Mounting Nuts	2-221...2-222

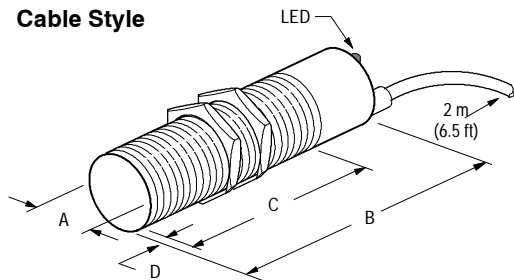


Product Selection

Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.		
					Cable Style	Mini QD Style	Micro QD Style
8 mm	1.5 (0.06)	Y	N.O.	25	872C-A1N8-A2	—	—
			N.C.		872C-A1C8-A2	—	—
	2 (0.08)	N	N.O.		872C-A2N8-A2	—	—
			N.C.		872C-A2C8-A2	—	—
12 mm	2 (0.08)	Y	N.O.	15	872C-A2N12-A2	—	872C-A2N12-R3
			N.C.		872C-A2C12-A2	—	872C-A2C12-R3
	4 (0.16)	N	N.O.		872C-A4N12-A2	—	872C-A4N12-R3
			N.C.		872C-A4C12-A2	—	872C-A4C12-R3
18 mm	5 (0.20)	Y	N.O.	15	872C-A5N18-A2	872C-A5N18-N3	872C-A5N18-R3
			N.C.		872C-A5C18-A2	872C-A5C18-N3	872C-A5C18-R3
	10 (0.39)	N	N.O.		872C-A10N18-A2	872C-A10N18-N3	872C-A10N18-R3
			N.C.		872C-A10C18-A2	872C-A10C18-N3	872C-A10C18-R3
30 mm	10 (0.39)	Y	N.O.	15	872C-A10N30-A2	872C-A10N30-N3	872C-A10N30-R3
			N.C.		872C-A10C30-A2	872C-A10C30-N3	872C-A10C30-R3
	15 (0.59)	N	N.O.		872C-A15N30-A2	872C-A15N30-N3	872C-A15N30-R3
			N.C.		872C-A15C30-A2	872C-A15C30-N3	872C-A15C30-R3
Recommended standard QD cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))					889N-F3AFC-6F	889R-F3ECA-2	

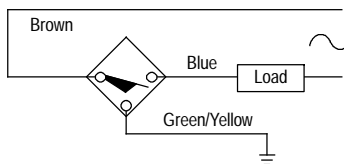
Approximate Dimensions [mm (in.)]

Cable Style

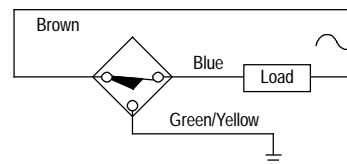


Wiring Diagrams

Normally Open



Normally Closed



NOTE: Load can be switched to brown wire.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M8 X 1	Y	8.0 (0.32)	47.0 (1.85)	36.0 (1.42)	—
	N	6.0 (0.24)	47.0 (1.85)	36.0 (1.42)	6.0 (0.24)
M12 X 1	Y	12.0 (0.47)	70.0 (2.76)	60.0 (2.36)	—
	N			54.0 (2.13)	6.0 (0.24)
M18 X 1	Y	18.0 (0.71)	60.0 (2.36)	50.0 (1.96)	—
	N			42.0 (1.65)	8.0 (0.31)
M30 X 1.5	Y	30.0 (1.18)	60.0 (2.36)	50.0 (1.96)	—
	N			38.0 (1.50)	12.0 (0.47)

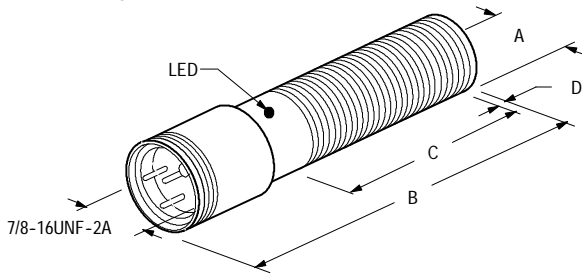
Inductive Proximity Sensors

872C WorldProx™ 2-Wire AC

Plastic Face/Threaded Nickel-Plated Brass Barrel

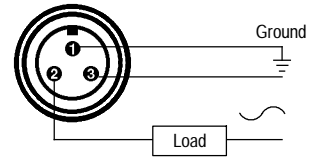
Approximate Dimensions [mm (in.)]

Mini QD Style



Wiring Diagrams

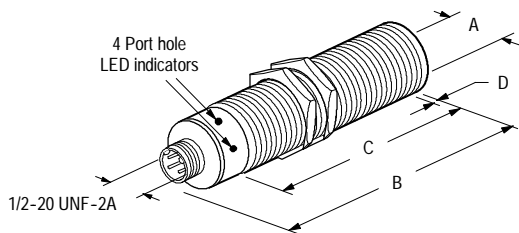
Normally Open or Normally Closed



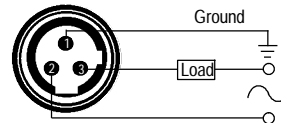
Note: Load can be switched to pin 3.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M18 X 1	Y	18.0 (0.71)	91.0 (3.58)	52.0 (2.05)	—
	N			44.0 (1.73)	8.0 (0.31)
M30 X 1.5	Y	30.0 (1.18)	91.0 (3.58)	52.0 (2.25)	—
	N			40.0 (1.57)	12.0 (0.47)

Micro Quick-Disconnect Style



Normally Open or Normally Closed



Note: Load can be switched to pin 2.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	75.0 (2.95)	45.0 (1.77)	—
	N			40.0 (1.57)	6.0 (0.24)
M18 X 1	Y	18.0 (0.71)	80.0 (3.15)	60.0 (2.36)	—
	N			52.0 (2.05)	8.0 (0.31)
M30 X 1.5	Y	30.0 (1.18)	80.0 (3.15)	50.0 (1.96)	—
	N			38.0 (1.50)	12.0 (0.47)

872C WorldProx™ Extended Sensing 2-Wire AC

Plastic Face/Threaded Nickel-Plated Brass Barrel



872C AC Cable Style
12, 18, 30 mm



872C AC Mini
Quick-Disconnect Style
18, 30 mm



872C AC Micro
Quick-Disconnect Style
12, 18, 30 mm

Specifications

Load Current, Max.	300 mA
Load Current, Min.	2 mA
Inrush Current (1 cycle)	≤2 A
Leakage Current	≤1.7 mA
Operating Voltage	20...250V AC
Voltage Drop	≤11V @ 10 mA, ≤7V @ 300 mA
Repeatability	≤5%
Hysteresis	≤10% typical
Protection Type	False pulse, transient noise, overload, and short circuit
Certifications	cULus Listed and CE Marked for all applicable directives
Enclosure Type Rating	NEMA 1, 2, 3, 4, 12, 13; IP67 (IEC 529) Nickel-plated brass barrel
Connection Type	Cable: 2 m (6.5 ft) length, 3-conductor PVC Quick-Disconnect: 3-pin micro style, 3-pin mini style
LED	Cable Models: yellow - power, green - output energized QD Models: green - power, red - output energized
Operating Temperature [C (F)]	-25...+70 ° (-13...+158 °)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.9
Brass	0.5
Aluminum	0.45
Copper	0.4

Features

- 2-wire operation
- 3-conductor or 3-pin connection
- 20...250V AC
- Normally open or normally closed output
- False pulse, transient noise, and overload protection
- cULus Listed and CE Marked for all applicable directives

QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
End Caps	2-220
Mounting Nuts	2-221...2-222

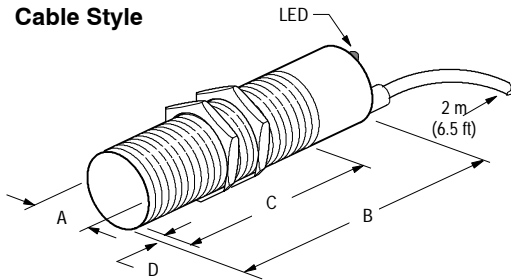
872C WorldProx™ Extended Sensing 2-Wire AC

Plastic Face/Threaded Nickel-Plated Brass Barrel

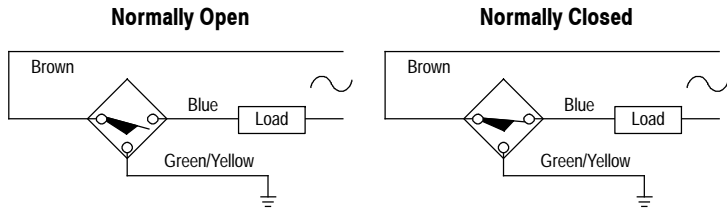
Product Selection

Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.		
					Cable Style	Mini QD Style	Micro QD Style
12 mm	4 (0.16)	Y	N.O.	20	872C-F4N12-A2	—	872C-F4N12-R3
			N.C.		872C-F4C12-A2	—	872C-F4C12-R3
	8 (0.31)	N	N.O.		872C-G8N12-A2	—	872C-G8N12-R3
			N.C.		872C-G8C12-A2	—	872C-G8C12-R3
18 mm	8 (0.31)	Y	N.O.		872C-F8N18-A2	872C-F8N18-N3	872C-F8N18-R3
			N.C.		872C-F8C18-A2	872C-F8C18-N3	872C-F8C18-R3
	12 (0.47)	N	N.O.		872C-G12N18-A2	872C-G12N18-N3	872C-G12N18-R3
			N.C.		872C-G12C18-A2	872C-G12C18-N3	872C-G12C18-R3
30 mm	15 (0.59)	Y	N.O.		872C-F15N30-A2	872C-F15N30-N3	872C-F15N30-R3
			N.C.		872C-F15C30-A2	872C-F15C30-N3	872C-F15C30-R3
	30 (1.18)	N	N.O.		872C-G30N30-A2	872C-G30N30-N3	872C-G30N30-R3
			N.C.		872C-G30C30-A2	872C-G30C30-N3	872C-G30C30-R3
Recommended standard QD cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))					889N-F3AFC-6F	889R-F3ECA-2	

Approximate Dimensions [mm (in.)]



Wiring Diagrams



NOTE: Load can be switched to brown wire.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	70.0 (2.76)	60.0 (2.36)	—
	N			54.0 (2.13)	6.0 (0.24)
M18 X 1	Y	18.0 (0.71)	60.0 (2.36)	50.0 (1.96)	—
	N			42.0 (1.65)	8.0 (0.31)
M30 X 1.5	Y	30.0 (1.18)	60.0 (2.36)	50.0 (1.96)	—
	N			38.0 (1.50)	12.0 (0.47)

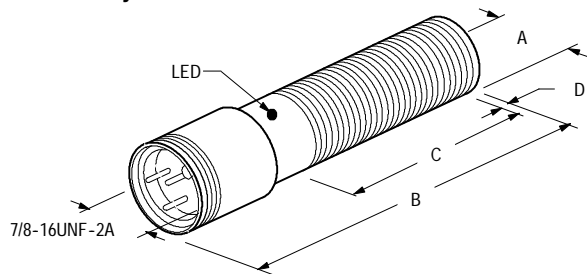
Inductive Proximity Sensors

872C WorldProx™ Extended Sensing 2-Wire AC

Plastic Face/Threaded Nickel-Plated Brass Barrel

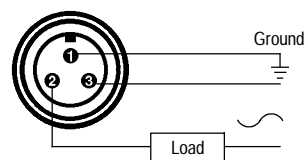
Approximate Dimensions [mm (in.)]

Mini QD Style



Wiring Diagrams

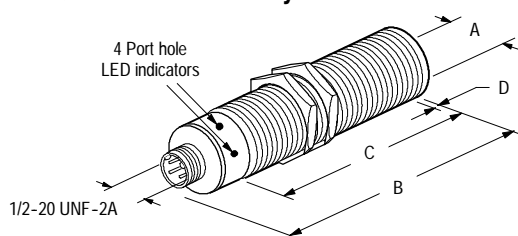
Normally Open or Normally Closed



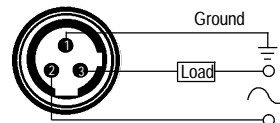
Note: Load can be switched to pin 3.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M18 X 1	Y	18.0 (0.71)	91.0 (3.58)	52.0 (2.05)	—
	N			44.0 (1.73)	8.0 (0.31)
M30 X 1.5	Y	30.0 (1.18)	91.0 (3.58)	52.0 (2.25)	—
	N			40.0 (1.57)	12.0 (0.47)

Micro Quick-Disconnect Style



Normally Open or Normally Closed



Note: Load can be switched to pin 2.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	75.0 (2.95)	45.0 (1.77)	—
	N			40.0 (1.57)	6.0 (0.24)
M18 X 1	Y	18.0 (0.71)	80.0 (3.15)	60.0 (2.36)	—
	N			52.0 (2.05)	8.0 (0.31)
M30 X 1.5	Y	30.0 (1.18)	80.0 (3.15)	50.0 (1.96)	—
	N			38.0 (1.50)	12.0 (0.47)

872C WorldProx™ 2-Wire AC/DC

Plastic Face/Threaded Nickel-Plated Brass Barrel



872C AC/DC Cable Style
12, 18, 30 mm



872C AC/DC Micro
Quick-Disconnect Style
12, 18, 30 mm

Specifications

	12 mm	18 & 30 mm
Load Current	300 mA	350 mA
Minimum Load Current	2 mA	
Inrush Current (1 cycle)	≤2A	
Leakage Current	≤1.7 mA @ 120V and ≤1.9 mA @ 250V	
Operating Voltage	20...250V AC/DC	
Voltage Drop	≤5V	
Repeatability	≤5%	
Hysteresis	≤10% typical	
False Pulse Protection	Incorporated	
Transient Noise Protection	Incorporated	
Short Circuit Protection	Incorporated	
Overload Protection	Incorporated	
Certifications	cULus Listed and CE Marked for all applicable directives	
Enclosure	NEMA 1, 2, 3, 4, 12, 13 IP67 (IEC 529) Nickel-plated brass barrel	
Connections	Cable: 2 m (6.5 ft) length 3-conductor PVC Quick-Disconnect: 3-pin micro style 3-pin mini style	
LED	Red: output energized, 360° visibility	
Operating Temperature [C (F)]	-25...+70° (-13...+158°)	
Shock and Vibration	30 g, 10...55 Hz	

Features

- 2-wire operation
- 3-conductor or 3-pin connection
- 20...250V AC/DC
- Normally open or normally closed output
- False pulse, transient noise, short circuit, and overload protection
- cULus Listed and CE Marked for all applicable directives

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.9
Brass	0.5
Aluminum	0.4
Copper	0.4

QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
End Caps	2-220
Mounting Nuts	2-221...2-222

Inductive Proximity Sensors
872C WorldProx™ 2-Wire AC/DC
Plastic Face/Threaded Nickel-Plated Brass Barrel

Product Selection

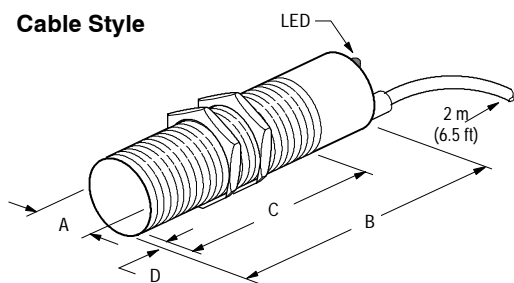
Barrel Diameter [mm]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.	
					Cable Style	Micro QD Style
12	2 (0.08)	Yes	N.O.	30	872C-J2N12-A2	872C-J2N12-R3
	4 (0.16)	No	N.O.		872C-K4N12-A2	872C-K4N12-R3
			N.C.		872C-K4C12-A2	872C-K4C12-R3
18	5 (0.20)	Yes	N.O.		872C-J5N18-A2	872C-J5N18-R3
			N.C.		872C-J5C18-A2	872C-J5C18-R3
	8 (0.32)	No	N.O.		872C-K8N18-A2	872C-K8N18-R3
			N.C.		872C-K8C18-A2	—
30	10 (0.39)	Yes	N.O.		872C-J10N30-A2	872C-J10N30-R3
			N.C.		872C-K15N30-A2	872C-K15N30-R3
	15 (0.59)	No	N.C.		872C-K15C30-A2	—

Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))

889R-F3ECA-2

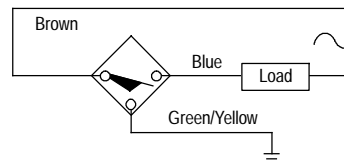
Approximate Dimensions [mm (in.)]

Cable Style



Wiring Diagrams

Normally Open



NOTE: Load can be switched to brown wire.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	70.0 (2.76)	60.0 (2.36)	—
	N			54.0 (2.13)	6.0 (0.24)
M18 X 1	Y	18.0 (0.71)	60.0 (2.36)	50.0 (1.96)	—
	N			42.0 (1.65)	8.0 (0.31)
M30 X 1.5	Y	30.0 (1.18)	60.0 (2.36)	50.0 (1.96)	—
	N			38.0 (1.50)	12.0 (0.47)

Inductive Proximity Sensors

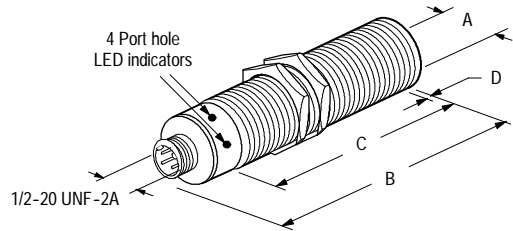
872C WorldProx™ 2-Wire AC/DC

Plastic Face/Threaded Nickel-Plated Brass Barrel

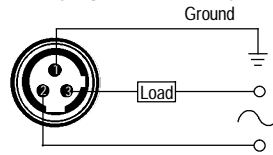
Approximate Dimensions [mm (in.)]

Wiring Diagrams

Micro Quick-Disconnect Style



Normally Open or Normally Closed



Note: Load can be switched to pin 2.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	75 (2.95)	45.0 (1.77)	—
	N			40.0 (1.57)	6.0 (0.24)
M18 X 1	Y	18.0 (0.71)	80.0 (3.15)	60.0 (2.36)	—
	N			52.0 (2.05)	8.0 (0.31)
M30 X 1.5	Y	30.0 (1.18)	80.0 (3.15)	50.0 (1.96)	—
	N			38.0 (1.50)	12.0 (0.47)

Inductive Proximity Sensors

872C WorldProx™ 2-Wire AC/DC Relay Output

Threaded Nickel-Plated Brass Barrel



872C AC/DC Cable Style
30 mm

Features

- High output current capability—up to 3 A
- N.O. and N.C. contacts in the same unit
- Isolated outputs
- 360° LED
- 30...132V AC/DC supply voltage
- Reverse polarity protection (DC)
- Circuit protected against industrial noise and transients
- UL Listed and CE Marked for all applicable directives

Specifications

Load Current	Switched Power, Max Switched Current, Max Switched Voltage, Max Relay Life	84 W or 900V A 3 amps SPDT 28V DC or 300V AC 20,000,000 operations (no load), 100,000 operations (full load)
Operating Voltage	30...132V AC/DC	
Repeatability	≤10% at constant temperature	
Hysteresis	10% typical	
False Pulse Protection	Incorporated	
Transient Noise Protection	Incorporated	
Reverse Polarity Protection	Incorporated	
Certifications	cULua Listed and CE Marked for all applicable directives	
Enclosure	NEMA 1, 2, 3, 3R 4, 4X, 6, 6P, 12, 13, IP67 (IEC 529); Nickel-plated brass barrel	
Connections	Cable: 2 m (6.5 ft) length 5-conductor 22 AWG PVC cable	
LED	Red: Output Energized, 360° visibility	
Operating Temperature [C (F)]	-25...+70° (-13...+158°)	
Shock	30 g, 11 ms	
Vibration	55 Hz, 1 mm amplitude, 3 planes	

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

Inductive Proximity Sensors

872C WorldProx™ 2-Wire AC/DC Relay Output

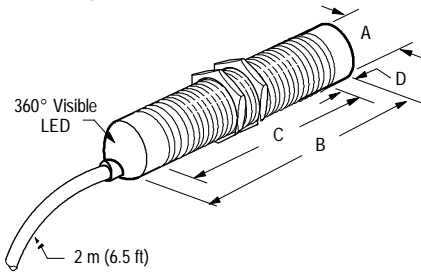
Threaded Nickel-Plated Brass Barrel

Product Selection

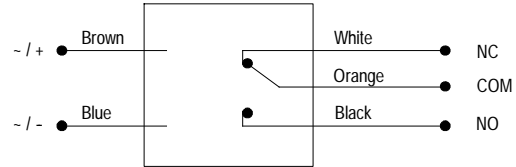
Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.
30 mm	10 (0.39)	Y	SPDT Relay	30	872C-B10BR30-E2
	15 (0.59)	N			872C-B15BR30-E2

Approximate Dimensions [mm (in.)]

Cable Style



Wiring Diagram



Thread Size	Shielded	[mm (in.)]			
		A	B (max)	C (min)	D (max)
M30 X 1.5	Y	30 (1.18)	61.0 (2.40)	57.0 (2.24)	—
	N		73.0 (2.87)		12.2 (0.48)



Description

Bulletin 871T inductive proximity sensors are self-contained, solid-state devices designed to sense the presence of ferrous and nonferrous metal objects without touching them.

The switch body consists of a plastic or stainless steel face and a threaded stainless steel barrel. They meet NEMA 1, 2, 3, 4, 12, 13 and IP67 (IEC529) enclosure standards. The electronic circuitry is potted for protection against shock, vibration, and contamination.

These sensors are available in 12 and 18 mm diameter housings. Connection options include a PVC cable and mini quick-disconnect.

Ferrous Selective Proximity Sensors

The Bulletin 871T ferrous (Fe) selective inductive proximity sensors operate in industrial environments where ferrous metal targets must be sensed without being touched. They are also an excellent replacement for standard inductive proximities that are sensing ferrous metals and subject to harsh environments. They are designed to replace standard inductive proximities when sensing ferrous metals or ignoring nonferrous chips smaller than 3 mm (0.125 in.).

The Fe-selective proximity sensors have a stainless steel sensing face and body. The stainless steel sensing face provides extra protection in sensor applications where the sensing face is

subjected to abrasion and chemicals. Typical proximity sensors have plastic sensing faces.

These sensors are self-contained, solid state, dual output devices which will energize and de-energize external loads. Each sensor has a normally open (N.O.) and an isolated normally closed (N.C.) output which can be operated up to 500 mA each. As with any sensor each application and target material should be reviewed before installing the sensor. Detailed specifications for these sensors are listed on page 2-90.

Features

- Threaded stainless steel barrel
- Cable or quick-disconnect styles
- Short circuit protection (DC models)
- Overload protection (DC models)
- Transient noise protection
- False pulse protection
- Reverse polarity protection (DC models)
- UL Listed, CSA Certified and CE Marked for all applicable directives

Styles

DC 3-Wire	page 2-86
AC 2-Wire	page 2-88
AC 4-Wire Ferrous Selective	page 2-90

Accessories

Cordsets	page 8-1
Conduit Adaptor	page 2-209
Mounting Bracket, Spring Return Style	page 2-210
Mounting Bracket, Right Angle Style	page 2-213
Mounting Bracket, Clamp Style	page 2-214
End Caps	page 2-220
Mounting Nuts	page 2-221
Lock Washers	page 2-223

General Information

Torque Chart	page 2-225
Metric/English Conversion Chart	page 14-6

871T 3-Wire DC

Plastic Face/Threaded Stainless Steel Barrel



871T DC Cable Style
12, 18 mm



871T DC Mini
Quick-Disconnect Style
18 mm

Specifications

	12 mm	18 mm
Load Current	≤300 mA	≤400 mA
Leakage Current	≤10 mA	
Operating Voltage	10...30V DC	
Voltage Drop	≤1V	
Repeatability	≤10%	
Hysteresis	≤10% typical	
False Pulse Protection	Incorporated	
Transient Noise Protection	Incorporated	
Reverse Polarity Protection	Incorporated	
Short Circuit Protection	Incorporated	
Overload Protection	Incorporated	
Certifications	UL Listed, CSA Certified and CE Marked for all applicable directives	
Enclosure	NEMA 1, 2, 3, 4, 12 and 13 IP67 (IEC529) 303 Stainless steel barrel	
Connections	Cable: 3 m (10 ft) length 3-conductor PVC Quick-Disconnect: 4-pin mini style	
LED	Red: Output Energized	
Operating Temperature [C (F)]	-40...+70° (-40...+158°)	

Features

- 3-wire operation
- 3-conductor or 4-pin connection
- 10...30V DC
- Normally open output
- Short circuit, overload, false pulse, reverse polarity and transient noise protection
- UL Listed, CSA Certified and CE Marked for all applicable directives

Correction Factors

Target Material	Correction Factors
Steel	1.0
Stainless Steel	0.7...0.9
Brass	0.3...0.5
Aluminum	0.3...0.4
Copper	0.3...0.4

Product Selection

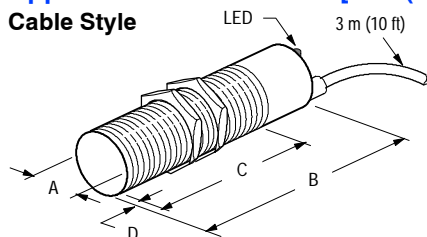
Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.	
					Cable Style	Mini QD Style
12 mm	2 (0.08)	Y	N.O.	2000	871T-R2A12	—
					871T-L2A12	—
	4 (0.16)	N		871T-R4B12	—	
				871T-L4B12	—	
18 mm	5 (0.20)	Y	N.O.	1000	871T-R5 A18	871T-R5J18
					871T-L5 A18	871T-L5J18
	8 (0.31)	N		871T-R8B18	871T-R8K18	
				871T-L8B18	871T-L8K18	
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft))						889N-F4AFC-6F

QD Cordsets and Accessories

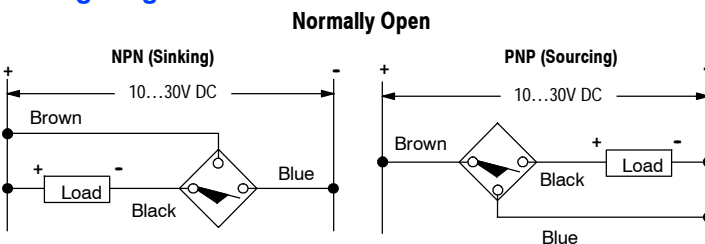
Description	Page Number	Description	Page Number
Other Cordsets Available	8-2	End Caps	2-220
Terminal Chambers	8-2	Mounting Nuts	2-221...2-222
Mounting Brackets	2-210...2-214	—	—

Approximate Dimensions [mm (in.)]

Cable Style

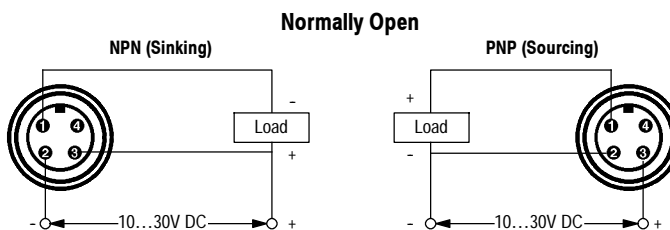
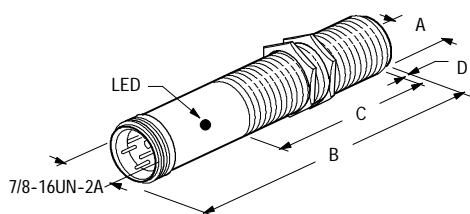


Wiring Diagrams



Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	80.0 (3.15)	53.8 (2.12)	0.8 (0.03)
	N			46.5 (1.83)	8.1 (0.32)
M18 X 1	Y	18.0 (0.71)	81.5 (3.21)	55.6 (2.19)	0.8 (0.03)
	N			81.3 (3.20)	43.7 (1.72)

Mini Quick-Disconnect Style



Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M18 X 1	Y	18.0 (0.71)	96.9 (3.81)	51.9 (2.04)	0.8 (0.03)
	N			40.4 (1.59)	12.3 (0.48)

871T 2-Wire AC

Plastic Face/Threaded Stainless Steel Barrel



871T AC Cable Style
12, 18 mm



871T AC Mini
Quick-Disconnect Style
18 mm

Specifications

	12 mm	18 mm
Load Current	≤300 mA	≤500 mA
Inrush Current (1 cycle)	≤3 A	≤5 A
Leakage Current	≤1.5 mA	
Supply Current (minimum)	5 mA	
Operating Voltage	20...132V AC	
Voltage Drop	6.5V AC at 500 mA, 10V AC at 20 mA (RMS)	
Repeatability	≤10%	
Hysteresis	≤10% typical	
False Pulse Protection	Incorporated	
Transient Noise Protection	Incorporated	
Certifications	UL Listed, CSA Certified and CE Marked for all applicable directives	
Enclosure	NEMA 1, 2, 3, 4, 12 and 13 IP67 (IEC529) 303 Stainless steel barrel	
Connections	Cable: 3 m (10 ft) length 12 mm—2 conductor PVC 18 mm—3 conductor PVC Quick-Disconnect: 3-pin mini style	
LED	Red: Output Energized (none on 871T-G5Q18FT)	
Operating Temperature [C (F)]	-40...+70° (-40...+158°)	
Shock	30 g, 11 ms	
Vibration	55 Hz, 1 mm amplitude, 3 planes	

Features

- 2-wire operation
- 2-conductor, 3-conductor, or 3-pin connection
- 20...132V AC
- False pulse and transient noise protection
- Normally open or normally closed output
- UL Listed, CSA Certified and CE Marked for all applicable directives

Correction Factors

Target Material	Correction Factors
Steel	1.0
Stainless Steel	0.7...0.9
Brass	0.3...0.5
Aluminum	0.3...0.4
Copper	0.3...0.4

Product Selection

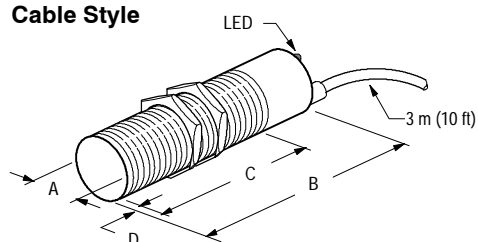
Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.	
					Cable Style	Mini QD Style
12 mm	2 (0.08)	Y	N.O.	50	871T-G2A12	—
	4 (0.16)	N			871T-G4B12	—
	2 (0.08)	Y	871T-H2A12		—	
	4 (0.16)	N	871T-H4B12		—	
18 mm	5 (0.20)	Y	N.O.		871T-G5 A18	871T-G5J18
	8 (0.31)	N			—	871T-G5Q18FT
	5 (0.20)	Y	N.C.		871T-G8B18	871T-G8K18
	8 (0.31)	N			871T-H5 A18	871T-H5J18
				871T-H8B18	871T-H8K18	
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft))						889N-F3AFC-6F

QD Cordsets and Accessories

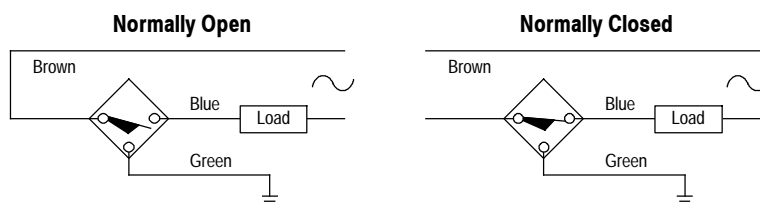
Description	Page Number	Description	Page Number
Other Cordsets Available	8-2	End Caps	2-220
Terminal Chambers	8-2	Mounting Nuts	2-221...2-222
Mounting Brackets	2-210...2-214	—	—

Approximate Dimensions [mm (in.)]

Cable Style



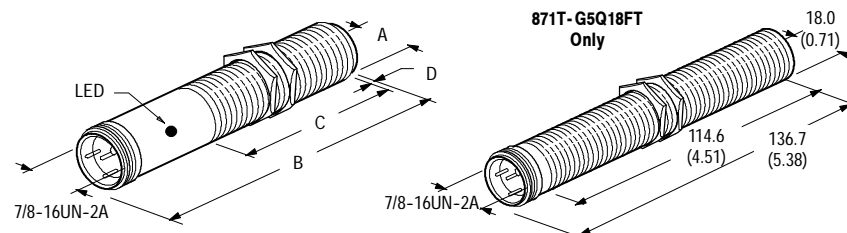
Wiring Diagrams



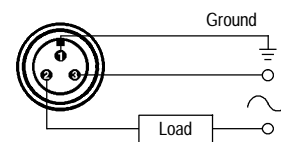
Note 1: No green wire on 12 mm. Attach housing to ground.
Note 2: Load can be switched to brown wire.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	80.0 (3.15)	53.8 (2.12)	0.8 (0.03)
	N			46.5 (1.83)	8.1 (0.32)
M18 X 1	Y	18.0 (0.71)	81.5 (3.21)	55.6 (2.19)	0.8 (0.03)
	N			43.7 (1.72)	12.3 (0.48)

Mini Quick-Disconnect Style



Normally Open or Normally Closed



Note: Load can be switched to pin 3.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M18 X 1	Y	18.0 (0.71)	96.9 (3.81)	51.9 (2.04)	0.8 (0.03)
	N			40.4 (1.59)	12.3 (0.48)

871T 4-Wire AC Ferrous Selective

Stainless Steel Face/Threaded Stainless Steel Barrel



871T AC Cable Style
18 mm



871T AC Mini
Quick-Disconnect Style
18 mm

Features

- 4-wire operation
- 20...132V AC
- Complementary (N.O. and N.C.) outputs
- Ferrous selective sensing
- Stainless steel active sensing face
- False pulse and transient noise protection
- CE Marked for all applicable directives

Specifications

Load Current	≤500 mA
Inrush Current (1 Cycle)	≤5 A
Supply Current (minimum)	5 mA
Leakage Current	≤1.7 mA
Operating Voltage	20...132V AC
Voltage Drop	N.O. output: 6.5V AC at 500 mA, 10V AC at 20 mA (RMS), N.C. output: 1.7V AC at 500 mA (RMS)
Isolation Voltage	800V AC (output to output); 1500V AC (output to housing)
Repeatability	≤10%
Hysteresis	≤10% typical
Protection Type	False pulse, transient noise
Certifications	CE Marked for all applicable directives
Enclosure Type Rating	NEMA 3, 4, 12 and 13; IP67 (IEC529)
Housing Material	Stainless steel face and barrel
Connections	Cable: 3.6 m (12 ft) length, 5-conductor PVC, Quick-Disconnect: 5-pin mini style
LED	Red: Output Energized, Green: Power
Operating Temperature [C (F)]	0...70 ° (32...158 °)

Correction Factors

Target Material	Correction Factors
Steel	1.0
Stainless Steel ★	0.8...1.1
Brass	0.0
Aluminum	0.0
Copper	0.0

★ Stainless steel containing carbon.



Inductive Proximity Sensors
871T 4-Wire AC Ferrous Selective
Stainless Steel Face/Threaded Stainless Steel Barrel

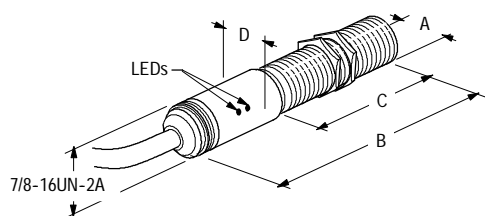
Product Selection

Barrel Diameter [mm]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.	
					Cable Style	Mini QD 5-pin Style
18	5 (0.20)	Yes	N.O. and N.C.	10	871T-A5A18FE-12	871T-A5J18FE
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft))						889N-F5AFC-6F

QD Cordsets and Accessories

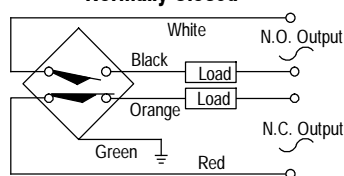
Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
End Caps	2-220
Mounting Nuts	2-221...2-222

**Approximate Dimensions [mm (in.)]
Cable Style**



Wiring Diagrams

Complementary Normally Open and Normally Closed

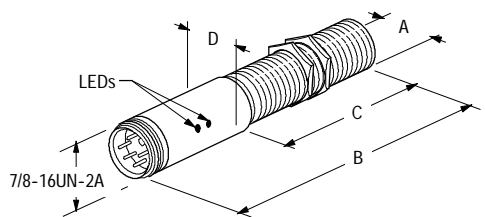


Notes:

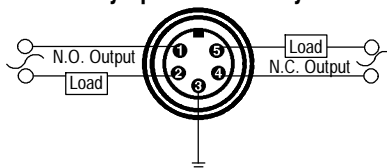
1. N.O. output must be wired for operation. N.C. output is optional.
2. N.O. load can be switched to white wire.
3. N.C. load can be switched to red wire.

Thread Size	mm (in.)			
	A	B	C	D
M18 x 1	18.0 (0.71)	101.6 (4.00)	50.8 (2.00)	20.3 (0.80)

Mini Quick-Disconnect Style



Normally Open and Normally Closed



Notes:

1. N.O. output must be wired for operation. N.C. output is optional.
2. N.O. load can be switched to pin 1.
3. N.C. load can be switched to pin 4.

Thread Size	mm (in.)			
	A	B	C	D
M18 x 1	18.0 (0.71)	101.6 (4.00)	50.8 (2.00)	20.3 (0.80)

Notes



Description

Bulletin 871TS inductive proximity sensors are self-contained, solid-state switching devices designed to sense the presence of metals without touching them. These units were designed to withstand high pressure washdown applications in the food and beverage industry. These sensors also offer a high resistance to corrosion caused by cleansing and exposure to disinfecting agents.

The switch body consists of a PPS (FDA Certified) plastic face and threaded or smooth stainless steel 316L barrel. These switches meet NEMA 1, 2, 3, 3R, 4, 4X, 6, 6P, 12, 13 and IP67, IP68 and IP69K enclosure standards. The electronic circuitry is potted for protection against shock, vibration, and contamination.

These sensors are available in 12 and 18 mm diameter housings with a 4-pin (complementary output) DC micro quick-disconnect style connector.

Features

- 4-wire operation (complementary normally open and normally closed outputs)
- Gold-plated 4-pin micro quick-disconnect
- 10...30V DC
- Standard and extended sensing range
- IP67, IP68, and IP69K enclosure ratings
- Stainless steel 316L barrel
- FDA Certified, PPS sensing face
- Extended temperature rating (-40...+80 °C (-40...+176 °F))
- Short circuit, false pulse, reverse polarity, overload, and transient noise protection
- cULus Listed and CE Marked for all applicable directives
- ECOLAB Certified

Styles

DC 3-Wire page 2-94

QD Cordsets and Accessories

Cordsets page 8-1

Mounting Bracket, Spring Return Style page 2-210

Mounting Bracket, Swivel/Tilt Style page 2-212

Mounting Bracket, Right Angle Style page 2-213

Mounting Bracket, Clamp Style page 2-214

End Caps page 2-220

Mounting Nuts page 2-221

Lock Washers page 2-223

General Information

Torque Chart page 2-225

Metric/English Conversion Chart page 14-6

Inductive Proximity Sensors
871TS Food & Beverage
 PPS Plastic Face/Stainless Steel 316L Barrel



871TS DC Micro
Quick-Disconnect Style
 12, 18 mm

Features

- 4-wire operation (complementary normally open and normally closed outputs)
- Gold-plated 4-pin micro quick-disconnect
- 10...30V DC
- Standard and extended sensing range
- IP67, IP68, and IP69K enclosure ratings
- Stainless steel 316L barrel
- FDA Certified, PPS sensing face
- Extended temperature rating (-40...+80 °C (-40...+176 °F))
- Short circuit, false pulse, reverse polarity, overload, and transient noise protection
- cULus Listed and CE Marked for all applicable directives
- ECOLAB Certified

Specifications

Load Current	≤200 mA
Leakage Current	≤15 mA
Operating Voltage	10...30V DC
Voltage Drop	≤2.0V
Repeatability	≤5%
Hysteresis	≤10% typical
Protection Type	False pulse, transient noise, reverse polarity, short circuit, and overload
Certifications	cULus Listed and CE Marked for all applicable directives
Enclosure Type Rating	NEMA 1, 2, 3, 3R, 4, 4X, 6, 6P, 12, 13; IP67, IP68, and IP69K
Housing Material	Stainless steel 316L, PPS (FDA Certified) plastic face
Connection Type	Quick Disconnect: 4-pin micro style
LED	Yellow: Output Energized
Operating Temperature [C (F)]	-40...+80 ° (-40...+176 °)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factors
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3



Product Selection

Barrel Diameter [mm]	Barrel Type	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.	
						Micro QD Style	
12	Threaded	2 (0.08)	Yes	N.O. and N.C.	2000	NPN	
						PNP	
		4 (0.16)	Yes	N.O. and N.C.	2000	NPN	
						PNP	
			No		NPN		
					PNP		
8 (0.31)	No	N.O. and N.C.	2000	NPN			
			PNP				
18	Threaded	5 (0.20)	Yes	N.O. and N.C.	1500	NPN	
						PNP	
		8 (0.31)	Yes	N.O. and N.C.	1500	NPN	
						PNP	
			No		NPN		
					PNP		
	12 (0.47)	No	N.O. and N.C.	1500	NPN		
					PNP		
		Smooth ★		8 (0.31)	Yes	1500	NPN
							PNP
12 (0.47)	No	N.O. and N.C.	1500	NPN			
			PNP				

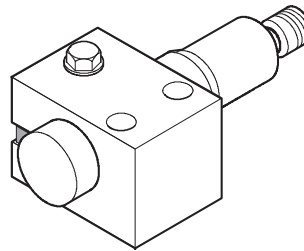
Recommended cordset: 2 m (6.5 ft) 4-pin DC micro (straight)

★ Use a stainless steel clamping bracket (Cat. No. 60-BCS-18B) with smooth barrels.

QD Cordsets and Accessories

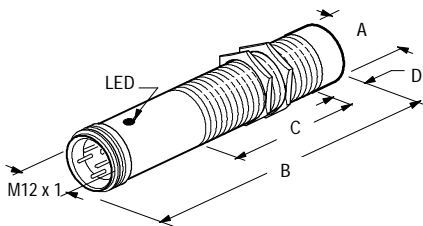
Description	Page No.
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
End Caps	2-220
Mounting Nuts	2-221...2-222

Smooth Barrel Clamping Bracket (Cat. No. 60-BCS-18B)



Approximate Dimensions [mm (in.)]

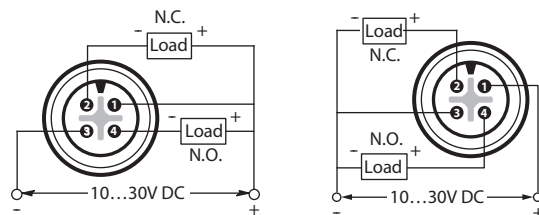
Micro QD Style



Wiring Diagrams

Micro QD Style

Complementary Normally Open and Normally Closed NPN (Sinking) PNP (Sourcing)



Barrel Type	Thread Size	Shielded	mm (in.)			
			A	B	C	D
Threaded	M12 X 1	Yes	12.0 (0.47)	65.0 (2.56)	38.1 (1.50)	—
		No			32.5 (1.28)	6.5 (0.26)
	M18 x 1	Yes	18.0 (0.71)	63.0 (2.48)	34.5 (1.36)	—
		No			26.5 (1.04)	8.0 (0.31)
Smooth	—	Yes	18.0 (0.71)	63.0 (2.48)	—	—
		No			—	8.0 (0.31)

Notes



Description

Bulletin 871Z inductive proximity sensors are self-contained, solid state switching devices designed to sense the presence of metal objects (ferrous and nonferrous) without touching them. These special weld-field immune models are ideal for welding environments and other applications where large magnetic fields are present. They are rated for reliable operation at a 25.4 mm (1 in.) distance from a current line carrying 20,000 A.❶

The electronic circuitry is potted for protection against shock, vibration, and contamination and is enclosed in a threaded, PTFE-coated brass housing which meets NEMA 1, 2, 3, 3R, 4, 4X, 6, 6P, 12, 13 and IP67 (IEC529) enclosure standards. The PTFE-coated housing and mounting nuts, Thermoset Plastic plastic face, and fire-retardant cable offer a high degree of weld splatter protection. The heavy #18 AWG SOOW-A cable offers additional abrasion, chemical, and environmental protection.

All units are provided with short circuit, overload, transient noise, and false pulse protection and weld field immunity which exceeds 20,000 A at 25.4 mm (1 in.) from the welding tip. All of these protections mean you can reduce your down time due to improper wiring, shorts, radio frequency interference, line spikes, and many other causes.

❶ This distance varies with current line amperage. See page 2-10 of the Introduction section to determine the minimum distance for your application.

These sensors are available in 12, 18 and 30 mm diameters. Connection options include a 2-meter cable, mini quick-disconnect and micro quick-disconnect.

Features

- Cable or quick-disconnect styles
- PTFE-coated brass barrel
- Weld field immunity
- Short circuit, false pulse, overload, and transient noise protection
- UL Listed, CSA Certified (AC/DC models) and CE Marked for all applicable directives

Styles

DC 3-Wire page 2-104
 AC/DC 2-Wire page 2-100

Accessories

Cordsets page 8-1
 Mounting Bracket, Spring Return Style page 2-210
 Mounting Bracket, Right Angle Style page 2-213
 Mounting Bracket, Clamp Style page 2-214
 PTFE End Caps page 2-219
 Mounting Nuts page 2-221
 Lock Washers page 2-223

General Information

Torque Chart page 2-225
 Metric/English Conversion Chart page 14-6

871Z 3-Wire DC Weld Field Immune

PTFE Face/Threaded PTFE-Coated Brass Barrel



871Z DC Mini
Quick-Disconnect Style
18, 30 mm



871Z DC Micro
Quick-Disconnect Style
12, 18, 30 mm

Specifications

Load Current	≤200 mA
Minimum Load Current	1 mA
Leakage Current	≤10 μA
Operating Voltage	10...30V DC
Voltage Drop	≤2.4V
Repeatability	≤10%
Hysteresis	≤15% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Reverse Polarity Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
Weld Field Immunity	20,000 A at 1 inch
Certifications	CE Marked for all applicable directives
Enclosure	NEMA 1, 2, 3, 4, 12 and 13, IP67 (IEC529) PTFE coated brass barrel
Connections	Quick-Disconnect: 4-pin mini style 4-pin micro style
LED	Red: Output Energized
Operating Temperature [C (F)]	-25...+70° (-13...+158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Features

- 3-wire operation
- 3-conductor or 4-pin connection
- 10...30V DC
- Weld field immunity
- Normally open output
- Reverse polarity, short circuit, overload, false pulse and transient noise protection
- CE Marked for all applicable directives

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.3...0.4

Inductive Proximity Sensors
871Z 3-Wire DC Weld Field Immune
 PTFE Face/Threaded PTFE-Coated Brass Barrel

Product Selection

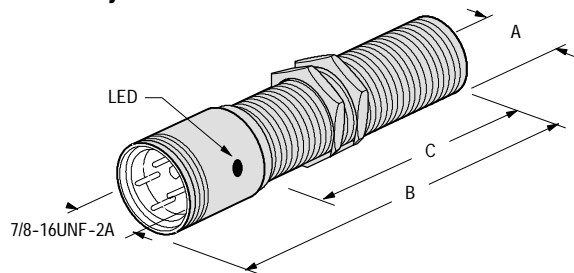
Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.	
						Mini QD Style	Micro QD Style
12 mm	2 (0.08)	Y	N.O.	PNP	15	—	871Z-DW2NP12-D4
18 mm	5 (0.20)	Y	N.O.	PNP	15	871Z-DW5NP18-N4	871Z-DW5NP18-D4
30 mm	10 (0.39)	Y	N.O.	PNP	15	871Z-DW10NP30-N4	871Z-DW10NP30-D4
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))						889N-F4AFC-6F	889D-F4WE-2

QD Cordsets and Accessories

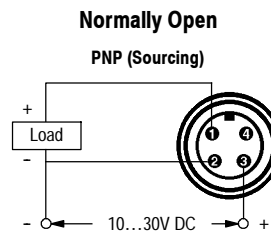
Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
PTFE End Caps	2-219
Mounting Nuts	2-221...2-222

Approximate Dimensions [mm (in.)]

Mini QD Style

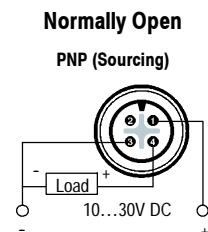
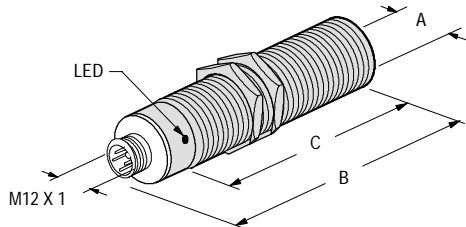


Wiring Diagram



Thread Size	Shielded	[mm (in.)]		
		A	B	C
M18 X 1	Y	18.0 (0.71)	90 (3.54)	53 (2.09)
M30 X 1.5	Y	30.0 (1.18)	90 (3.54)	56 (2.20)

Micro QD Style



Thread Size	Shielded	[mm (in.)]		
		A	B	C
M12 X 1	Y	12.0 (0.47)	70.0 (2.76)	50.0 (1.97)
M18 X 1	Y	18.0 (0.71)	80.0 (3.15)	60.0 (2.36)
M30 X 1.5	Y	30.0 (1.18)	80.0 (3.15)	60.0 (2.36)

Inductive Proximity Sensors

871Z 2-Wire AC/DC Weld Field Immune

Thermoset Plastic Face/Threaded PTFE-Coated Brass Barrel



871Z AC/DC Cable Style
18 & 30 mm



871Z AC/DC Mini
Quick-Disconnect Style
12, 18, and 30 mm



871Z AC/DC Micro
Quick-Disconnect Style
12, 18, and 30 mm

Features

- 2-wire operation
- 3-conductor or 3-pin connection
- 20...250V AC/DC
- Normally open or normally closed output
- Weld field immunity
- Short circuit, false pulse, overload, and transient noise protection
- UL Listed, CSA Certified, and CE Marked for all applicable directives

Specifications

	12 mm	18 & 30 mm
Load Current	5...200 mA	5...250 mA
Inrush Current (1 cycle)	≤2 A	≤4 A
Leakage Current	≤1.9 mA @ 120V AC	
Operating Voltage	20...250V AC/DC	
Voltage Drop	≤10V @ 5...200 mA	≤10V @ 5...250 mA
Repeatability	≤10% at constant temperature	
Hysteresis	7% typical	
Protection Type	Short circuit (trigger @ 5 A typical), false pulse, reverse polarity (DC output), overload (trigger @ 260 mA typical), and transient noise	Short circuit (trigger @ 8 A typical), false pulse, reverse polarity (DC output), overload (trigger @ 320 mA typical), and transient noise
Weld Field Immunity	20,000 A at 1 inch	
Certifications	UL Listed, CSA Certified, and CE Marked for all applicable directives	
Enclosure Type Rating	NEMA 1, 2, 3, 3R, 4, 4X, 6, 6P, 12, 13; IP67 (IEC529) PTFE coated housing	
Connection Type	Cable: 2 m (6.5 ft) length H2 - 3 conductor #18 AWG ToughLink™ Quick-Disconnect: 3-pin micro style, 3-pin mini style	
LED	Red: Output energized Green: Power	Red: Flashing short circuit/overload
Operating Temperature [C (F)]	-25...+70 ° (-13...+158 °)	
Shock	30 g, 11 ms	
Vibration	55 Hz, 1 mm amplitude, 3 planes	

Correction Factors

Target Material	Correction Factors
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.3...0.4



Inductive Proximity Sensors
871Z 2-Wire AC/DC Weld Field Immune
Thermoset Plastic Face/Threaded PTFE-Coated Brass Barrel

Product Selection

Barrel Diameter [mm]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.		
					Cable Style	Mini QD Style	Micro QD Style
12	2 (0.08)	Yes	N.O.	30	—	871Z-BW2N12-N3	871Z-BW2N12-R3
			N.C.	20	—	871Z-BW2C12-N3	871Z-BW2C12-R3
	4 (0.16)	No	N.O.	30	—	871Z-BW4N12-N3	871Z-BW4N12-R3
			N.C.	20	—	871Z-BW4C12-N3	871Z-BW4C12-R3
18	5 (0.20)	Yes	N.O.	30	871Z-BW5N18-H2	871Z-BW5N18-N3	871Z-BW5N18-R3
			N.C.	20	871Z-BW5C18-H2	871Z-BW5C18-N3	871Z-BW5C18-R3
30	10 (0.39)	Yes	N.O.	30	871Z-BW10N30-H2	871Z-BW10N30-N3	871Z-BW10N30-R3
			N.C.	20	871Z-BW10C30-H2	871Z-BW10C30-N3	—
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))						889N-F3AFC-6F	889R-F3WEA-2

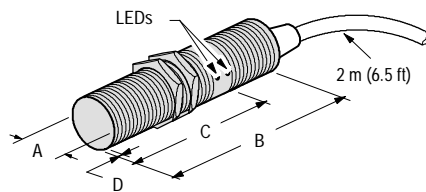
Note: This Allen-Bradley Weld Field Immune proximity sensor is also available with additional weld slag resistant material on the sensing face. Consult your local Rockwell Automation sales office or Allen-Bradley distributor for details.

QD Cordsets and Accessories

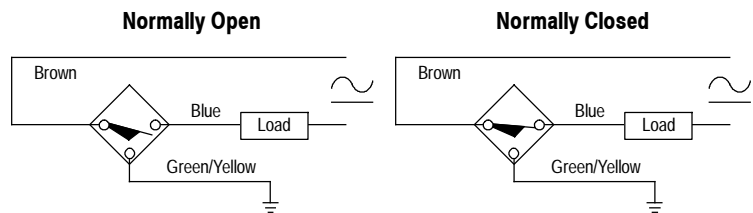
Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
PTFE End Caps	2-219
Mounting Nuts	2-221...2-222

Approximate Dimensions —[mm (in.)]

Cable Style



Wiring Diagram



Note: Rear portion of barrel left uncoated for ground contact on 12 mm models.

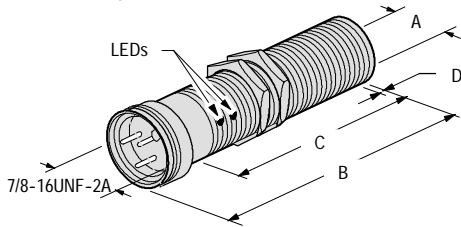
Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M18 X 1	Y	18.0 (0.71)	74.68 (2.94)	61.6 (2.43)	0.8 (0.03)
M30 X 1.5	Y	30.0 (1.18)	77.52 (3.05)	64.3 (2.53)	

871Z 2-Wire AC/DC Weld Field Immune

Thermoset Plastic Face/Threaded PTFE-Coated Brass Barrel

Approximate Dimensions [mm (in.)]

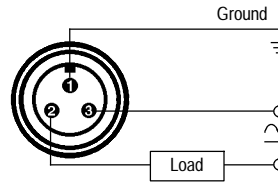
Mini QD Style



Note: Rear portion of barrel left uncoated for ground contact on 12 mm models.

Wiring Diagram

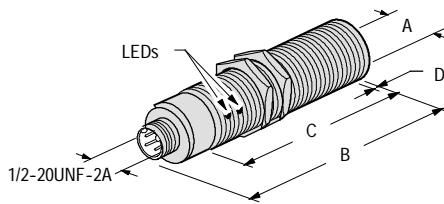
Normally Open or Normally Closed



Note 1: No ground pin on 12 mm. Attach housing to ground.
Note 2: Load can be switched to pin 3.

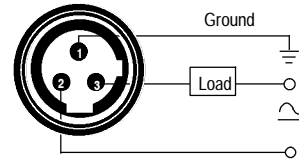
Thread Size	Shielded	mm (inches)			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	93.45 (3.68)	46.2 (1.82)	0.8 (0.03)
	N			40.7 (1.52)	8.1 (0.32)
M18 X 1	Y	18.0 (0.71)	75.82 (2.99)	57.28 (2.26)	0.8 (0.03)
M30 X 1.5	Y	30.0 (1.18)	86.66 (3.41)	64.3 (2.53)	

Micro QD Style



Note: Rear portion of barrel left uncoated for ground contact on 12 mm models.

Normally Open or Normally Closed



Note 1: No ground pin on 12 mm. Attach housing to ground.
Note 2: Load can be switched to pin 3.

Thread Size	Shielded	mm (inches)			
		A	B (max)	C (min)	D (max)
M12 x 1	Y	12.0 (0.47)	90.1 (3.55)	46.7 (1.85)	0.8 (0.03)
	N			39.7 (1.56)	8.10 (0.32)
M18 x 1	Y	18.0 (0.71)	83.5 (3.29)	61.6 (2.43)	0.8 (0.03)
M30 X 1.5	Y	30.0 (1.18)	86.0 (3.38)	64.3 (2.53)	0.8 (0.03)





Description

Bulletin 871ZT inductive proximity sensors are self contained, solid-state switching devices designed to sense the presence of metal objects without touching them. However, unlike most inductive sensors, Bulletin 871ZT sensors are equal sensing inductive proximity sensors; they sense all metals at nearly the same distance. Additionally, these special weld-field immune models are ideal for welding environments and other applications where large magnetic fields are present.

The electronic circuitry is potted for protection against shock, vibration, and contamination and is enclosed in a threaded, PTFE-coated brass housing, which meets IP67 (IEC 529) enclosure standards. The PTFE-coated housing, face and mounting nuts offer a high degree of weld-splatter protection.

All units are provided with short circuit, overload, transient noise, and false pulse protection and weld-field immunity, which exceeds 20,000 A at 25.4 mm (1 in.) from the welding tip. All of these protections mean that you can reduce your downtime due to improper wiring, shorts, radio frequency interference, line spikes, and many other causes.

Features

- Weld field immune
- Weld-slag resistant PTFE-coated brass barrel and face
- Equal sensing for all metals
- Normally open output
- Reverse polarity, short circuit, overload, false pulse and transient noise protection
- cULus Listed and CE Marked for all applicable directives

Styles

DC 3-Wire page 2-104

Accessories

Cordsets page 8-1

Conduit Adaptors page 2-209

Mounting Brackets,
Spring Return Style page 2-210

Mounting Brackets,
Swivel/Tilt Style page 2-212

Mounting Brackets,
Right Angle Style page 2-213

Mounting Brackets,
Clamp Style page 2-214

End Caps page 2-220

Mounting Nuts page 2-221

Lock Washers page 2-223

General Information

Torque Chart page 2-225

Metric/English
Conversion Chart page 14-6

871ZT 3-Wire DC Weld Field Immune/Equal Sensing

PTFE Face/Threaded PTFE-Coated Brass Barrel



871ZT DC Micro
Quick-Disconnect Style
12, 18, 30 mm

Features

- 3-wire operation
- 4-pin micro quick-disconnect
- 10...30V DC
- Weld field immunity
- Weld-slag resistant PTFE coated brass barrel and face
- Equal sensing for all metals
- Normally open output
- Reverse polarity, short circuit, overload, false pulse and transient noise protection
- UL Listed and CE Marked for all applicable directives

Specifications

Load Current, Max.	200 mA
Load Current, Min.	1 mA
Leakage Current	<0.08 mA
Operating Voltage	10...30V DC
Voltage Drop	≤2.5V
Repeatability	≤5% typical
Hysteresis	≤10% typical
Protection Type	False pulse, transient noise, reverse polarity, short circuit, overload
Weld Field Immunity	Up to 1260 Gauss (M5)
Certifications	UL Listed and CE Marked for all applicable directives
Enclosure Type Rating	IP67 (IEC 529) PTFE coated brass barrel
Connection Type	Quick-Disconnect: 4-pin micro style
LED	360° LED visibility; Orange: Target Present
Operating Temperature [C (F)]	-25...+70 ° (-13...+158 °)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factors
Steel	1.0
Stainless Steel	0.9...1.1
Brass	0.9...1.1
Aluminum	0.9...1.1
Copper	0.9...1.1



871ZT 3-Wire DC Weld Field Immune/Equal Sensing

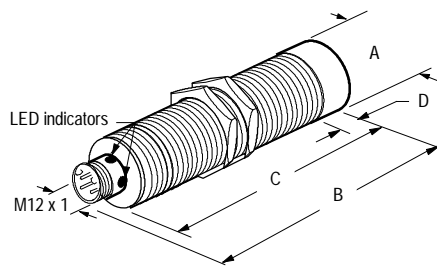
PTFE Face/Threaded PTFE-Coated Brass Barrel

Product Selection

Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Outout Configuration		Switching Frequency [Hz]	Cat. No.
						Micro QD Style
12 mm	3 (0.12)	Y	N.O.	PNP	2000	871ZT-MB3NP12-D4
	8 (0.31)	N			2000	871ZT-NB8NP12-D4
18 mm	5 (0.20)	Y			2500	871ZT-MB5NP18-D4
	12 (0.47)	N			2500	871ZT-NB12NP18-D4
30 mm	10 (0.39)	Y			600	871ZT-MB10NP30-D4
	20 (0.79)	N			1000	871ZT-NB20NP30-D4
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))						889D-F4WE-2

Dimensions [mm (in.)]

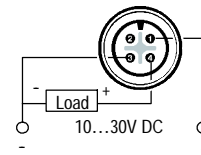
Micro QD Style



Wiring Diagram

Normally Open

PNP (Sourcing)



Thread Size	Shielded	A	B	C	D
M12x1	Y	12 (0.47)	65 (2.56)	50 (1.97)	—
	N	12 (0.47)	65 (2.56)	40 (1.58)	10 (0.39)
M18x1	Y	18 (0.71)	65 (2.56)	50 (1.97)	—
	N	18 (0.71)	65 (2.56)	40.5 (1.59)	10 (0.39)
M30x1	Y	30 (1.18)	65 (2.56)	50.5 (1.99)	—
	N	30 (1.18)	65 (2.56)	37.5 (1.48)	13 (.51)

Notes

Obsolete

Inductive Proximity Sensors

871ZC 3-Wire DC Weld Field Immune

Thermoset Plastic Face/Threaded Copper Barrel

Obsolete

Obsolete

Inductive Proximity Sensors

871ZC 2-Wire AC/DC Weld Field Immune

Thermoset Plastic Face/Threaded Copper Barrel

Obsolete

Obsolete

Inductive Proximity Sensors

871ZC 2-Wire AC/DC Weld Field Immune

Thermoset Plastic Face/Threaded Copper Barrel

Obsolete



Description

Bulletin 871C inductive proximity sensors are self-contained, general purpose, solid-state devices designed to sense the presence of ferrous and nonferrous metal objects without touching them.

The switch body consists of a plastic face and either a stainless steel barrel, nickel-plated brass barrel or plastic barrel. The electronic circuitry is potted for protection against shock, vibration, and contamination.

These sensors are available in 3, 4, 5, 8, 12, 18 and 30 mm diameters, with smooth or threaded barrels. Connection options include a 2 m cable, micro quick-disconnect, and pico quick-disconnect.

Features

- Cable or quick-disconnect styles
- Short circuit protection❶
- Overload protection❶
- Transient noise protection
- False pulse protection
- Reverse polarity protection
- CE Marked for all applicable directives (most models)

Styles

DC 3-Wire Small Diameter	page 2-114
DC 3-Wire Extended Temperature Range	page 2-117
AC 2-Wire Full-Featured	page 2-119
AC 2-Wire Plastic Barrel	page 2-122
NAMUR Intrinsically Safe	page 2-124
Analog Output	page 2-127

Accessories

Cordsets	page 8-1
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Mounting Brackets, Spring Return Style	page 2-210
Mounting Brackets, Swivel/Tilt Style	page 2-212
Mounting Brackets, Right Angle Style	page 2-213
Mounting Brackets, Clamp Style	page 2-214
End Caps	page 2-220
Mounting Nuts	page 2-221
Lock Washers	page 2-223

General Information

Torque Chart	page 2-225
Metric/English Conversion Chart	page 14-6

❶ AC full-featured and DC models only.

871C 3-Wire DC

Plastic Face/Small Threaded or Smooth Nickel-Plated Brass Barrel



871C DC Cable Style
Smooth Barrel
3, 4 mm



871C DC Pico Style 3-Pin 6 inch Lead
Smooth Barrel
4, 5 mm



871C DC Cable Style
Threaded Barrel
4, 5 mm



871C DC Cable Style
Smooth Barrel
4 mm



871C DC Pico Quick-Disconnect
Style Threaded Barrel
5 mm

Features

- 3-wire operation
- 3-conductor, 3-pin pico or 3-pin pico on 6 inch lead
- 10...30V DC
- Normally open
- False pulse, transient noise, reverse polarity and short circuit protections
- cULus Listed and CE Marked for all applicable directives (except for 3 mm models)

Specifications

Barrel Diameter	3 mm Smooth Barrel and 4 mm Threaded Barrel	4 mm Smooth Barrel and 5 mm Threaded Barrel
Load Current	≤100 mA	≤200 mA
Leakage Current	≤0.1 mA	
Operating Voltage	10...30V DC	
Voltage Drop	≤2.5V	
Repeatability	≤5%	
Hysteresis	15% typical	
False Pulse Protection	Incorporated	
Transient Noise Protection	Incorporated	
Reverse Polarity Protection	Incorporated	
Short Circuit Protection	Incorporated	
Certifications	cULus Listed and CE Marked for all applicable directives	
Enclosure	NEMA 1, 2, 3, 4, 12, 13 IP67 (cable only) IP65 (qd only) (IEC529); Stainless steel barrel	
Connections	Cable: 2 m (6.5 ft) length 3-conductor PUR Quick-Disconnect: 3-pin pico style 3-pin pico on 6 in. lead	Cable: 2 m (6.5 ft) length 3-conductor PVC Quick-Disconnect: 3-pin pico style
LED	Red or Yellow: Output energized	
Operating Temperature [C (F)]	-25...+70° (-13...+158°)	
Shock	30 g, 11 ms	
Vibration	55 Hz, 1 mm amplitude, 3 planes	

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.3...0.4



Product Selection

Barrel Dia.	Barrel Type	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.			
						Cable Style	Pico QD Style	Pico with Lead Style	
3	Smooth	0.6 (0.02)	Y	N.O.	5000	871C-DM1NN3-E2	—	871C-DM1NN3-AP3	
						871C-DM1NP3-E2	—	871C-DM1NP3-AP3	
		1 (0.04)			3000	871C-MM1NN3-E2	—	871C-MM1NN3-AP3	
						871C-MM1NP3-E2	—	871C-MM1NP3-AP3	
4	Threaded	0.8 (0.03)			5000	NPN	871C-D1NN4-E2	—	871C-D1NN4-AP3
						PNP	871C-D1NP4-E2	—	871C-D1NP4-AP3
		1 (0.04)			3000	NPN	871C-M1NN4-E2	—	871C-M1NN4-AP3
						PNP	871C-M1NP4-E2	—	871C-M1NP4-AP3
	Smooth	0.8 (0.03)	5000	NPN	871C-DM1NN4-E2	871C-DM1NN4-P3	—		
				PNP	871C-DM1NP4-E2	871C-DM1NP4-P3	871C-DM1NP4-AP3		
		1.5 (0.06)		3000	NPN	871C-MM2NN4-E2	871C-MM2NN4-P3	—	
					PNP	871C-MM2NP4-E2	871C-MM2NP4-P3	—	
5	Threaded	1 (0.04)		5000	NPN	871C-D1NN5-E2	871C-D1NN5-P3	—	
					PNP	871C-D1NP5-E2	871C-D1NP5-P3	—	
		1.5 (0.06)		3000	NPN	871C-M2NN5-E2	871C-M2NN5-P3	—	
					PNP	871C-M2NP5-E2	871C-M2NP5-P3	—	
Recommended cordset						889P-F3AB-2			

QD Cordsets and Accessories

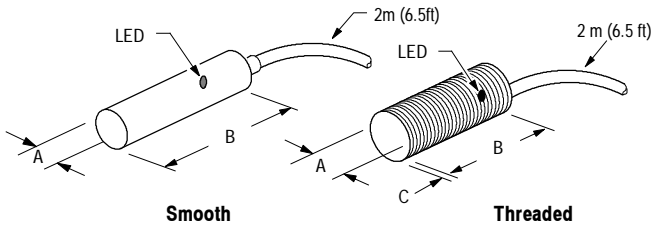
Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
End Caps	2-220
Mounting Nuts	2-221...2-222

871C 3-Wire DC

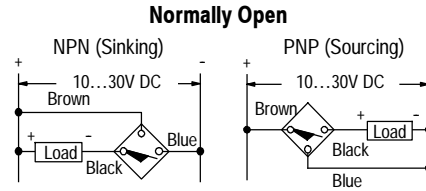
Plastic Face/Small Threaded or Smooth Nickel-Plated Brass Barrel

Approximate Dimensions [mm (in.)]

Cable Style

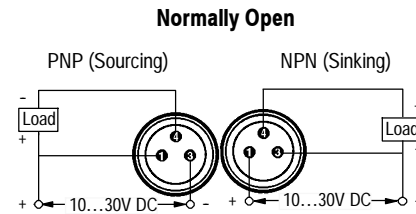
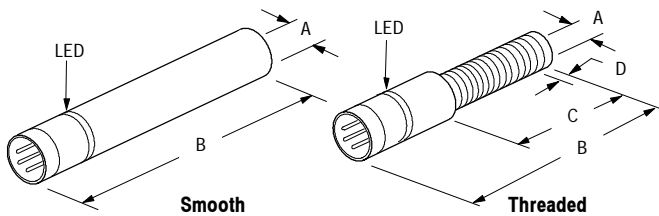


Wiring Diagram



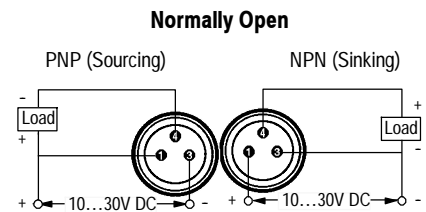
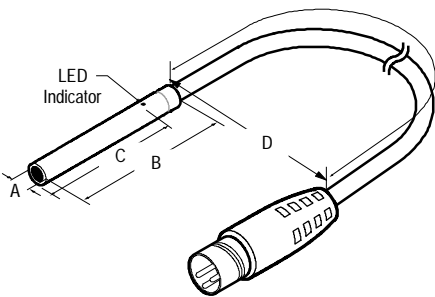
Smooth Diameter	Thread Size	Shielded	[mm (in.)]		
			A	B	C
3.0	—	Y	3.0 (0.12)	22.0 (0.87)	—
4.0	—	Y	4.0 (0.16)	25.0 (0.98)	—
4.0	M4 x 0.5	Y	4.0 (0.16)	22.0 (0.87)	—
5.0	M5 x 0.5	Y	5.0 (0.20)	25.0 (0.98)	—

Pico QD Style



Smooth Diameter	Thread Size	Shielded	[mm (in.)]			
			A	B	C	D
4.0	—	Y	4.0 (0.16)	38.0 (1.50)	19.0 (0.74)	—
5.0	M5 x 0.5	Y	5.0 (0.20)	38.0 (1.50)	23.0 (0.90)	—

Pico with Lead Style



Barrel Diameter	Shielded	[mm (in.)]			
		A	B	C	D
3.0	Y	3.0 (0.12)	22.0 (0.87)	—	150.0 (5.9)
4.0	Y	4.0 (0.16)	22.0 (0.87)	19.0 (0.74)	150.0 (5.9)

871C 3-Wire DC Extended Temperature

Plastic Face/Threaded Nickel-Plated Brass Barrel



871C DC Cable Style
12, 18, 30 mm



871C DC Micro
Quick-Disconnect Style
12, 18, 30 mm

Description

Bulletin 871C inductive proximity sensors are self-contained, solid state devices designed for most industrial applications where it is required to sense the presence of metal objects without touching them. These special extended temperature models are ideal for industrial environments where temperatures can reach as high as 212°F (100°C) or as low as -40°F (-40°C). They are available for current source (PNP) operation with a normally open output.

Each switch has a plastic face and a nickel-plated brass housing which meet NEMA 1, 2, 3, 4, 12, 13 and IP67 (IEC529) enclosure standards. The electronic circuitry is potted for protection against shock, vibration, and contamination.

These sensors are available in 12, 18, and 30 mm diameters. Connection options include: 2 m (6.5 ft) PUR cable or micro quick-disconnect (4 pin, 1 keyway).

Specifications

Load Current	1...200 mA
Leakage Current	≤10 mA
Operating Voltage	10...30V DC
Voltage Drop	≤2.4V
Repeatability	≤10%
Hysteresis	≤15% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Reverse Polarity Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
Certifications	CE Marked for all applicable directives
Enclosure	NEMA 1, 2, 3, 4, 12, 13, IP67 (IEC529) Nickel-plated brass barrel
Connections	Cable: 2 m (6.5 ft) length 3-conductor PUR Quick-Disconnect: 4-pin micro style
LED	Orange: Output Energized
Operating Temperature [C (F)]	-40...+100° (-40...+212°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Features

- 3-wire operation
- 3-conductor or 4-pin connection
- 10...30V DC
- Extended temperature range
- Normally open output
- Short circuit, false pulse, reverse polarity, overload and transient noise protection
- CE Marked for all applicable directives

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.9
Brass	0.5
Aluminum	0.45
Copper	0.4

871C 3-Wire DC Extended Temperature

Plastic Face/Threaded Nickel-Plated Brass Barrel

Product Selection

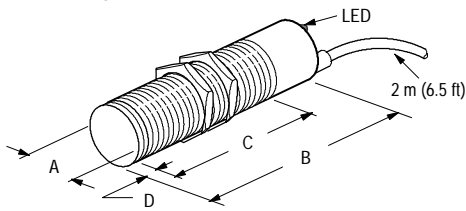
Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.		
						Cable Style	Micro QD Style	
12 mm	2 (0.08)	Y	N.O.	PNP	2000	871C-DT2NP12-U2	871C-DT2NP12-D4	
	4 (0.16)	N				871C-DT4NP12-U2	871C-DT4NP12-D4	
18 mm	5 (0.20)	Y	N.O.	PNP	1000	871C-DT5NP18-U2	871C-DT5NP18-D4	
	8 (0.31)	N				871C-DT8NP18-U2	871C-DT8NP18-D4	
30 mm	10 (0.39)	Y	N.O.	PNP	500	871C-DT10NP30-U2	871C-DT10NP30-D4	
	15 (0.59)	N				871C-DT15NP30-U2	871C-DT15NP30-D4	
Recommended standard QD cordset (-2 = 2 m (6.5 ft))							889D-F4AC-2	

QD Cordsets and Accessories

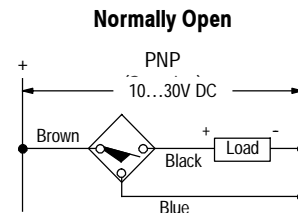
Description	Page Number	Description	Page Number
Other Cordsets Available	8-2	End Caps	2-220
Terminal Chambers	8-2	Mounting Nuts	2-221...2-222
Mounting Brackets	2-210...2-214	—	—

Approximate Dimensions [mm (in.)]

Cable Style

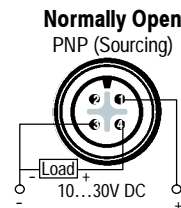
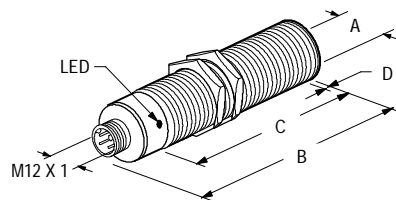


Wiring Diagram



Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	40.0 (1.57)	40.0 (1.57)	—
	N			34.0 (1.34)	6.0 (0.24)
M18 X 1	Y	18.0 (0.71)		40.0 (1.57)	—
	N			32.0 (1.26)	8.0 (0.31)
M30 X 1.5	Y	30.0 (1.18)		40.0 (1.57)	—
	N			28.0 (1.12)	12.0 (0.47)

Micro QD Style



Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	60.0 (2.36)	40.0 (1.57)	—
	N			34.0 (1.34)	6.0 (0.24)
M18 X 1	Y	18.0 (0.71)		40.0 (1.57)	—
	N			32.0 (1.26)	8.0 (0.31)
M30 X 1.5	Y	30.0 (1.18)		40.0 (1.57)	—
	N			28.0 (1.10)	12.0 (0.47)



871C AC Cable Style
18, 30 mm



871C AC Mini
Quick-Disconnect Style
12, 18, 30 mm



871C AC Micro
Quick-Disconnect Style
12, 18, 30 mm

Specifications

Barrel Diameter	12 mm	18 and 30 mm
Load Current	5...200 mA	5...250 mA
Minimum Load Current	5 mA	
Inrush Current (1 cycle)	≤2 A	≤4 A
Leakage Current	≤1.9 mA @ 120V AC	
Operating Voltage	20...250V AC	
Voltage Drop	≤10V @ 5...200 mA,	≤10V @ 5...250 mA
Repeatability	≤10% at constant temperature	
Hysteresis	10% typical	
False Pulse Protection	Incorporated	
Transient Noise Protection	Incorporated	
Short Circuit Protection	Incorporated	
Overload Protection	Incorporated, trigger at 250 mA typical	Incorporated, trigger at 320 mA typical
Certifications	UL Listed, CSA Certified and CE Marked for all applicable directives	
Enclosure	NEMA 1, 2, 3, 3R, 4, 4X, 6, 6P, 12, 13 IP67 (IEC529) Nickel plated brass barrel	
Connections	Cable: 2 m (6.5 ft) length 2-conductor PVC Quick Disconnect: 3-pin micro style 3-pin mini style	
LED	Red: Output energized/Short Circuit (Flashing) Green: Power	
Operating Temperature [C (F)]	-25...+70° (-13...+158°)	
Shock	30 g, 11 ms	
Vibration	55 Hz, 1 mm amplitude, 3 planes	

Features

- 2-wire operation
- 2-conductor or 3-pin connection
- 20...250V AC
- Normally open or normally closed output
- Short circuit, false pulse, overload, and transient noise protection
- UL Listed, CSA Certified, and CE Marked for all applicable directives

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.9
Brass	0.5
Aluminum	0.45
Copper	0.4

Inductive Proximity Sensors

871C 2-Wire AC Full Featured

Plastic Face/Threaded Nickel-Plated Brass Barrel

Product Selection

Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.		
					Cable Style	Mini QD Style	Micro QD Style
12 mm	2 (0.08)	Y	N.O.	30	871C-A2N12-A2	871C-A2N12-N3	871C-A2N12-R3
			N.C.	20	871C-A2C12-A2	871C-A2C12-N3	871C-A2C12-R3
18 mm	5 (0.20)	Y	N.O.	30	871C-A5N18-A2	871C-A5N18-N3	871C-A5N18-R3
			N.C.	20	871C-A5C18-A2	871C-A5C18-N3	871C-A5C18-R3
30 mm	10 (0.39)	Y	N.O.	30	871C-A10N30-A2	871C-A10N30-N3	871C-A10N30-R3
			N.C.	20	871C-A10C30-A2	871C-A10C30-N3	871C-A10C30-R3
Recommended standard QD cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))						889N-F3AFC-6F	889R-F3ECA-2

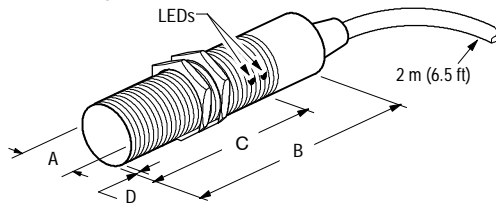
QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	8-2
Mounting Brackets	2-210...2-214
End Caps	2-220
Mounting Nuts	2-221...2-222

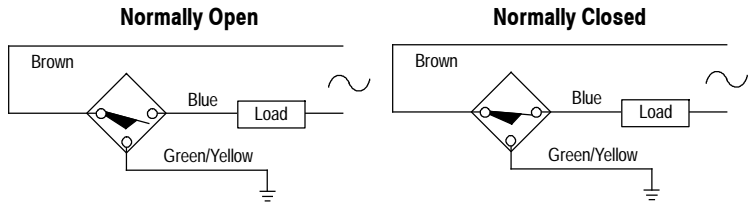
Inductive Proximity Sensors
871C 2-Wire AC Full Featured
Plastic Face/Threaded Nickel-Plated Brass Barrel

Approximate Dimensions [mm (in.)]

Cable Style



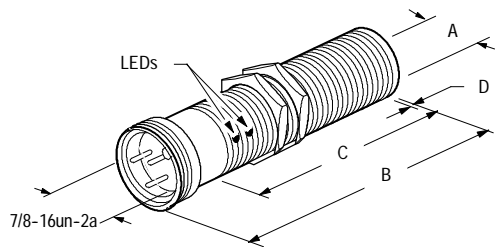
Wiring Diagram



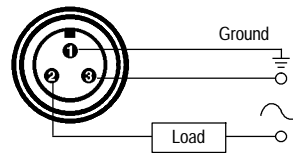
Note: Load can be switched to brown wire.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M12 X 1	Y	12.0 (0.47)	78.99 (3.11)	47.24 (1.86)	0.8 (0.03)
M18 X 1	Y	18.0 (0.71)	74.68 (2.94)	61.6 (2.43)	
M30 X 1.5	Y	30.0 (1.18)	77.52 (3.05)	64.31 (2.53)	

Mini QD Style



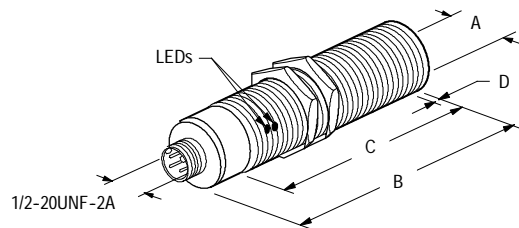
Normally Open or Normally Closed



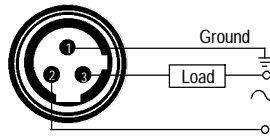
Note 1: No ground wire on 12 mm. Attach housing to ground.
Note 2: Load can be switched to pin 3.

Thread Size	[mm (in.)]			
	A	B	C	D
M12 X 1	12.0 (0.47)	93.45 (3.68)	46.08 (1.81)	—
M18 X 1	18.0 (0.71)	75.82 (2.99)	53.92 (2.12)	
M30 X 1.5	30.0 (1.18)	86.66 (3.41)	64.31 (2.53)	

Micro QD Style



Normally Open or Normally Closed



Note 1: No ground wire on 12 mm. Attach housing to ground.
Note 2: Load can be switched to pin 2.

Thread Size	[mm (in.)]			
	A	B	C	D
M12 X 1	12.0 (0.47)	90.42 (3.56)	46.99 (1.85)	—
M18 X 1	18.0 (0.71)	83.54 (3.29)	61.6 (2.43)	
M30 X 1.5	30.0 (1.18)	86.00 (3.39)	64.31 (2.53)	

871C 2-Wire AC

Plastic Face/Threaded Plastic Barrel



871C AC Cable Style
18, 30 mm

Features

- 2-wire operation
- 2-conductor connection
- 24...250V AC
- Normally open or normally closed output
- Transient noise protection
- CE Marked for all applicable directives

Specifications

Barrel Diameter	18 mm	30 mm
Load Current	≤180 mA	≤300 mA
Inrush Current (1 cycle)	≤1 A	≤3 A
Leakage Current	≤1.7 mA	
Operating Voltage	24...250V AC	
Voltage Drop	≤11V	
Hysteresis	≤20% typical	
Transient Noise Protection	Incorporated	
Certifications	CE Marked for all applicable directives	
Enclosure	NEMA 1, 2, 3, 4, 4X, 12, 13 IP67 (IEC529) Plastic barrel	
Connections	Cable:	2 m (6.5 ft) length 2-conductor PVC
LED	Red: Output energized	
Operating Temperature [C (F)]	-25...+55° (-13...+131°)	
Shock	30 g, 11 ms	
Vibration	55 Hz, 1 mm amplitude, 3 planes	

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.3...0.4

Product Selection

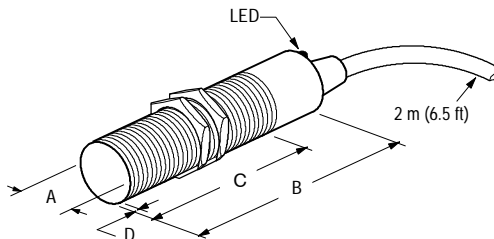
Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.
					Cable Style
18 mm	5 (0.20)	Y	N.O.	8	871C-C5S18
			N.C.		871C-D5S18
	8 (0.31)	N	N.O.		871C-C8R18
			N.C.		871C-D8R18
30 mm	10 (0.39)	Y	N.O.		871C-C10S30
			N.C.		871C-D10S30
	15 (0.59)	N	N.O.		871C-C15R30
			N.C.		871C-D15R30

Accessories

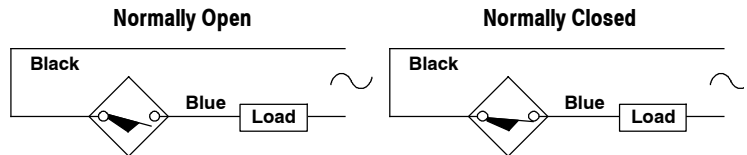
Description	Page Number
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
End Caps	2-220
Mounting Nuts	2-221...2-222

Approximate Dimensions [mm (in.)]

Cable Style



Wiring Diagram



Note: Load can be switched to black wire.

Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M18 X 1	Y	18.0 (0.71)	81.0 (3.19)	61.0 (2.40)	2.0 (0.08)
	N 1				
M30 X 1.5	Y	30.0 (1.18)	81.0 (3.19)		
	N 1				

1 Unshielded proximity sensors require a metal-free zone around the sensing face. Any metal immediately opposite the sensing face should be no closer than three times the rated nominal sensing distance of the sensor.

871C 2-Wire NAMUR

Nickel-Plated Brass Barrel, Plastic Face



871C NAMUR
Cable Style
8, 12, 18, 30 mm



871C NAMUR
Micro Quick-Disconnect Style
8, 12, 18, 30 mm

Description

For Allen-Bradley NAMUR style sensors, the sensor input and output conforms to NAMUR specifications (DIN 19 234) allowing these sensors to be used with any approved NAMUR style amplifier/ isolator. Allen-Bradley's NAMUR style sensors are Intrinsically Safe when used with an approved Intrinsically Safe NAMUR style isolator.

The 871C NAMUR style family of sensors can be used in Class I, II, III; Division 1 and 2; Groups A, B, C, D, E, F, and G as well as Zones 0, 1, 2; Groups IIA, IIB, IIC when used with Allen-Bradley's NAMUR style isolators/amplifiers. Installation must be in accordance with the National Electrical Code, ANSI/ISA RP12.6, or per other regulations by authority having jurisdiction over the installation site as appropriate.

Features

- 2-Wire NAMUR operation
- 8, 12, 18, and 30 mm sizes
- Short barrel length
- Shielded and unshielded models
- FM, CSA, and CE Marked for all applicable directives

Specifications

Outputs	NAMUR (conforms to DIN 19 234)
Load Current Target Present	<1 mA
Load Current Target Absent	>3 mA
Operating Voltage	5...15V DC (8.2V DC nom., Ri = 1 kohm, DIN 19 234)
Ripple Voltage	<5%
Repeatability	<10%
Hysteresis	10% typical
Reverse Polarity Protection	Incorporated
False Pulse Protection	Realized in amplifier
Transient Noise Protection	Realized in amplifier
Short Circuit Protection	Realized in amplifier
Overload Protection	Realized in amplifier
Enclosure	NEMA 4, IP67 (IEC529)
Certifications	FM Approved - Class I, II, III; Divisions 1, 2; Groups A, B, C, D, E, F, G CSA Approved - Class I, II, III; Divisions 1, 2; Groups A, B, C, D, E, F, G - Class I; Zone 0, 1, 2; Groups IIC, IIB, IIA CE Marked for all applicable directives
Connections	Cable: 2 m (6.5 ft) length 2 conductor #22 AWG PVC Quick-Disconnect: 4-pin micro style
LED	None
Operating Temperature [C (F)]	-25...60° (-13...140°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes
Housing Material	Nickel-plated brass barrel, plastic face

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

Entity Parameters

Sensor			Barrier	
V_{max}	16V	\geq	V_t	
I_{max}	60 mA	\geq	I_t	
C_i	150 nF	\leq	C_a	
L_i	200 μ H	\leq	L_a	



Operating parameters must be adhered to.

Inductive Proximity Sensors
871C 2-Wire NAMUR, Cable Style
Nickel-Plated Brass Barrel, Plastic Face

Product Selection

Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.		
					Cable Style	Micro QD Style	
8 mm	1 (0.03)	Y	NAMUR DIN 19 234	2000	871C-DH1M8-A2	871C-DH1M8-D4	
	2 (0.06)	N		1000	871C-DH2M8-A2	871C-DH2M8-D4	
12 mm	2 (0.08)	Y		2000	871C-DH2M12-A2	871C-DH2M12-D4	
	4 (0.16)	N		1000	871C-DH4M12-A2	871C-DH4M12-D4	
18 mm	5 (0.20)	Y		1000	871C-DH5M18-A2	871C-DH5M18-D4	
	8 (0.31)	N		500	871C-DH8M18-A2	871C-DH8M18-D4	
30 mm	10 (0.39)	Y		500	871C-DH10M30-A2	871C-DH10M30-D4	
	15 (0.59)	N		300	871C-DH15M30-A2	871C-DH15M30-D4	
Recommended standard QD cordset (-2 = 2 m (6.5 ft))						889D-F4AC-2 ①	

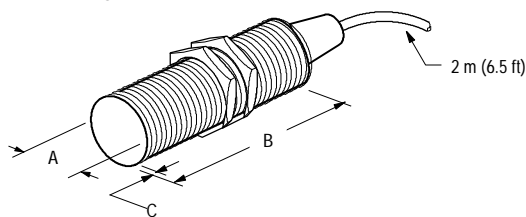
① Intrinsically Safe wiring labels 897H-L1 or 897H-L2 must be applied every 7.6 m (25 ft).

QD Cordsets and Accessories

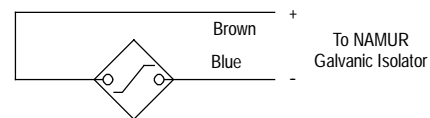
Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Galvanic Isolators	12-5
Intrinsic Safety Wiring Labels	12-8
Mounting Brackets	2-210...2-214
End Caps	2-220
Mounting Nuts	2-221...2-222

Approximate Dimensions [mm (in.)]

Cable Style



Wiring Diagram



Thread Size	Shielded	[mm (in.)]		
		A	B	C
M8 x 1	Y	8.0 (0.31)	30.0 (1.18)	—
	N			5.0 (0.20)
M12 x 1	Y	12.0 (0.47)		—
	N			6.0 (0.24)
M18 x 1	Y	18.0 (0.71)		—
	N			8.0 (0.31)
M30 x 1.5	Y	30.0 (1.18)	40.0 (1.57)	—
	N			12.0 (0.47)

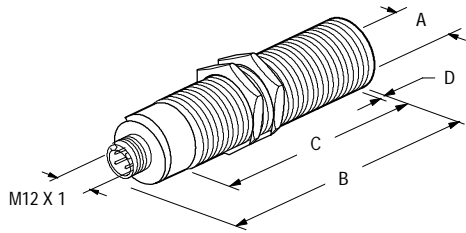
Inductive Proximity Sensors

871C 2-Wire NAMUR

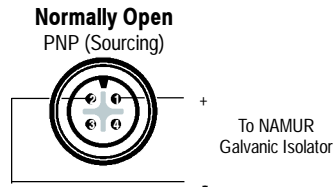
Nickel-Plated Brass Barrel, Plastic Face

Approximate Dimensions [mm (in.)]

Micro QD Style



Wiring Diagram



Thread Size	Shielded	[mm (in.)]			
		A	B	C	D
M8 x 1	Y	8.0 (0.31)	50.0 (1.97)	28.0 (1.10)	—
	N			23.0 (0.91)	5.0 (0.20)
M12 x 1	Y	12.0 (0.47)		30.0 (1.18)	—
	N			24.0 (0.94)	6.0 (0.24)
M18 x 1	Y	18.0 (0.71)		30.0 (1.18)	—
	N			22.0 (0.87)	8.0 (0.31)
M30 x 1.5	Y	30.0 (1.18)	60.0 (2.36)	40.0 (1.57)	—
	N			28.0 (1.10)	12.0 (0.47)

Inductive Proximity Sensors
871C Analog Output, 3-Wire DC
Plastic Face/Nickel-Plated Brass Barrel



871C Cable Style
12, 18, 30 mm

Description

Bulletin 871C inductive proximity sensors are self-contained, solid-state devices designed to sense the presence of metal objects without touching them. This special version provides a 0...10V sourcing analog output proportional to the sensing distance.

This device is enclosed by a plastic face and a nickel-plated brass housing which meets NEMA 1, 2, 3, 4, 12, 13 and IP67 (IEC529) enclosure standards. The electronic circuitry is potted for protection against shock, vibration and contamination.

This sensor is available in 12, 18 and 30 mm diameters with a 2 m (6.5 ft.) PVC cable connection.

Features

- 3-wire operation
- 18...30V DC
- Short circuit, overload, reverse polarity, and transient noise protection
- 0...10V sourcing analog output
- CE Marked for all applicable directives

Specifications

	12 mm	18 mm	30 mm
Analog Output	0...10V Sourcing		
Load Current	5 mA		
Operating Voltage	18...30V DC		
Repeatability	≤ 1%		
Ripple	10%		
Slew Rate	1.0V/ms	0.7V/ms	0.1V/ms
Δ Output / Δ Distance	0.25 mm/V	0.375 mm/V	0.875 mm/V
Linearity Tolerance	6.25%		
Temperature Tolerance	± 0.3V		
Transient Noise Protection	Incorporated		
Reverse Polarity Protection	Incorporated		
Short Circuit Protection	Incorporated		
Overload Protection	Incorporated		
Enclosure	NEMA 1, 2, 3, 4, 12, 13; IP67 (IEC529), Nickel-plated brass barrel, plastic face (PBT)		
Certifications	CE Marked for all applicable directives		
Connections	Cable:		2 m (6.5 ft) length 3 conductor PVC
LED	None		
Operating Temperature [C (F)]	-25...+70° (-13...+158°)		
Shock	30 g, 11 ms		
Vibration	55 Hz, 1 mm amplitude, 3 planes		

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

871C Analog Output, 3-Wire DC

Plastic Face/Nickel-Plated Brass Barrel

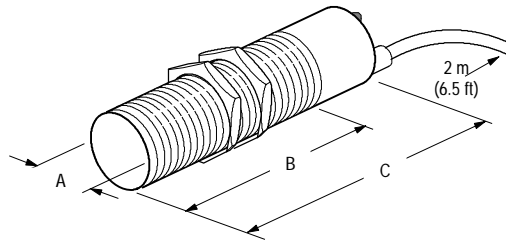
Product Selection

Barrel Diameter	Linear Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.
12 mm	0.5...2.5 (0.02...0.10)	Y	Analog Voltage	Sourcing	100	871C-D3AP12-E2
18 mm	1...4 (0.04...0.16)	Y	Analog Voltage	Sourcing	100	871C-D4AP18-E2
30 mm	7...14 (0.27...0.55)	N	Analog Voltage	Sourcing	30	871C-D14AP30-E2

QD Cordsets and Accessories

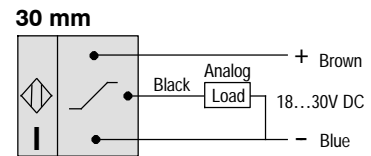
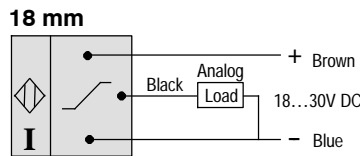
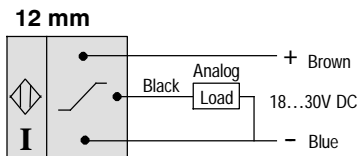
Description	Page Number
Terminal Chambers	8-2
Mounting Brackets	2-210...2-214
End Caps	2-220
Mounting Nuts	2-221...2-222

Approximate Dimensions [mm (in.)]

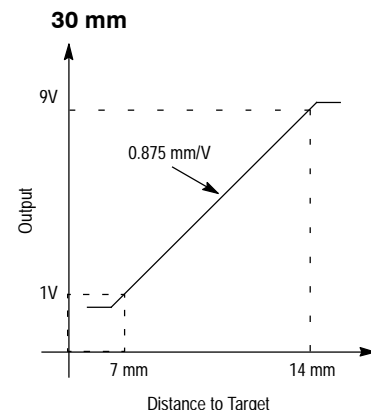
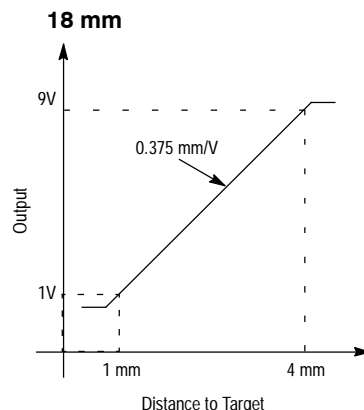
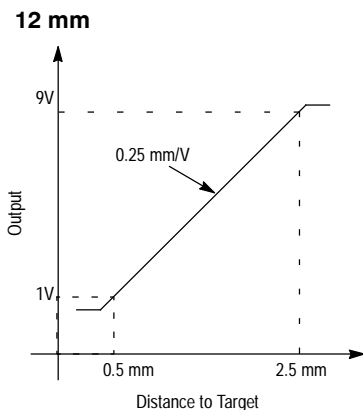


Thread Size	[mm (in.)]		
	A	B	C
12 mm	12 (0.47)	70 (2.75)	80 (3.15)
18 mm	18 (0.71)		
30 mm	30 (1.18)		

Wiring Diagrams



Nominal Output





Description

Bulletin 871P VersaCube inductive proximity sensors are self-contained, solid state devices designed to sense the presence of ferrous and nonferrous metal objects without touching them.

The special weld field immune models are ideal for welding environments and other applications where magnetic fields are present. General Purpose 871P VersaCube models are available for more standard applications where long sensing distance and compact size are required.

The unique VersaCube package is ideal for applications in which space is limited. Their overall size is approximately half that of limit switch style models. The two mounting holes on the VersaCube base align with standard limit switch style mounting holes allowing easy and convenient retrofit capability.

VersaCube models feature two LEDs, one for output and one for power and short-circuit indication. Connection options include mini and micro quick-disconnect.

Features

- 5-position sensing head
- Rugged burn and weld-slag resistant housing on weld-field immune models
- Mini and micro quick-disconnect styles
- Weld field immunity (some models)
- Short circuit protection
- False pulse protection
- Overload protection
- Transient noise protection
- Reverse polarity protection (DC models)
- ToughCoat Finish™ ❶ resists weld-splatter accumulation
- UL Listed, cUL Certified and CE Marked for all applicable directives

❶ 871P VersaCube is now being offered with ToughCoat Finish™ on the sensor face. This is a proprietary epoxy-based material which resists the adhesion and accumulation of weld-slag particles thereby improving and extending sensor performance.

Styles

DC 3-Wire General Purpose & Weld Field Immune page 2-130

DC 4-Wire Weld Field Immune page 2-133

AC/DC 2-Wire General Purpose & Weld Field Immune page 2-134

Accessories

Cordsets page 8-1

Mounting Kit page 2-216

Limit Switch Style Mounting Bracket page 2-217

PTFE Covers page 2-218

General Information

Metric/English Conversion Chart page 14-6

871P VersaCube™ 3-Wire DC

General Purpose, Weld Field Immune & ToughCoat Finish™



871P DC
Micro Quick-Disconnect Style



871P DC Mini
Quick-Disconnect Style

Features

- New rugged housing
- Weld field immune models
- ToughCoat Finish[Ⓢ] resists weld-splatter accumulation
- Convenient mounting base
- 3-wire operation
- 4-pin connection
- 10...60V DC
- Normally open or normally closed output
- Short circuit, overload, false pulse, transient noise, and reverse polarity protection
- UL Listed, cUL Certified and CE Marked for all applicable directives

Specifications

	General Purpose	Weld Field Immune
Load Current	≤200 mA	≤200 mA
Leakage Current	≤10 μA	≤10 μA
Operating Voltage	10...60V DC	10...60V DC
Voltage Drop	<2.5V @ 200 mA	<2.5V @ 200 mA
Repeatability	≤5%	≤10% of effective operating distance
Hysteresis	5% typical	12% typical
False Pulse Protection	Incorporated	Incorporated
Transient Noise Protection	Incorporated	Incorporated
Short Circuit Protection	Incorporated	Incorporated
Overload Protection	Incorporated	Incorporated
Reverse Polarity Protection	Incorporated	Incorporated
Weld Field Immunity	N/A	1000 Gauss [Ⓢ]
Connections	Quick-Disconnect: 4-pin mini style 4-pin micro style	Quick-Disconnect: 4-pin mini style 4-pin micro style
Certifications	UL Listed, cUL Certified and CE Marked for all applicable directives	
Enclosure	NEMA 1, 2, 3, 4, 6, 6P, 12, 13; IP67 (IEC 529), 1200 psi (8270 kPa) washdown; Plastic body, zinc base; micro connector versions also meet IP69K (IEC 529)	
LED	Orange: Output Energized Green: Power	
Operating Temperature [C (F)]	-25...+70° (-13...+158°)	
Shock	30 g, 11 ms	
Vibration	55 Hz, 1 mm amplitude, 3 planes	

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

[Ⓢ] Measured with field perpendicular to face.

[Ⓢ] 871P VersaCube is now being offered with ToughCoat Finish on the sensor face. This is a proprietary epoxy-based material which resists the adhesion and accumulation of weld-slag particles thereby improving and extending sensor performance.

Product Selection

Head Size	Weld Field Immune	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.			
							Mini QD Style	Micro QD Style		
40 mm	N	20 (0.79)	Y	N.O.	PNP	100	871P-D20NP40-N4	871P-D20NP40-D4		
					NPN		871P-D20NN40-N4	871P-D20NN40-D4		
				N.C.	PNP		871P-D20CP40-N4	871P-D20CP40-D4		
					NPN		871P-D20CN40-N4	871P-D20CN40-D4		
		40 (1.57)	N	N.O.	PNP		871P-D40NP40-N4 ①	871P-D40NP40-D4 ①		
					NPN		871P-D40NN40-N4 ①	871P-D40NN40-D4 ①		
				N.C.	PNP		871P-D40CP40-N4 ①	871P-D40CP40-D4 ①		
					NPN		871P-D40CN40-N4 ①	871P-D40CN40-D4 ①		
	Y	15 (0.59)	Y	N.O.	PNP	50	871P-DW15NP40-N4	871P-DW15NP40-D4		
					NPN		871P-DW15NN40-N4	871P-DW15NN40-D4		
				N.C.	PNP		871P-DW15CP40-N4	871P-DW15CP40-D4		
					NPN		871P-DW15CN40-N4	871P-DW15CN40-D4		
				20 (0.59)	N.O.		PNP	—	871P-DW20NP40-D4	
							NPN	871P-DW25NP40-N4	871P-DW25NP40-D4	
		25 (0.79)	N	N.O.	PNP		871P-DW25NN40-N4	871P-DW25NN40-D4		
					NPN		871P-DW25CP40-N4	871P-DW25CP40-D4		
				N.C.	PNP		871P-DW25CN40-N4	871P-DW25CN40-D4		
					NPN		—	871P-DV15NP40-D4		
				15 (0.59)	Y		N.O.	PNP	—	871P-DV20NP40-D4
								NPN	—	871P-DV25NP40-D4
PNP	—	871P-DV25NP40-D4								
20 (0.59)	N	N.O.	PNP	—	871P-DV25NP40-D4					
			NPN	—	871P-DV25NP40-D4					
			PNP	—	871P-DV25NP40-D4					
25 (0.79)	N	N.O.	PNP	—	871P-DV25NP40-D4					
			NPN	—	871P-DV25NP40-D4					
			PNP	—	871P-DV25NP40-D4					
Recommended Standard QD Cordset (-6F = 1.8m (6ft), -2 = 2m (6.5ft))							889N-F4AFC-6F	889D-F4AC-2		

- ① Assured operating distance for general purpose unshielded models is 0...33 mm.
- ② 871P VersaCube is now being offered with ToughCoat Finish on the sensor face. This is a proprietary epoxy-based material which resists the adhesion and accumulation of weld-slag particles thereby improving and extending sensor performance.

QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Kit ③	2-216
Limit Switch Style Mounting Brackets	2-217
PTFE Covers	2-218

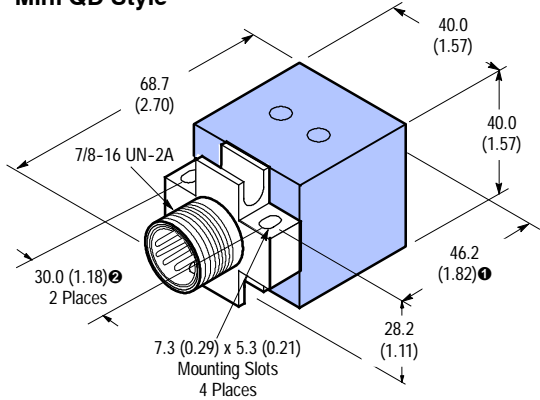
- ③ Each mounting kit includes a ground lug, a ground screw, and an optional adaptor for competitive retrofits.

871P VersaCube™ 3-Wire DC

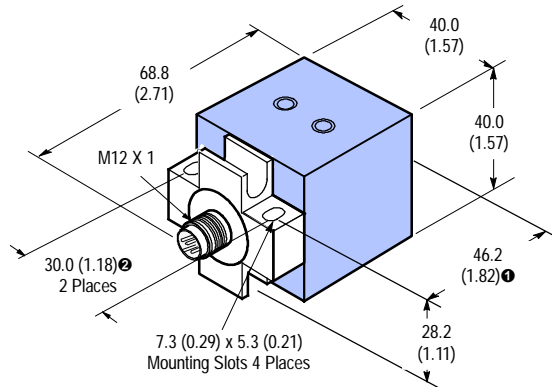
General Purpose, Weld Field Immune & ToughCoat Finish™

Approximate Dimensions [mm (in.)]

Mini QD Style



Micro QD Style



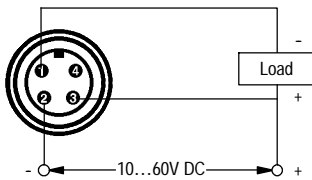
- ❶ With retrofit adaptor, distance from face to mounting holes becomes 60.0 (2.36).
- ❷ With retrofit adaptor, spacing between mounting holes becomes 20.0 (0.79).

Wiring Diagrams

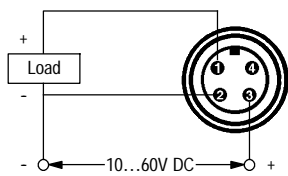
Mini QD Style

Normally Open or Normally Closed

NPN (Sinking)



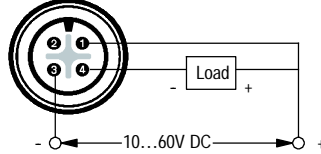
PNP (Sourcing)



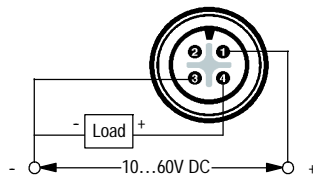
Micro QD Style

Normally Open or Normally Closed

NPN (Sinking)



PNP (Sourcing)



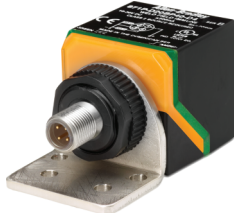
ATTENTION



Unit must be mounted to a grounded metal frame or grounded via field wiring lug per NEC requirements. Recommended grounding lug is available in Allen-Bradley mounting kit 871A-PKIT.



871P DC Micro Quick-Disconnect Style
(Standard Zinc Mounting Bracket)



871P DC Micro Quick-Disconnect Style
(Optional Stainless Steel Mounting L-Bracket)

Features

- Increased range for unshielded sensor partially embedded or with one side against metal
- Two piece design (housing and bracket) with multiple mounting options
- Sensing face can be established in five different positions
- Equal Sensing: Factor-1 sense all metals at same distance
- Shielded (20 mm) sensing and unshielded (40 mm) sensing models
- Complimentary NO and NC outputs
- Highly visible status indicators
- Margin indication for signal strength
- IP67, IP68, and IP69K enclosure ratings

Specifications

Load Current	≤200 mA from -25...+50 °C (-13...+122 °F) ≤100 mA from 50...70 °C (122...158 °F)
Leakage Current	≤10 μA
Operating Voltage	10...30V DC
Voltage Drop	<2.5V @ 200 mA
Repeatability	≤10%
Hysteresis	10% typical
Protection Type	False pulse, transient noise, short circuit, overload, and reverse polarity
Weld Field Immunity	1000 Gauss
Certifications	cULus Listed and CE Marked for all applicable directives
Enclosure Type Rating	NEMA 1, 2, 3, 4, 6, 6P, 12, 13; IP67 (IEC 529), IP68, IP69k, 1200psi (8270kPa) wash-down; Plastic body, zinc bracket, optional stainless steel L-bracket
Connection Type	Quick Disconnect: 4-pin micro style
Indicator LEDs	Power: Green Output energized: Amber Margin indication: Amber flashing (target within 80...100% of operating distance) Short circuit or overload: Green and amber flashing
Operating Temperature [C (F)]	-25...+70 ° (-13...+158 °)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Note: Bul. 871P VersaCube is offered with ToughCoat Weld Slag Finish on the sensor face. This is a proprietary epoxy-based material which resists the adhesion and accumulation of weld-slag particles thereby improving and extending sensor performance.

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	1.0
Brass	1.0
Aluminum	1.0
Copper	1.0

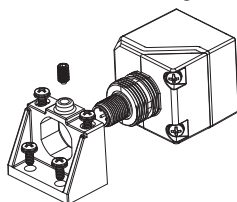
Inductive Proximity Sensors 871P VersaCube™ 4-Wire DC

General Purpose, Equal Sensing, Weld Field Immune/ToughCoat™ Finish

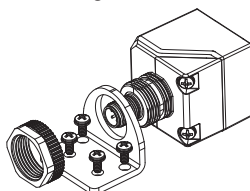
Product Selection

Head Size	Weld Field Immune	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.	
							Micro QD Style	
							With Standard Zinc Mounting Bracket	Mounting Bracket Not Included
40 mm	Yes	20 (0.79)	Yes	N.O. and N.C.	PNP	40	871P-D20BP40-D4	871P-D20BP40X-D4
					NPN		871P-D20BN40-D4	871P-D20BN40X-D4
		40 (1.57)	No	N.O. and N.C.	PNP	40	871P-D40BP40-D4	871P-D40BP40X-D4
					NPN		871P-D40BN40-D4	871P-D40BN40X-D4
	Yes ToughCoat Weld Slag Finish	20 (0.79)	Yes	N.O. and N.C.	PNP	40	871P-DV20BP40-D4	871P-DV20BP40X-D4
					NPN		871P-DV40BP40-D4	871P-DV40BP40X-D4
Recommended Standard QD Cordset (-2 = 2 m (6.5 ft))							889D-F4AC-2	

Standard Zinc Mounting Bracket



Optional Stainless Steel Mounting L-Bracket (see Mounting Accessories below)



Mounting Accessories

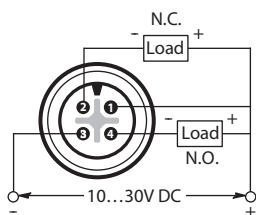
Description	Cat. No.
Standard zinc mounting bracket	871A-PBR
Stainless steel mounting L-bracket and 22 mm plastic mounting nut	871A-BRS59
Plastic mounting nut, 22 mm	871T-N9

Typical Wiring Diagrams

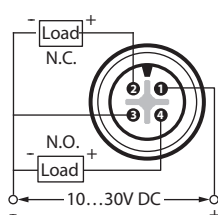
Micro QD Style

Complementary Normally Open and Normally Closed

NPN (Sinking)



PNP (Sourcing)



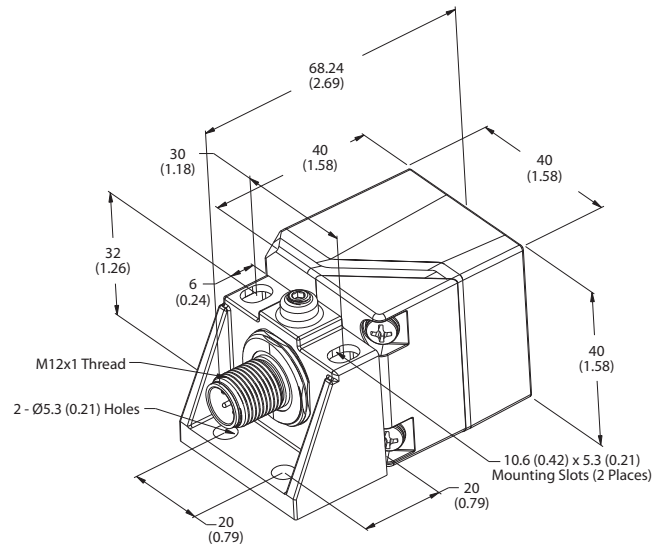
Inductive Proximity Sensors 871P VersaCube™ 4-Wire DC

General Purpose, Equal Sensing, Weld Field Immune/ToughCoat™ Finish

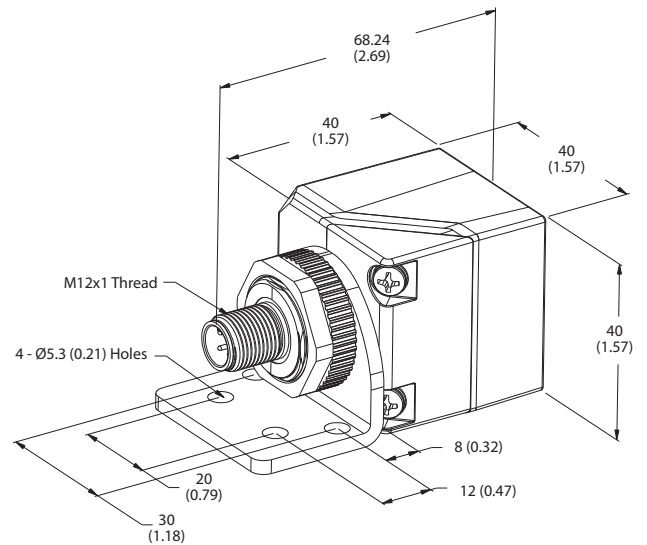
Approximate Dimensions [mm (in.)]

Dimensions are not intended to be used for installation purposes.

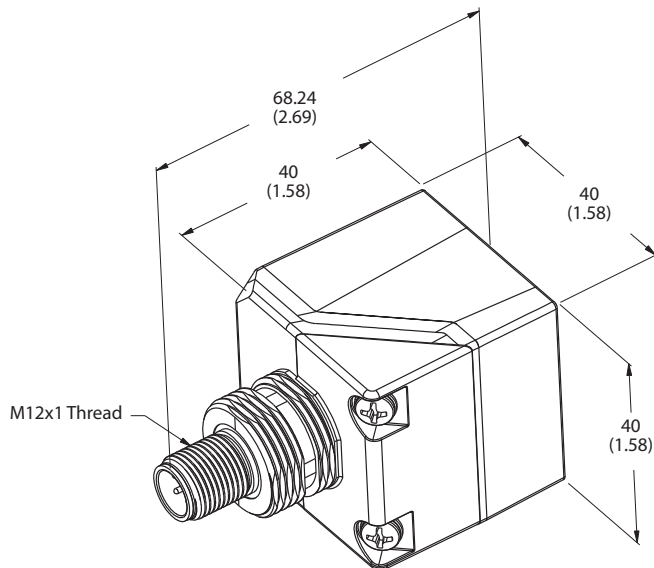
Zinc Bracket



L-Bracket



No Bracket





871P AC/DC General Purpose
Micro Quick-Disconnect Style

Features

- New rugged housing
- Burn and weld-slag resistant body on weld field immune models
- Convenient mounting base
- 2-wire operation
- 3-pin connection
- 20...250V AC/DC
- Normally open or normally closed output
- Weld-field immune models
- Short circuit, overload, false pulse, and transient noise protection
- UL Listed, cUL Certified and CE Marked for all applicable directives

Specifications

	General Purpose	Weld Field Immune
Load Current	2...100 mA	2...300 mA
Inrush Current (1 cycle)	≤ 2 A	≤ 2 A
Leakage Current	≤1.5 mA @ 20V ≤1.7 mA @ 120V ≤2.0 mA @ 250V	≤1.5 mA@20V ≤1.7 mA@120V ≤2.0 mA@250V
Operating Voltage	20...250V AC/DC	20-250V AC/DC
Voltage Drop	<10V	<10V
Repeatability	≤10% of effective operating distance	≤10% of effective operating distance
Hysteresis	12% typical	12% typical
False Pulse Protection	Incorporated	Incorporated
Transient Noise Protection	Incorporated	Incorporated
Short Circuit Protection	Incorporated	Incorporated
Overload Protection	Incorporated	Incorporated
Weld-Field Immunity	N/A	1000 Gauss ①
Certifications	UL Listed, cUL Certified and CE Marked for all applicable directives	
Enclosure	NEMA 1, 2, 3, 4, 6, 6P, 12, 13; IP67 (IEC529), 1200 psi (8270 kPa) washdown; Plastic body, zinc base; micro connector versions also meet IP69K (IEC 529)	
Connections	Quick-Disconnect: 3-pin mini style 3-pin micro style	
LED	Red: Output Energized Green: Power (short circuit if flashing)	
Operating Temperature	-25...+70° (-13...+158°)	
Shock	30 g, 11 ms	
Vibration	55 Hz, 1 mm amplitude, 3 planes	

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

① Measured with field perpendicular to sensing face.

Product Selection

Head Size	Weld Field Immune	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.		
						Mini QD Style	Micro QD Style	
40 mm	N	20 (0.79)	Y	N.O.	30	871P-B20N40-N3	871P-B20N40-R3	
				N.C.		871P-B20C40-N3	871P-B20C40-R3	
		40 (1.57)	N	N.O.	20	871P-B40N40-N3 ①	871P-B40N40-R3 ①	
				N.C.		871P-B40C40-N3 ①	871P-B40C40-R3 ①	
	Y	15 (0.59)	Y	N.O.	30	871P-BW15N40-N3	871P-BW15N40-R3	
				N.C.		871P-BW15C40-N3	871P-BW15C40-R3	
		25 (0.98)	N	N.O.	20	871P-BW25N40-N3	871P-BW25N40-R3	
				N.C.		871P-BW25C40-N3	871P-BW25C40-R3	
			Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))				889N-F3AFC-6F	889R-F3ECA-2

① Assured operating distance for general purpose unshielded models is 0...33 mm (0...1.3 in.).

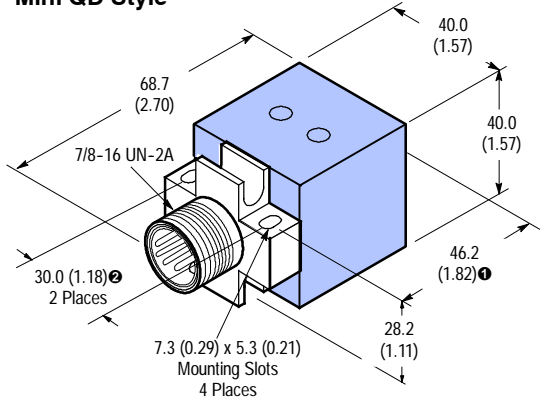
QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Mounting Kit ②	2-216
Limit Switch Style Mounting Brackets	2-217
PTFE Covers	2-218

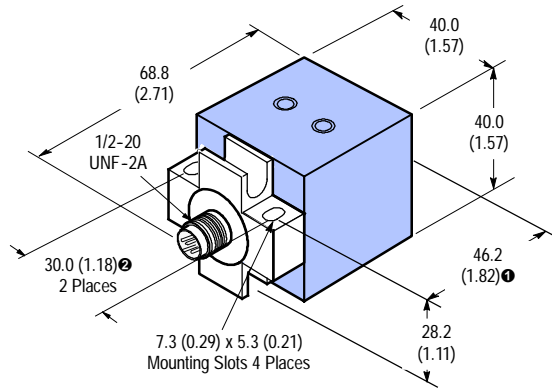
② Each mounting kit includes a ground lug, a ground screw, and an optional adaptor for competitive retrofits.

Approximate Dimensions [mm (in.)]

Mini QD Style



Micro QD Style

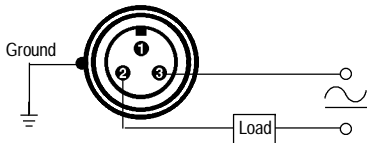


- ❶ With retrofit adaptor, distance from face to mounting holes becomes 60.0 (2.36).
- ❷ With retrofit adaptor, spacing between mounting holes becomes 20.0 (0.79).

Wiring Diagrams

Mini QD Style

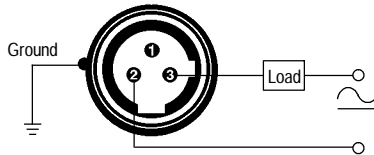
Normally Open or Normally Closed



Note: Load can be switched to pin 3.

Micro QD Style

Normally Open or Normally Closed



Note: Load can be switched to pin 2.

ATTENTION



Unit must be mounted to a grounded metal frame or grounded via field wiring lug per NEC requirements. Recommended grounding lug is available in Allen-Bradley mounting kit **871A-PKIT**. This kit is included with all weld field immune models.



Description

Bulletin 871F inductive flat pack and block style proximity sensors are self-contained, solid state devices. These devices are designed for most applications where it is required to sense the presence of ferrous and nonferrous metal objects without touching them.

The body material is either plastic (flat pack) or aluminum (block) and meets NEMA 1, 2, 3, 4, 6, 6P, 12 and 13, IP67 (IEC529), 1200 psi (8270 kPa) washdown enclosure standards (871F only). The electronic circuitry is potted for protection against shock, vibration, and contamination.

Connection options include a micro and mini quick-disconnect, ToughLink™ and PVC cable models, and both 1/2-14 NPT and PG13.5 conduit opening with screw terminals.

Features

- Cable, conduit, or quick-disconnect styles
- Short circuit protection
- Overload protection
- Transient noise protection
- False pulse protection
- Reverse polarity protection (DC models)
- CE Marked for all applicable directives

Styles

DC 4-Wire Complementary Output Flat Pack	page 2-138
DC Weld Field Immune	page 2-141
AC/DC 2-Wire Flat Pack	page 2-143
AC/DC 2-Wire Flat Pack Weld Field Immune	page 2-146
AC/DC 2-Wire Weld Field Immune	page 2-148
DC 3-Wire Block	page 2-150

Accessories

Cordsets	page 8-1
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General Information

Metric/English Conversion Chart	page 14-6
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871F 4-Wire DC Complementary Output

Flat Pack Style



871F DC Mini
Quick-Disconnect Style



871F DC Micro
Quick-Disconnect Style

Features

- 4-wire operation
- 4-pin or 4-terminal connection
- 10...30V DC
- Complementary normally open and normally closed outputs
- False pulse, transient noise, reverse polarity, short circuit, and overload protection
- cULus Listed and CE Marked for all applicable directives
- DIN Rail mounting option on quick-disconnect and cable models

Specifications

Load Current, Max.	200 mA
Load Current, Min.	1 mA
Leakage Current	≤10 μA
Operating Voltage	10...30V DC
Voltage Drop	≤2.5V
Repeatability	≤2%
Hysteresis	≤5% typical
Protection Type	False pulse, transient noise, reverse polarity, short circuit, overload
Certifications	cULus Listed and CE Marked for all applicable all directives
Enclosure Type Rating	NEMA 1, 2, 3, 4, 6, 6P, 12 and 13; IP67 (IEC529), 1200 psi (8270 kPa) washdown; micro connector versions also meet IP69K (IEC529)
Connection Type	Quick-Disconnect: 4-pin mini, 4-pin micro; Conduit Opening: 1/2 - 14NPT thread, PG 13.5 thread
LED	Green: Power, Orange: Output Energized
Operating Temperature [C (F)]	-25...+70 ° (-13...+158 °)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

Inductive Proximity Sensors

871F 4-Wire DC Complementary Output

Flat Pack Style

Product Selection

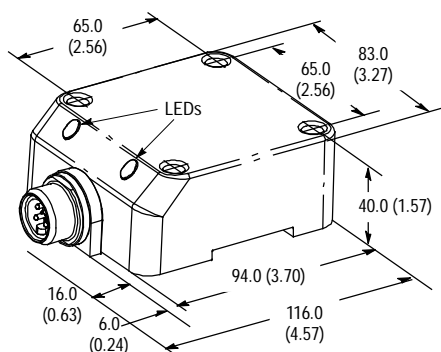
Head Size [mm (in.)]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.			
						Mini QD Style	Micro QD Style	Conduit 1/2 NPT	Conduit PG13.5
83 (3.27)	50 (1.97) ★	Yes	N.O. and N.C.	PNP	100	871F-P50BP80-N4	871F-P50BP80-D4	871F-P50BP80-T4	871F-P50BP80-Q4
				NPN		871F-P50BN80-N4	871F-P50BN80-D4	871F-P50BN80-T4	871F-P50BN80-Q4
	No	PNP		871F-N65BP80-N4		871F-N65BP80-D4	871F-N65BP80-T4	871F-N65BP80-Q4	
		NPN		871F-N65BN80-N4		871F-N65BN80-D4	871F-N65BN80-T4	871F-N65BN80-Q4	
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))						889N-F4AFC-6F	889D-F4AC-2	—	—

★ Must be fully embedded in mild steel to achieve maximum sensing distance.



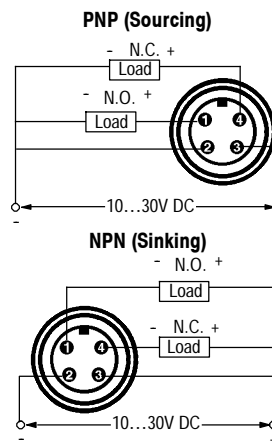
Approximate Dimensions [mm (in.)]

Mini QD Style



Wiring Diagram

Complementary Normally Open and Normally Closed Outputs

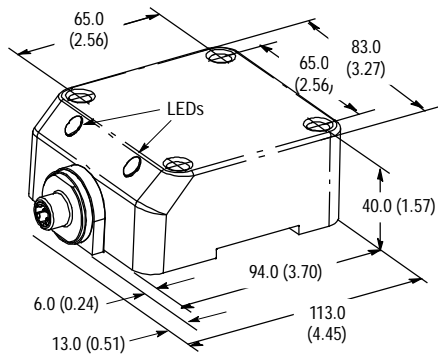


871F 4-Wire DC Complementary Output

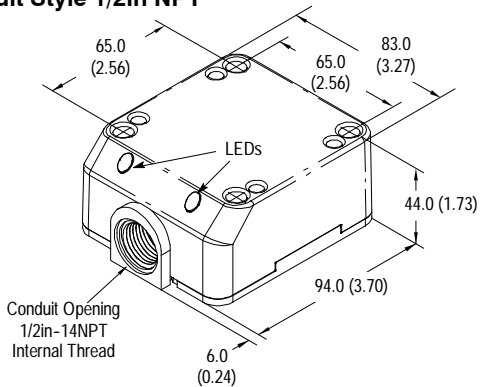
Flat Pack Style

Approximate Dimensions [mm (in.)]

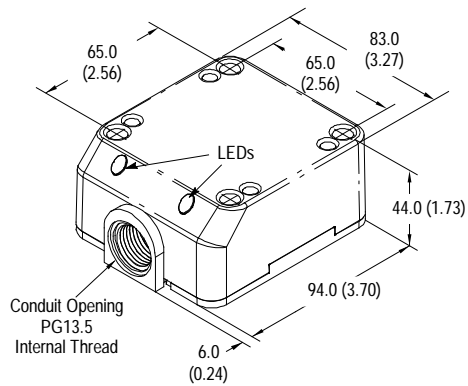
Micro QD Style



Conduit Style 1/2in NPT



Conduit Style PG13.5

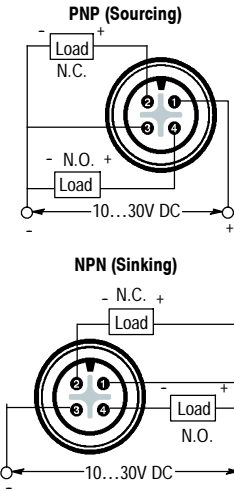


QD Cordsets and Accessories

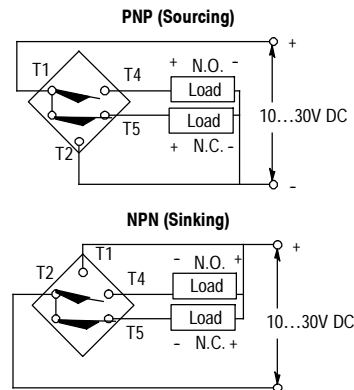
Description	Page Number
Other Cordsets Available	8-2

Wiring Diagram

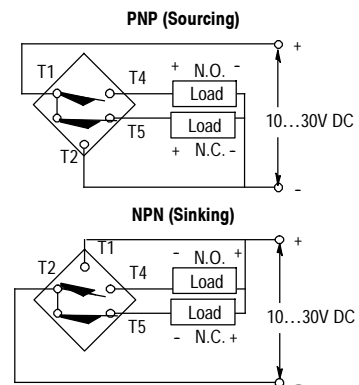
Complementary Normally Open and Normally Closed



Complementary Normally Open and Normally Closed Outputs



Complementary Normally Open and Normally Closed Outputs





*871F DC Mini
Quick-Disconnect Style*



*871F DC Micro
Quick-Disconnect Style*

Features

- 4-wire operation
- 4-pin, 4-conductor or 4-terminal connection
- 10...30V DC
- Complementary normally open and normally closed outputs
- False pulse, transient noise, reverse polarity, short circuit and overload protection
- UL Listed, cUL Certified and CE Marked for all applicable directives
- DIN rail mounting option on quick-disconnect
- Weld field immune

Specifications

Load Current	≤200 mA
Minimum Load Current	1 mA
Leakage Current	≤10 μA
Operating Voltage	10...30V DC
Voltage Drop	≤2.5V
Repeatability	≤5%
Hysteresis	≤5% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Reverse Polarity Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
Weld Field Immunity	1600 Gauss
Certifications	UL Listed, cUL Certified and CE Marked for all applicable all directives
Enclosure	NEMA 1, 2, 3, 4, 6, 6P, 12 and 13, IP67 (IEC529), 1200 psi (8270 kPa) washdown; Housing material: Valox®; micro connector versions also meet IP69K (IEC529)
Connections	Quick Disconnect: 4-pin mini style 4-pin micro style
LEDs	Green: Power Orange: Output Energized
Operating Temperature [C (F)]	-25...+70° (-13...+158°)
Shock	5 g
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

871F DC Weld Field Immune

Flat Pack Style

Product Selection

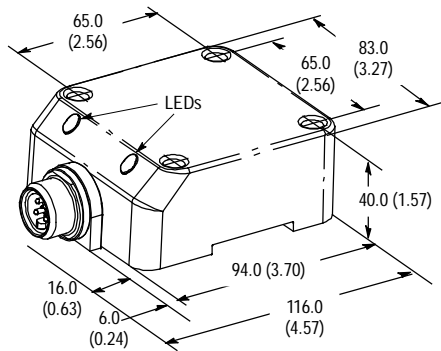
Head Size	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.	
					Mini QD Style	Micro QD Style
83 (3.27)	40 (1.57) ★	Y	N.O. and N.C.	15	871F-PW40BP80-N4	871F-PW40BP80-D4
					871F-PW40BN80-N4	871F-PW40BN80-D4
	50 (1.97)	N			871F-NW50BP80-N4	871F-NW50BP80-D4
					871F-NW50BN80-N4	871F-NW50BN80-D4
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))					889N-F4AFC-6F	889D-F4WE-2

★ Must be fully embedded in mild steel to achieve maximum sensing distance.

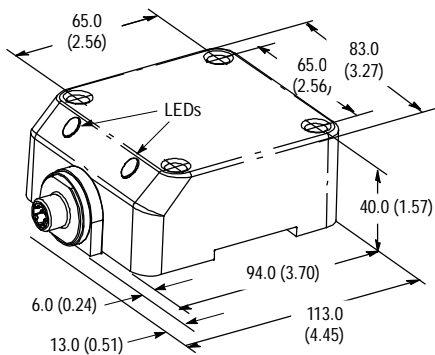


Approximate Dimensions [mm (in.)]

Mini QD Style

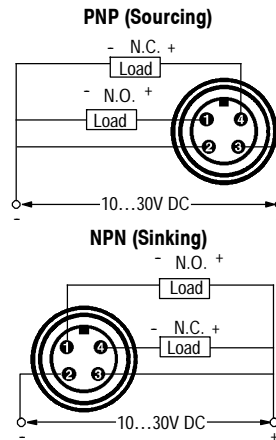


Micro QD Style

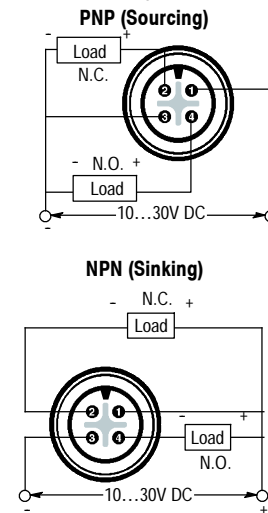


Wiring Diagram

Complementary Normally Open and Normally Closed Outputs



Complementary Normally Open and Normally Closed





871F AC/DC Cable Style

871F AC/DC Mini
Quick-Disconnect Style871F AC/DC Micro
Quick-Disconnect Style

Specifications

Load Current, Max.	100 mA
Load Current, Min.	5 mA
Leakage Current	≤1.7 mA @ 120V; ≤2.0 mA @ 250V
Operating Voltage	20...250V AC/DC
Voltage Drop	≤10V
Repeatability	≤5%
Hysteresis	≤10% typical
Protection Type	False pulse, transient noise, short circuit, overload
Certifications	cULus Listed and CE Marked for all applicable all directives
Enclosure Type Rating	NEMA 1, 2, 3, 4, 6, 6P, 12 and 13, IP67 (IEC529), 1200 psi (8270 kPa) washdown; micro connector versions also meet IP69K (IEC529)
Connection Type	Cable: 2 m (6.5 ft), 2-conductor #22 AWG ToughLink; Quick-Disconnect: 3-pin mini style, 3-pin micro style; Conduit Opening: 1/2 - 14NPT thread, PG 13.5 thread
LED	Green: Power, Orange: Output Energized
Operating Temperature [C (F)]	-25...+70 ° (-13...+158 °)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

Features

- 2-wire operation
- 2 conductor, 2 terminal, or 3-pin connection
- 20...250V AC/DC
- False pulse, transient noise, short circuit, and overload protection
- cULus Listed and CE Marked for all applicable directives
- DIN Rail mounting option on quick-disconnect and cable models

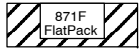
871F 2-Wire AC/DC

Flat Pack Style

Selection Guide

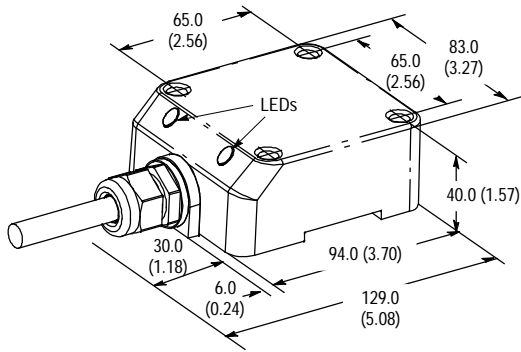
Head Size	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.				
					ToughLink™ Cable	Mini QD Style	Micro QD Style	Conduit 1/2 NPT	Conduit PG13.5
83 (3.27)	50 (1.97) 1	Y	N.O.	10	871F-R50N80-C2	871F-R50N80-N3	871F-R50N80-R3	871F-R50N80-T2	871F-R50N80-Q2
	65 (2.56)	N			871F-K65N80-C2	871F-K65N80-N3	871F-K65N80-R3	871F-K65N80-T2	871F-K65N80-Q2
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))					889N-F3AFC-6F	889R-F3ECA-2	—	—	—

1 50 mm when fully embedded in mild steel as shown

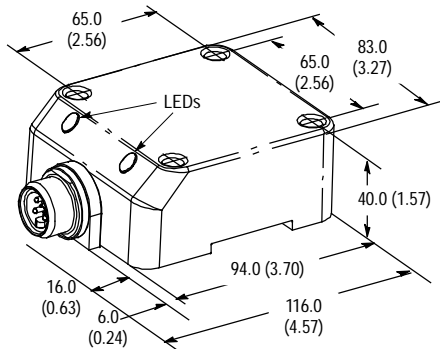


Approximate Dimensions [mm (in.)]

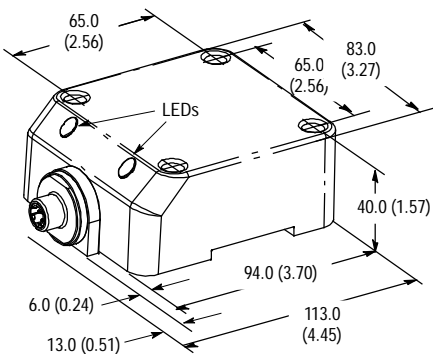
Cable Style



Mini QD Style

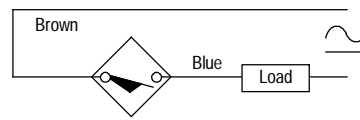


Micro QD Style



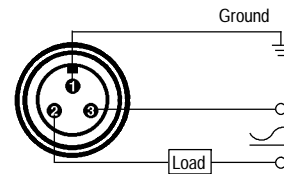
Wiring Diagram

Normally Open



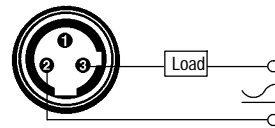
Note: Load can be switched to brown wire.

Normally Open



Note: Load can be switched to pin 3.

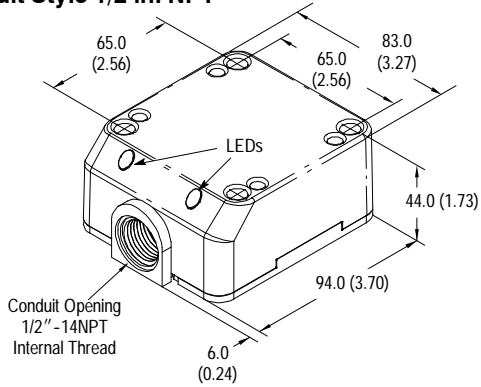
Normally Open



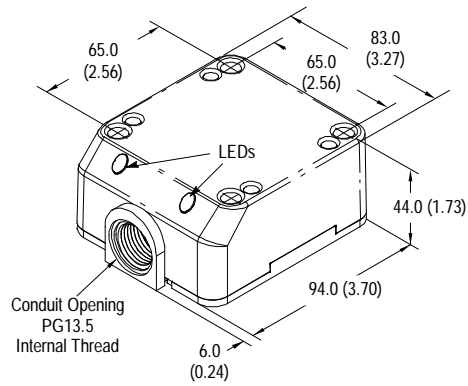
Note: Load can be switched to pin 2.

Approximate Dimensions [mm (in.)]

Conduit Style 1/2 in. NPT

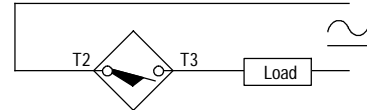


Conduit Style PG13.5



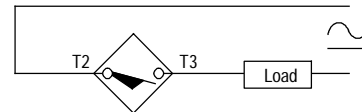
Wiring Diagram

Normally Open



Note: Load can be switched to terminal 2.

Normally Open



Note: Load can be switched to terminal 2.

QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	8-2

871F 2-Wire AC/DC Weld Field Immune

Flat Pack Style



871F AC/DC WFI Micro
Quick-Disconnect Style

Features

- Weld Field Immune
- 2-wire operation
- 20...250V AC/DC
- False pulse, transient noise, short circuit and overload protection
- UL Listed, cUL Certified and CE Marked for all applicable directives
- DIN rail mountable option on quick-disconnect and cable models

Specifications

Load Current	≤100 mA
Minimum Load Current	5 mA
Leakage Current	≤1.7 mA @ 120V; ≤2.0 mA @ 250V
Operating Voltage	20...250V AC/DC
Voltage Drop	≤10V
Repeatability	≤5%
Hysteresis	10% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
Certifications	UL Listed, cUL Certified and CE Marked for all applicable all directives
Enclosure	NEMA 1, 2, 3, 4, 6, 6P, 12 and 13, IP67 (IEC529), 1200 psi (8270 kPa) washdown; Housing material: Valox®; micro connector versions also meet IP69K (IEC529)
Connections	Quick Disconnect: 3-pin micro style
LEDs	Green: Power Red: Output Energized
Operating Temperature [C (F)]	-25...+70° (-13...+158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes
Weld Field Immunity	1600 Gauss

Correction Factors

Target Material	Correction Factor	
	Shielded	Unshielded
Steel	1.0	1.0
Stainless Steel	0.7...0.8	0.7...0.8
Brass	0.5...0.6	0.4...0.5
Aluminum	0.4...0.5	0.4...0.5
Copper	0.4...0.5	0.4...0.5

QD Cordsets

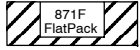
Description	Page Number
Other Cordsets Available	8-2

Inductive Proximity Sensors
871F 2-Wire AC/DC Weld Field Immune
 Flat Pack Style

Product Selection

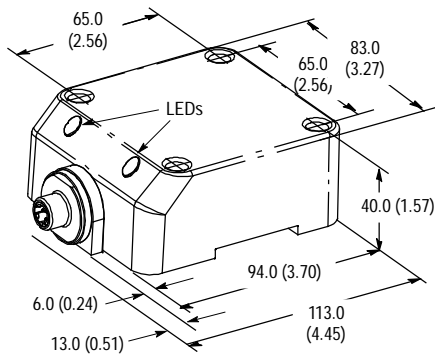
Head Size	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No. Micro QD Style
83 (3.27)	40 (1.57) 1	Y	N.O.	10	871F-JW40N80-R3
	50 (1.97)	N	N.O.	10	871F-KW50N80-R3
Recommended Standard QD Cordset (-2 = 2 m (6.5 ft))					889R-F3WEA-2

1 40 mm when fully embedded in mild steel as shown

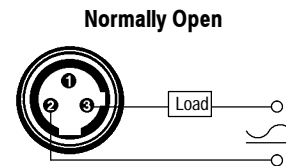


Approximate Dimensions [mm (in.)]

Micro QD Style



Wiring Diagram



Note: Load can be switched to pin 2.

871F 2-Wire AC/DC Weld Field Immune



871F AC/DC Mini and Micro
Quick-Disconnect Style

Description

Bulletin 871F inductive proximity sensors are self-contained, solid-state devices designed to sense the presence of ferrous and nonferrous metal objects without touching them. These special weld-field immune models are ideal for welding environments and other applications where large magnetic fields are present. They are rated for reliable operation at a 1 in distance from a current in line carrying 20,000A. ❶

Each sensor is housed by an aluminum body which meets NEMA 4, 13, and IP67 (IEC529) enclosure standards. It is equipped with a green LED to indicate power and an orange LED which lights when the output is energized.

Features

- 2-wire operation
- 3-pin connection
- 20...250V AC/DC
- Normally open output
- Weld field immune
- Short circuit, false pulse and transient noise protection
- CE Marked for all applicable directives

❶ This distance varies with current line amperage. See page 2-9 of the Introduction section to determine the minimum distance for your application.

Specifications

Load Current	≤400 mA
Minimum Load Current	3 mA
Inrush Current (1 cycle)	≤8 A
Leakage Current	≤1.5 mA
Operating Voltage	20...250V AC/DC
Voltage Drop	≤5V
Repeatability	≤10%
Hysteresis	≤15% typical
Short Circuit Protection	Incorporated
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Weld Field Immunity	20,000A at 1 inch
Certifications	CE Marked for all applicable directives
Enclosure	NEMA 4 and 13, IP67 (IEC529) Aluminum body, PTFE sensing area
Connections	Quick-Disconnect: 3-pin mini style 3-pin micro style
LEDs	Green: Power Orange: Output Energized
Operating Temperature [C (F)]	-25...+70° (-13...+158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

Product Selection

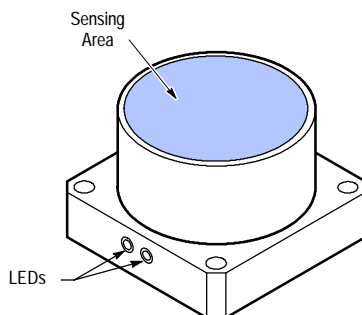
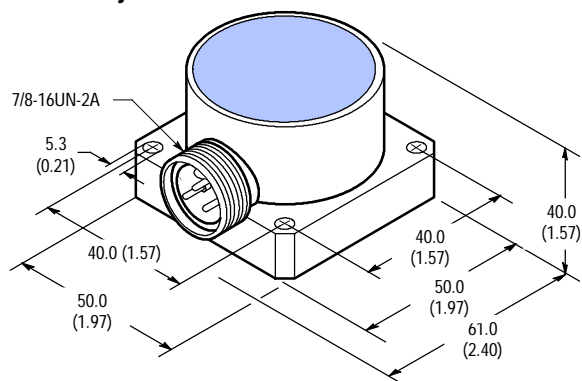
Head Size	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.	
					Mini QD Style	Micro QD Style
50	20 (0.79)	Y	N.O.	15	871F-BW20N50-N3	871F-BW20N50-R3
Recommended Standard QD Cordset (-2 = 2 m (6.5 ft), -6F = 1.8 m (6 ft))					889N-F3AFC-6F	889R-F3WEA-2

QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	8-2

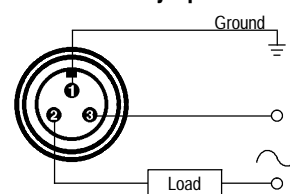
Approximate Dimensions [mm (in.)]

Mini QD Style



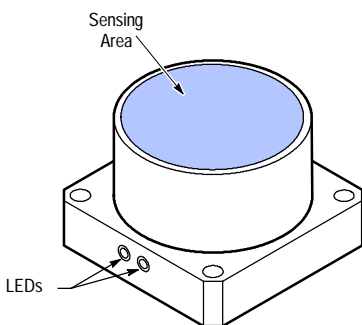
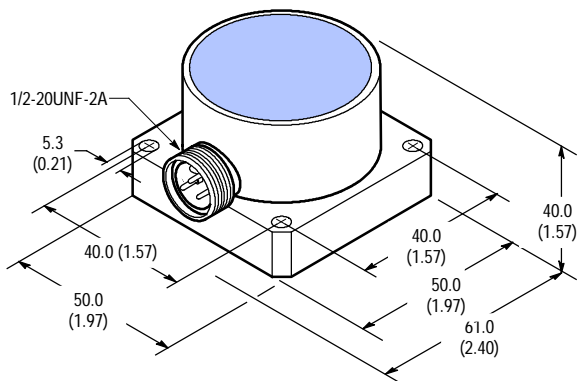
Wiring Diagram

Normally Open

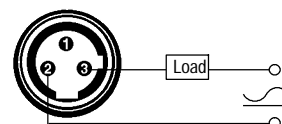


Note: Load can be switched to pin 3.

Micro QD Style



Normally Open



Note: Load can be switched to pin 2.

871F 3-Wire DC

Block Style



871F DC Cable Style



871F DC Micro
Quick-Disconnect Style

Features

- 3-wire operation
- 3-conductor or 4-pin connection
- 10...30V DC
- Normally open output
- False pulse, transient noise, reverse polarity, short circuit and overload protection
- CE Marked for all applicable directives

Specifications

Load Current	≤400 mA
Minimum Load Current	1 mA
Leakage Current	≤10 μA
Operating Voltage	10...30V DC
Voltage Drop	≤2.4V
Repeatability	≤10%
Hysteresis	≤15% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Reverse Polarity Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
Certifications	CE Marked for all applicable directives
Enclosure	NEMA 1, 2, 3, 4, 12, 13, IP67 (IEC529) Aluminum Body
Connections	Cable: 2 m (6.5 ft) length 3-conductor PVC Quick-Disconnect: 4-pin micro style
LED	Orange: Output Energized
Operating Temperature [C (F)]	-25...+70° (-13...+158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

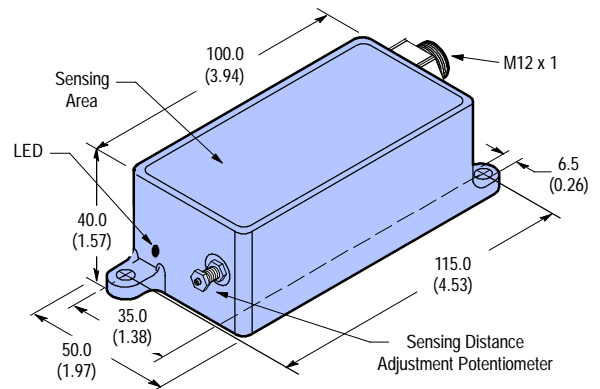
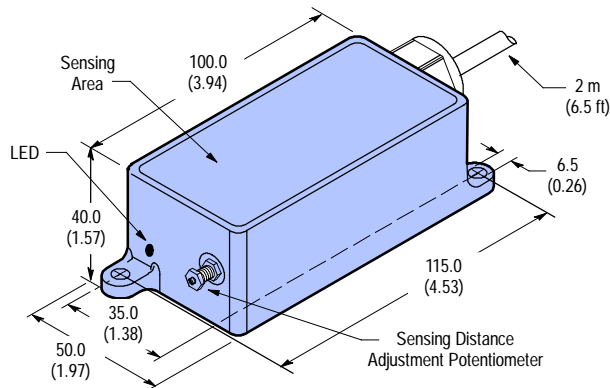
Product Selection

Head Size	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.	
						Cable Style	Micro QD Style
50	70 (2.76)	N	N.O.	NPN	300	871F-D70NN50-E2	871F-D70NN50-D4
				PNP		871F-D70NP50-E2	871F-D70NP50-D4
Recommended Standard QD Cordset (-2 = 2 m (6.5 ft))							889D-F4AC-2

QD Cordsets and Accessories

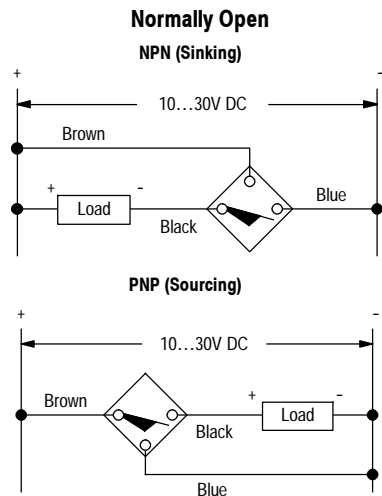
Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2

Approximate Dimensions [mm (in.)]

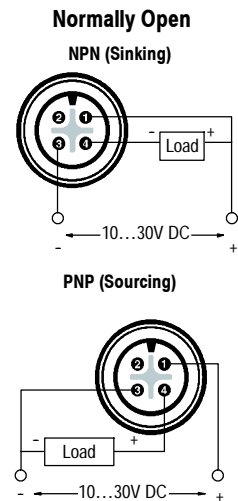


Wiring Diagrams

Cable Style



Micro QD Style





Description

Bulletin 871L and 872L inductive proximity sensors are self-contained, general purpose, solid state devices designed to sense the presence of metal objects (ferrous and nonferrous) without touching them.

These devices provide mounting interchangeability, easily-wired terminations and rugged construction. The adjustable head can be positioned for top or side sensing. In side-sensing applications, the head can be rotated in 22.5° increments and locked in any of 16 positions.

These sensors are available with a 1/2-14NPT conduit opening, mini quick-disconnect, or micro quick-disconnect.

Features

- 17 sensing head positions (1 top, 16 sides)
- Conduit or quick-disconnect styles
- Short circuit protection (DC only)
- Overload protection
- Transient noise protection
- False pulse protection
- Reverse polarity protection
- Selectable normally open or normally closed output
- CE Marked for all applicable directives

Styles

DC 3-Wire	page 2-154
AC 2-Wire	page 2-156
AC/DC 2-Wire	page 2-156

Accessories

Cordsets	page 8-1
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General Information

Metric/English Conversion Chart	page 14-6
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Inductive Proximity Sensors
871L & 872L 3-Wire DC
Limit Switch Style



871L & 872L DC
Mini Quick-Disconnect Style



871L & 872L DC
Micro Quick-Disconnect Style



871L & 872L DC
Conduit Style

Features

- 3-wire operation
- 3-terminal or 4-pin connection
- 10...60V DC for 871L models
- 10...30V DC for 872L models
- Switch selectable normally open or normally closed output on 871L models
- Normally open or normally closed outputs programmable via jumper on 872L models
- Alignment LED on 871L models
- False pulse, transient noise, reverse polarity, short circuit and overload protection
- cULus and CE Marked for all applicable directives

Specifications

	871L Models	872L Models
Load Current	≤400 mA	≤120 mA
Leakage Current	≤10 μA	≤10 μA
Operating Voltage	10...60V DC	10...30V DC
Voltage Drop	≤2.4V	≤2.5V
Repeatability	≤5%	≤5%
Hysteresis	≤20% typical	≤20% typical
False Pulse Protection	Incorporated	Incorporated
Transient Noise Protection	Incorporated	Incorporated
Reverse Polarity Protection	Incorporated	Incorporated
Short Circuit Protection	Incorporated	Incorporated
Overload Protection	Incorporated	Incorporated
Certifications	cULus and CE Marked for all applicable directives	
Enclosure	NEMA 3, 4, 6, 12, 13, IP67 (IEC 529) Polyloy	
Connections	Quick-Disconnect: 4-pin mini style 4-pin micro style Conduit Opening: 1/2-14 NPT internal thread with screw terminals	
LEDs	Green: Power (Blinks in SCP/Overload) Orange: Output Energized Red: Alignment Indicator	Green: Power (Blinks in SCP/Overload) Orange: Output Energized
Operating Temperature [C (F)]	-25...70° (-13...+158°)	
Shock	30 g, 11 ms	
Vibration	55 Hz, 1 mm amplitude, 3 planes	

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

Product Selection

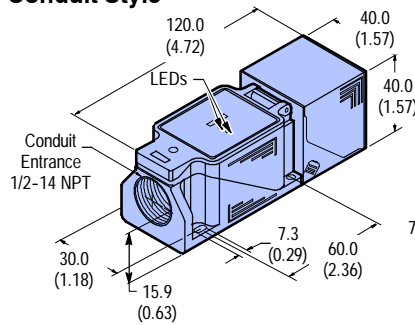
Head Size	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.			
					Conduit Style	Mini QD Style	Micro QD Style	
40	20 (0.79)	Y	Selectable N.O. or N.C.	NPN	150	871L-D20EN40-T3	871L-D20EN40-N4	871L-D20EN40-D4
				PNP		871L-D20EP40-T3	871L-D20EP40-N4	871L-D20EP40-D4
	40 (1.57)	N		NPN	70	871L-D40EN40-T3	871L-D40EN40-N4	871L-D40EN40-D4
				PNP		871L-D40EP40-T3	871L-D40EP40-N4	871L-D40EP40-D4
	20 (0.79)	Y	Program-mable N.O. or N.C.	NPN	100	872L-D20EN40-T3	872L-D20EN40-N4	872L-D20EN40-D4
				PNP		872L-D20EP40-T3	872L-D20EP40-N4	872L-D20EP40-D4
	40 (1.57)	N		NPN	50	872L-D40EN40-T3	872L-D40EN40-N4	872L-D40EN40-D4
				PNP		872L-D40EP40-T3	872L-D40EP40-N4	872L-D40EP40-D4
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))							889N-F4AFC-6F	889D-F4AC-2

QD Cordsets and Accessories

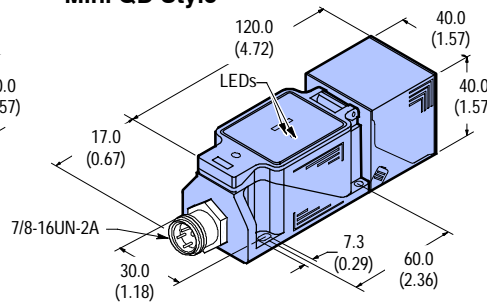
Description	Page Number
Other Cordsets Available	8-2

Approximate Dimensions [mm (in.)]

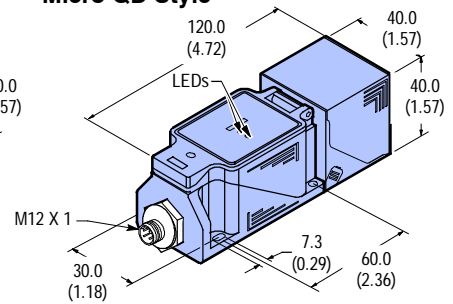
Conduit Style



Mini QD Style



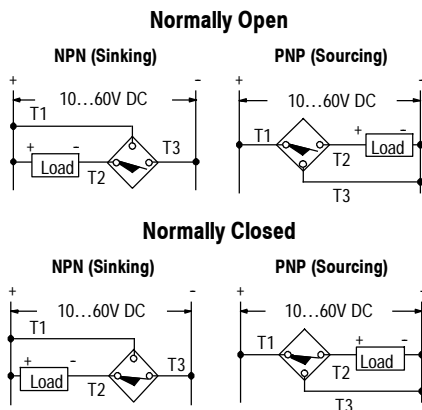
Micro QD Style



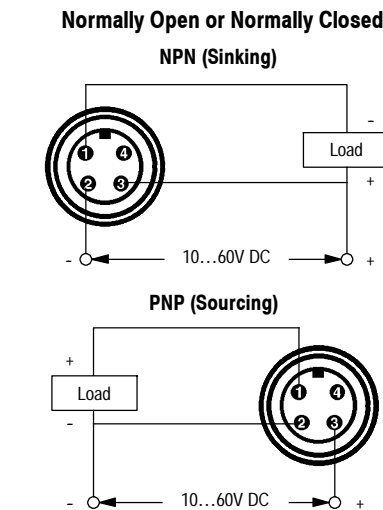
Note: Head can be rotated in 22.5° increments to provide 16 side-sensing positions or rotated for top-sensing.

Wiring Diagram

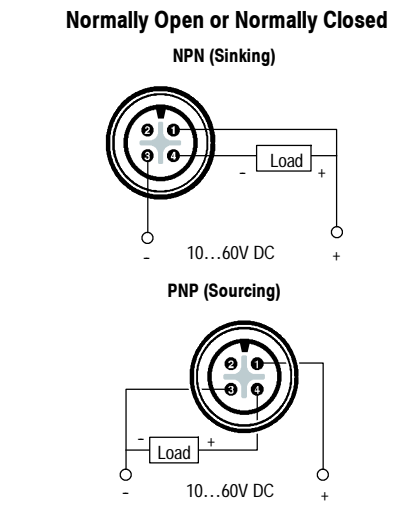
Conduit Style



Mini QD Style



Micro QD Style





871L AC/DC & 872L AC
Mini Quick-Disconnect Style



871L AC/DC & 872L AC
Micro Quick-Disconnect Style



871L AC/DC & 872L AC
Conduit Style

Specifications

	871L Models	872L Models
Load Current	≤400 mA	≤500 mA
Minimum Load Current	2 mA	2 mA
Inrush Current (1 cycle)	≤8 A	≤8 A
Leakage Current	≤2 mA	≤2 mA
Operating Voltage	20...250V AC/DC	20-250V AC
Voltage Drop	≤5V	≤5V
Repeatability	≤5%	≤5%
Hysteresis	≤20%	≤20%
False Pulse Protection	Incorporated	Incorporated
Transient Noise Protection	Incorporated	Incorporated
Certifications	cULus and CE Marked for all applicable directives	
Enclosure	NEMA 3, 4, 6, 12, 13, IP65 (IEC 529) Polyloy	
Connections	Quick Disconnect: 3-pin mini style 3-pin micro style Conduit Opening: 1/2-14 NPT internal thread with screw terminals	
LEDs	Green: Power (Blinks in SCP/Overload) Orange: Output Energized	
Operating Temperature [C (F)]	-25...+70° (-13...+158°)	
Shock	30 g, 11 ms	
Vibration	55 Hz, 1 mm amplitude, 3 planes	

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.7...0.8
Brass	0.4...0.5
Aluminum	0.3...0.4
Copper	0.2...0.3

Features

- 2-wire operation
- 2-terminal or 3-pin connection
- 20...250V AC/DC on 871L models
- 20...250V AC on 872L models
- Switch selectable normally open or normally closed output on 871L models
- Normally open or normally closed output programmable via jumper on 872L models
- False pulse, transient noise, and overload protection
- cULus and CE Marked for all applicable directives

Product Selection

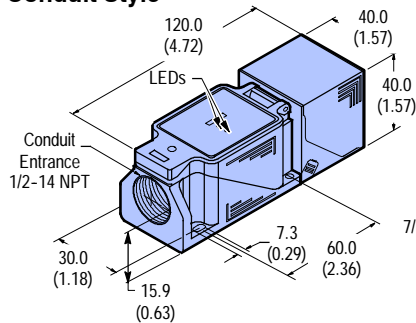
Head Size	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.		
					Conduit Style	Mini QD Style	Micro QD Style
40	20 (0.79)	Y	Selectable N.O. or N.C.	15	871L-B20E40-T2	871L-B20E40-N3	871L-B20E40-R3
	40 (1.57)	N			871L-B40E40-T2	871L-B40E40-N3	871L-B40E40-R3
	20 (0.79)	Y	Programmable N.O. or N.C.		872L-A20E40-T2	872L-A20E40-N3	872L-A20E40-R3
	40 (1.57)	N			872L-A40E40-T2	872L-A40E40-N3	872L-A40E40-R3
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))						889N-F3AFC-6F	889R-F3ECA-2

QD Cordsets and Accessories

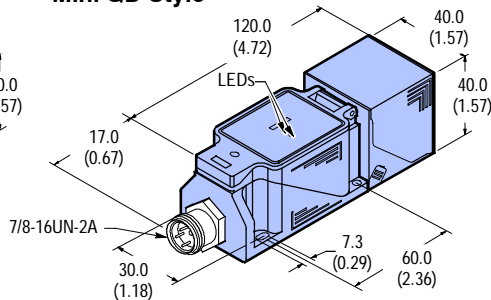
Description	Page Number
Other Cordsets Available	8-2

Approximate Dimensions [mm (in.)]

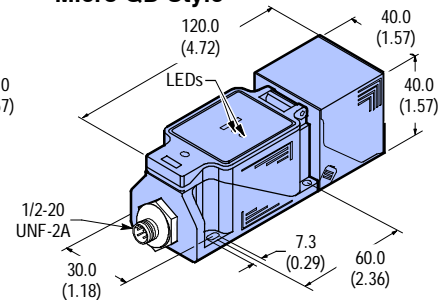
Conduit Style



Mini QD Style



Micro QD Style

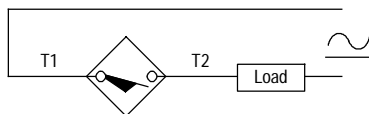


Note: Head can be rotated in 22.5° increments to provide 16 side-sensing positions or rotated for top-sensing.

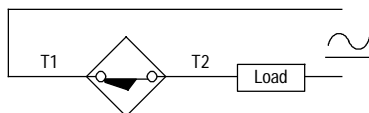
Wiring Diagram

Conduit Style

Normally Open



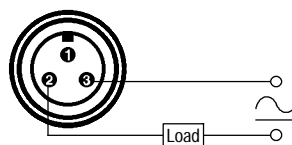
Normally Closed



Note: Load can be switched to Terminal 1.

Mini QD Style

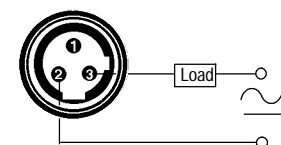
Normally Open or Normally Closed



Note: Load can be switched to pin 3.

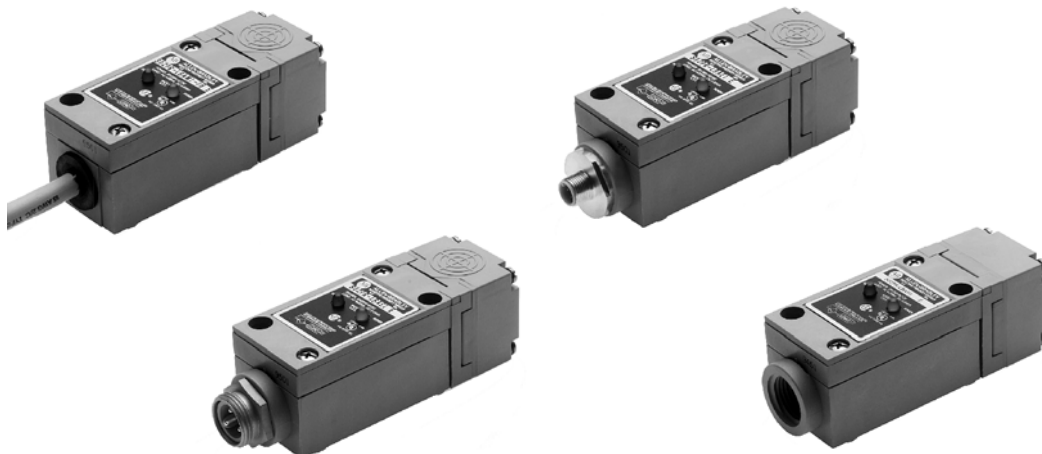
Micro QD Style

Normally Open or Normally Closed



Note: Load can be switched to pin 2.

Notes



Description

Bulletin 802PR inductive proximity sensors are self-contained, 2-wire devices designed to detect the presence of ferrous and nonferrous metal objects without touching them. Types LA and XA are high-output AC models designed to switch current loads up to 1 A, while types LB and XB are AC/DC solid-state switches made to interface directly with programmable controllers.

Features

- Multiple sensing directions
- Cable, conduit, or quick-disconnect styles
- Short circuit protection (AC/DC models)
- Overload protection (AC/DC models)
- Transient noise protection
- False pulse protection
- Hazardous location models are available
- UL Listed, CSA Certified and CE Marked for all applicable directives

Styles

AC/DC 2-Wire page 2-160

AC/DC 2-Wire
Hazardous Location page 2-165

AC 2-Wire High-Output page 2-167

AC 2-Wire Hazardous Location
High-Output page 2-171

Accessories

Cordsets page 8-1

General Information

Metric/English
Conversion Chart page 14-6

ATTENTION



High-output models should not be used in solid-state switching, TTL, or programmable controller operations.

Each sensor is housed in a self-extinguishing glass-reinforced polyester body. Special hazardous location models are available which meet Division 2 enclosure standards in Classes I, II, and III (see specifications). Switch constructions include top and side sensing models. The side-sensing head can be rotated in 90° increments to sense in four directions. These devices are available with a threaded conduit opening, conduit coupler, 3-pin mini connector, 3-pin micro connector, or pre-wired cable.



802PR AC/DC
Cable Style



802PR AC/DC Mini
Quick-Disconnect Style



802PR AC/DC Micro
Quick-Disconnect Style



802PR AC/DC
Conduit Style

Specifications

Load Current	AC 4...25 mA; DC 2...25 mA
Leakage Current	≤1.7 mA at 132V, ≤2.5 mA at 250V
Operating Voltage	20...250V AC/DC
Voltage Drop	≤10V
Repeatability	≤10% typical
Hysteresis	≤10% typical
Transient Noise Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
False Pulse Protection	Incorporated
Radio Frequency Protection	10V per meter; frequency range 20...1000 MHz
Certifications	UL Listed, CSA Certified and CE Marked for all applicable directives
Enclosure	NEMA 1, 2, 3, 4, 4X ^❶ , 12, 13, IP65 (IEC529) Self extinguishing glass-reinforced polyester body
Connections	Cable: 2.4 m (8 ft) length 2-conductor ToughLink™ Quick-Disconnect: 3-pin micro style 3-pin mini style Conduit Opening or Conduit Coupler: Internal thread with screw terminals (use #18-14 AWG wire)
LEDs	Green: Power; Red: Output energized (both on in SCP/Overload)
Operating Temperature [C (F)]	-25...+75° (-13...+167°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

❶ Corrosion resistant models

Features

- 2-wire operation
- 2-conductor or 3-pin connection
- 20...250V AC/DC (for solid state inputs)
- Normally open output
- Short circuit, overload, false pulse, RFI and transient noise protection
- Corrosion resistant models
- 2 LEDs
- UL Listed, CSA Certified and CE Marked for all applicable directives

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.9
Brass	0.8
Aluminum	0.75
Copper	0.7

Inductive Proximity Sensors

802PR 2-Wire AC/DC, Cable Style

Limit Switch Style

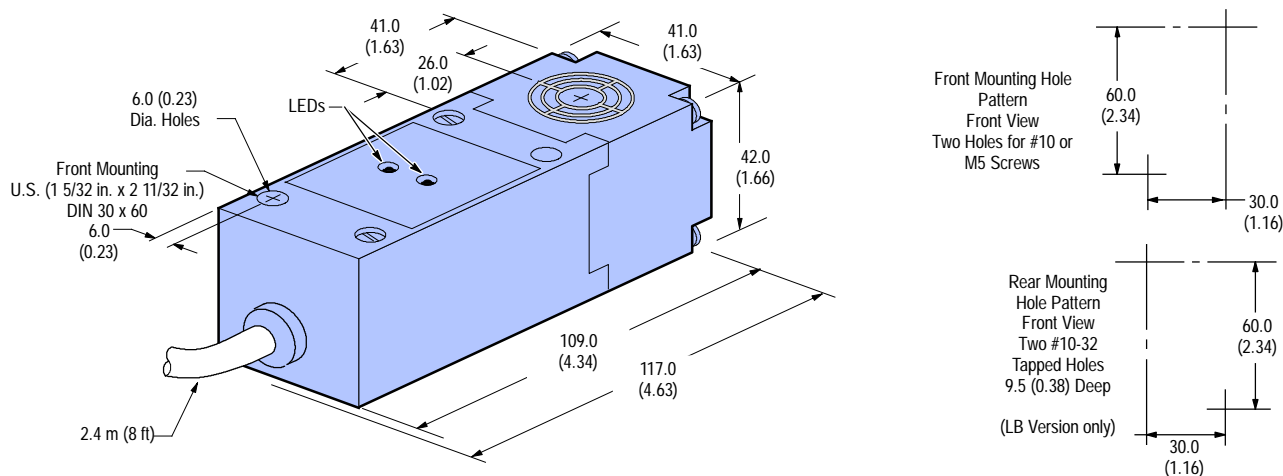
Product Selection

Sensing Direction	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cable Length [m (ft)]	Corrosion Resistant	Cat. No. Cable Style
Side	17 (0.67)	Y	N.O.	20	2.5 (8)	Y	802PR-XBAM1-08
						N	802PR-LBAM1-08
					3.6 (12)	Y	802PR-XBAM1-12
						N	802PR-LBAM1-12
Top	17 (0.67)	Y	N.O.	20	2.5 (8)	Y	802PR-XBAR1-08
						N	802PR-LBAR1-08
					3.6 (12)	Y	802PR-XBAR1-12
						N	802PR-LBAR1-12

Accessories

Description	Page Number
Terminal Chambers	8-2

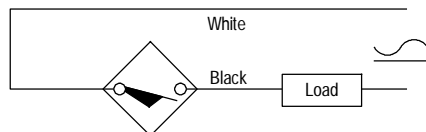
Approximate Dimensions [mm (in.)]



Note: Side sensing model heads can be turned in 90° increments to accommodate 4 side sensing positions.

Wiring Diagram

Normally Open



Note: Load can be switched to white lead.

Inductive Proximity Sensors

802PR 2-Wire AC/DC, Mini Quick-Disconnect Style

Limit Switch Style

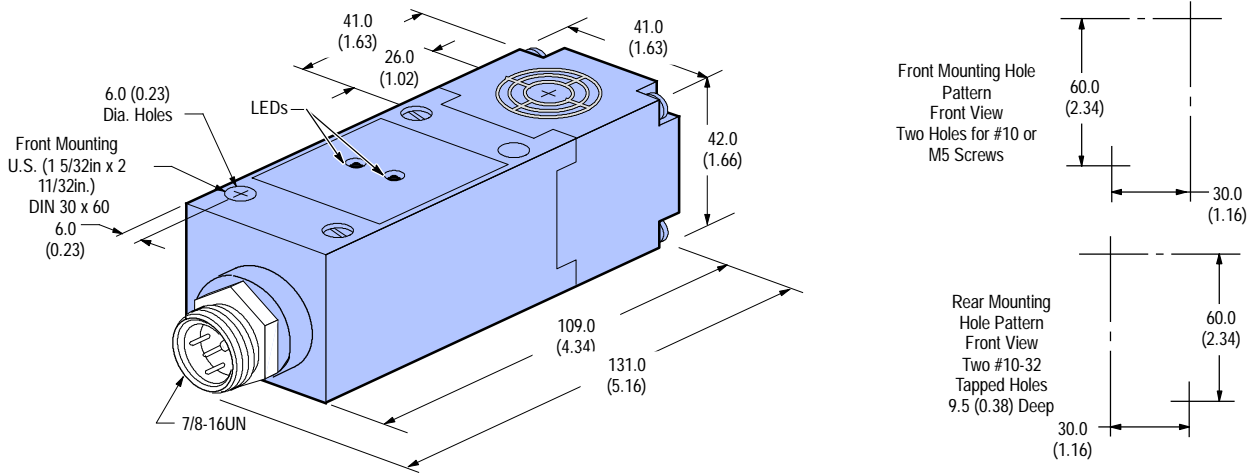
Product Selection

Sensing Direction	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No. Mini QD Style
Side	17 (0.67)	Y	N.O.	20	802PR-LBAE1
Top					802PR-LBAK1
Recommended Standard QD Cordset Required (-6F = 1.8 m (6 ft))					889N-F3AFC-6F

QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2

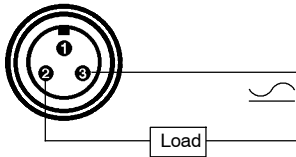
Approximate Dimensions [mm (in.)]



Note: Side sensing model heads can be turned in 90° increments to accommodate 4 side sensing positions.

Wiring Diagram

Normally Open



Note: Load can be switched to Pin 3.

Inductive Proximity Sensors
802PR 2-Wire AC/DC, Micro Quick-Disconnect Style
 Limit Switch Style

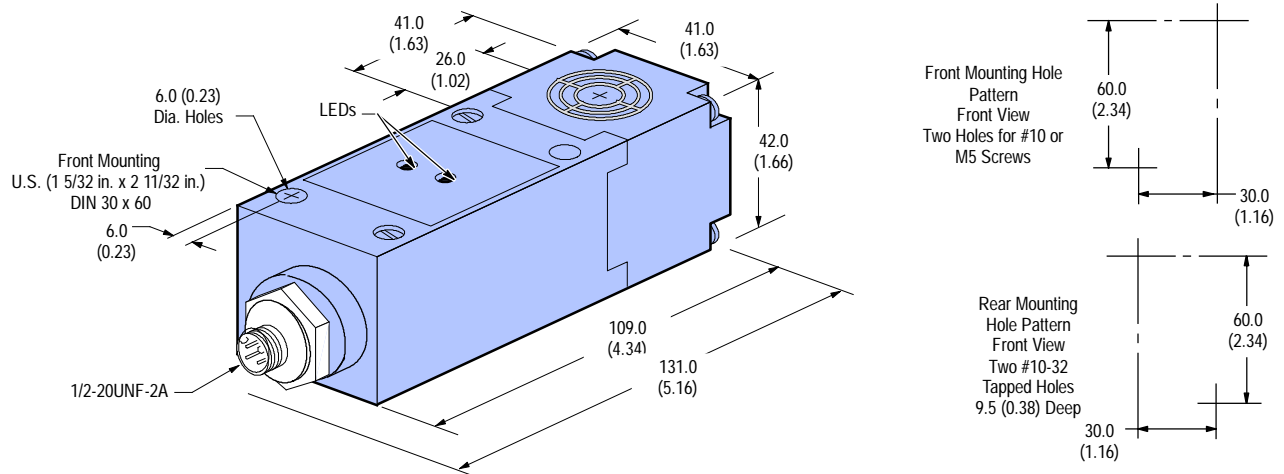
Product Selection

Sensing Direction	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No. Micro QD Style
Side	17 (0.67)	Y	N.O.	20	802PR-LBAC1
Top					802PR-LBAF1
Recommended Standard QD Cordset Required (-2 = 2 m (6.5 ft))					889R-F3ECA-2

QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2

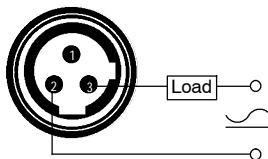
Approximate Dimensions [mm (in.)]



Note: Side sensing model heads can be turned in 90° increments to accommodate 4 side sensing positions.

Wiring Diagram

Normally Open



Note: Load can be switched to pin 2.

Inductive Proximity Sensors

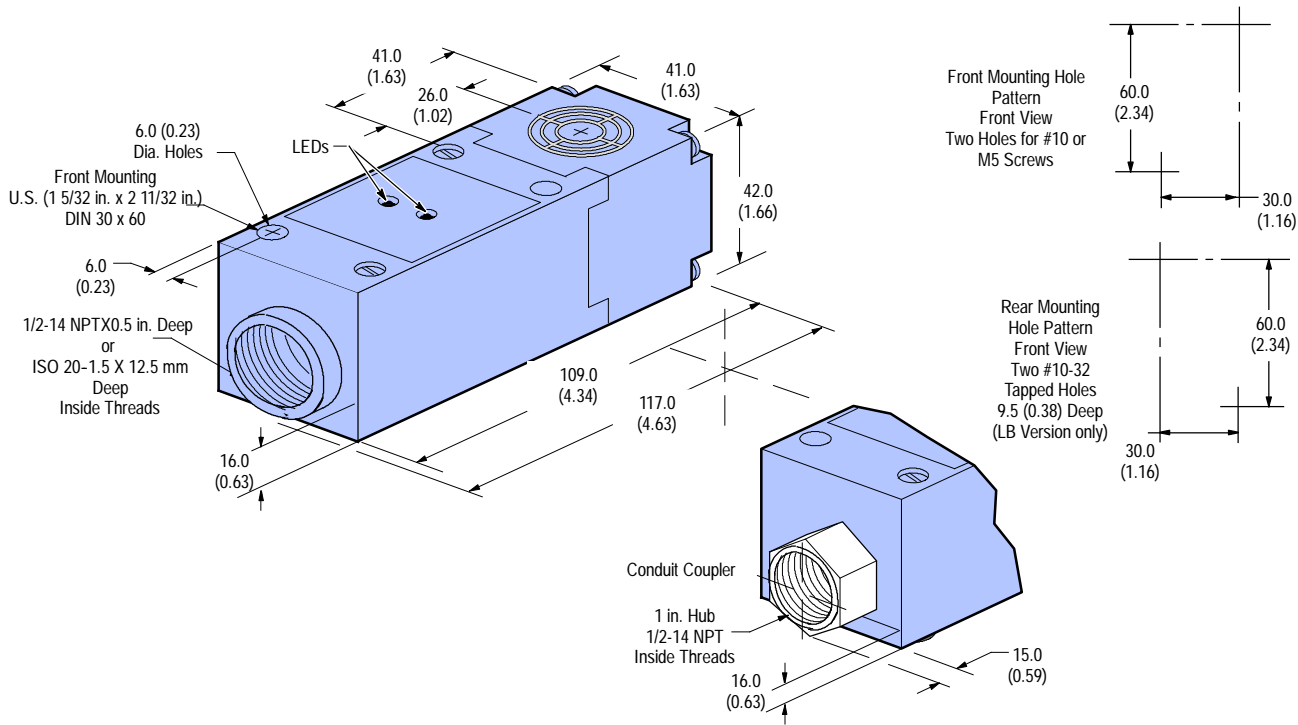
802PR 2-Wire AC/DC, Conduit Style

Limit Switch Style

Product Selection

Sensing Direction	Nominal Sensing Distance mm (inches)	Shielded	Output Configuration	Switching Frequency [Hz]	Corrosion Resistant	Connection Type	Cat. No. Conduit Style
Side	17 (0.67)	Y	N.O.	20	Y	1/2 in. - 14NPT	802PR-XBAB1
					N		802PR-LBAB1
					Y	ISO 20-1.5	802PR-XBAB1-S6
					N		802PR-LBAB1-S6
					N	Conduit Coupler	802PR-LBAA1
Top	17 (0.67)	Y	N.O.	20	Y	1/2 in. - 14NPT	802PR-XBAH1
					N		802PR-LBAH1
					Y	ISO 20-1.5	802PR-XBAH1-S6
					N		802PR-LBAH1-S6
					N	Conduit Coupler	802PR-LBAJ1

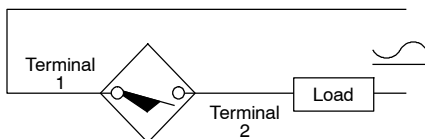
Approximate Dimensions [mm (in.)]



Note: Side sensing model heads can be turned in 90° increments to accommodate 4 side sensing positions.

Wiring Diagram

Normally Open



Note: Load can be switched to Terminal 1.

Inductive Proximity Sensors
802PR 2-Wire AC/DC Hazardous Location
Limit Switch Style



*802PR AC/DC
Conduit Style*

Features

- 2-wire operation
- 2-terminal connection
- 20...250V AC/DC (for solid-state inputs)
- Normally open output
- Short circuit, overload, false pulse, RFI, and transient noise protection
- Hazardous location rating
- 2 LEDs
- UL Listed and CSA Certified

Specifications

Load Current	AC: 4...25 mA, DC: 2...25 mA
Leakage Current	≤1.7 mA at 132V, ≤2.5 mA at 250V
Operating Voltage	20...250V AC/DC
Voltage Drop	≤10V
Repeatability	≤10% typical
Hysteresis	≤10% typical
Protection Type	Transient noise, short circuit, overload, false pulse, radio frequency (≤10V per meter; frequency range 20...1000 MHz)
Certifications	UL Listed and CSA Certified
Enclosure Type Rating	NEMA 1, 2, 3, 4, 12, 13; IP65 (IEC529); Division 2 Class I: Groups A, B, C & D; Class II: Groups F & G; Class III: All groups Self-extinguishing glass-reinforced polyester body
Connection Type	Conduit Coupler: 1/2 - 14 NPT internal thread with screw terminals, use #18...14 AWG wire
LED	Green: Power, Red: Output energized (both on in SCP/Overload)
Operating Temperature [C (F)]	-25...+75 ° (-13...+167 °)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.9
Brass	0.8
Aluminum	0.75
Copper	0.7

Inductive Proximity Sensors

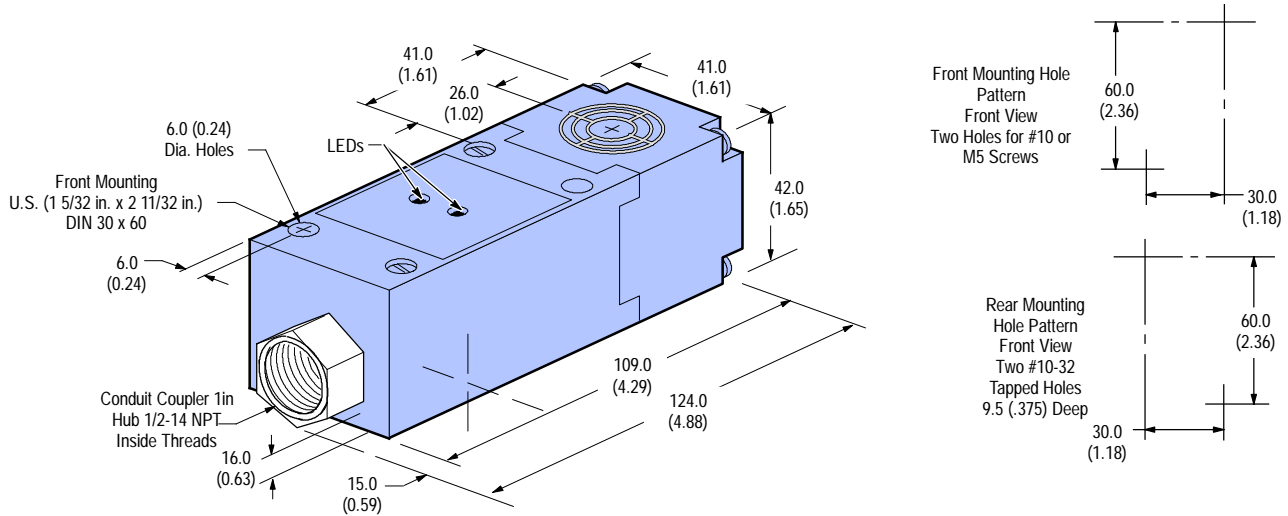
802PR 2-Wire AC/DC Hazardous Location, Conduit Style

Limit Switch Style

Product Selection

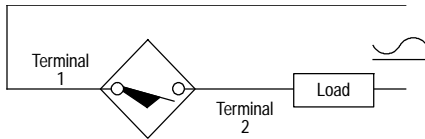
Sensing Direction	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No. Conduit Style
Side	17 (0.67)	Y	N.O.	20	802PR-LBAA3
Top					802PR-LBAJ3

Approximate Dimensions [mm (in.)]



Note: Side-sensing model heads can be turned in 90° increments to accommodate 4 side-sensing positions.

Wiring Diagram



Note: Load can be switched to Terminal 1.



802PR AC
Cable Style



802PR AC Mini
Quick-Disconnect Style



802PR AC
Conduit Style

Specifications

Load Current	≤1 A at +40°C linearly derated to 0.5 A at 75°C
Inrush Current	≤10 A/1 s
Supply Current (minimum)	25 mA
Leakage Current	≤3.5 mA (60...132V AC); ≤6.5 mA (102...132V AC)
Operating Voltage	60...132V AC or 102...132V AC
Voltage Drop	≤8.5V
Repeatability	≤0.025 mm
Hysteresis	15% (max.)
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Certifications	UL Listed, CSA Certified and CE Marked for all applicable directives
Enclosure	NEMA 1, 2, 3, 4, 4X ^① , 12, 13, IP65 (IEC529) Self-extinguishing glass-reinforced polyester body
Connections	Cable: 8 ft or 12 ft length 2-conductor 16 AWG STO (oil-resistant thermoplastic) Quick Disconnect: 3-pin mini style Conduit Opening or Conduit Coupler: 1/2-14NPT internal thread with screw terminals (use #18-14 AWG wire)
LED	Red: Output Energized
Operating Temperature [C (F)]	-25...+75° (-13...+167°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

^① Corrosion resistant models

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.80...0.85
Brass	0.50...0.55
Aluminum	0.45...0.50
Copper	0.40...0.45

Features

- 2-wire operation
- 2-conductor, 3-pin, or 2-terminal connection
- 60...132V AC or 102...132V AC
- Normally open or N.O./N.C. selectable output
- High output (1 A)
- Transient noise and false pulse protection
- UL Listed, CSA Certified and CE Marked for all applicable directives

Inductive Proximity Sensors

802PR 2-Wire AC High Output, Cable Style

Limit Switch Style

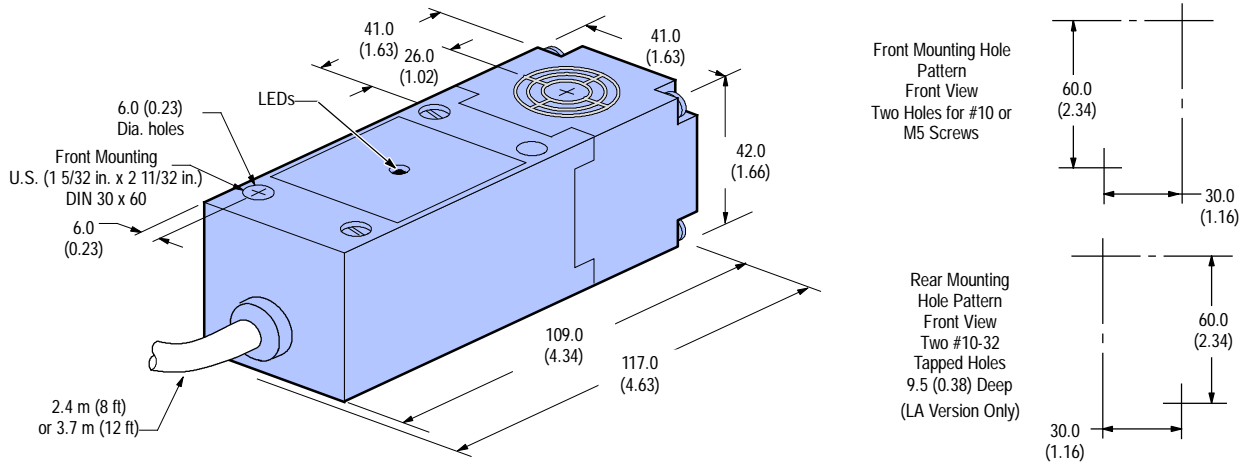
Product Selection

Sensing Direction	Nominal Sensing Distance [mm (in.)]	Shielded	Voltage Range	Output Configuration	Corrosion Resistant	Switching Frequency [Hz]	Cable Length [ft]	Cat. No. Cable Style	
Side	13 (0.51)	Y	60...132V AC	Selectable ^①	N	20	8	802PR-LABM2-08	
							12	802PR-LABM2-12	
Top							8	802PR-LABR2-08	
							12	802PR-LABR2-12	
Side							Selectable ^②	8	802PR-LACM2-08
								12	802PR-LACM2-12
Top			8	802PR-LACR2-08					
			12	802PR-LACR2-12					
Side			102-132V AC	N.O.		16		8	802PR-LAAM1-08
								12	802PR-LAAM1-12
Top							8	802PR-LAAR1-08	
							12	802PR-LAAR1-12	
Side	Y	N.C.			16		8	802PR-XAAM1-08	
							12	802PR-XAAM1-12	
Top			8	802PR-XAAR1-08					
			12	802PR-XAAR1-12					

① Preset to N.O. at factory.

② Preset to N.C. at factory.

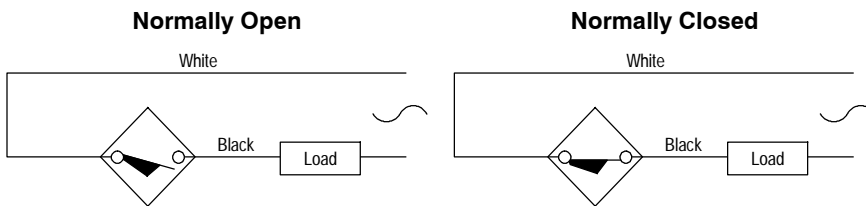
Approximate Dimensions [mm (in.)]



Note 1: Side sensing model heads can be turned in 90° increments to accommodate 4 side sensing positions.

Note 2: Low voltage models have 2 LEDs.

Wiring Diagrams



Note: Load can be switched to white lead.

Accessories

Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2

802PR 2-Wire AC High Output, Mini Quick-Disconnect Style Limit Switch Style

Product Selection

Sensing Direction	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Voltage Range	Switching Frequency [Hz]	Cat. No. Mini QD Style
Side	13 (0.51)	Y	Selectable❶	60...132V AC	20	802PR-LABE2
Top						802PR-LABK2
Side			Selectable❷			802PR-LACE2
Top						802PR-LACK2
Side			N.O.	102...132V AC	16	802PR-LAAE1
Top						802PR-LAAK1
Recommended Standard QD Cordset Required (-6F = 1.8 m (6 ft))						889N-F3AFC-6F

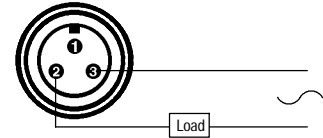
- ❶ Preset to N.O. at factory.
- ❷ Preset to N.C. at factory.

QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2

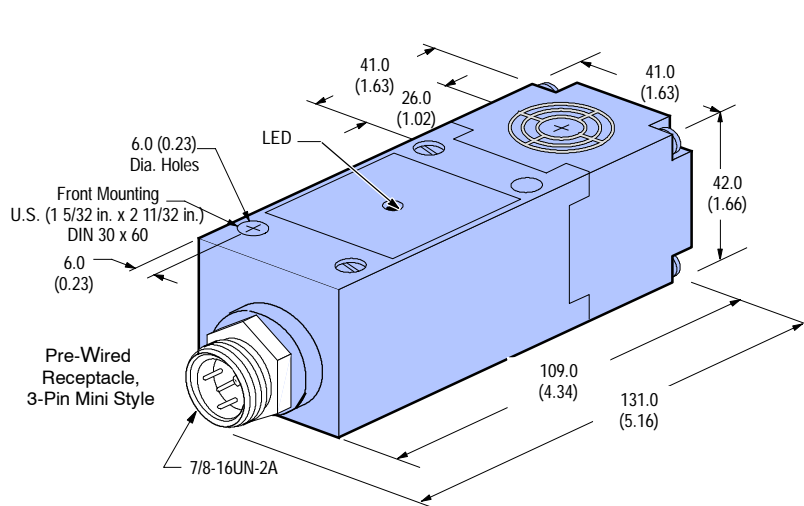
Wiring Diagram

Normally Open or Normally Closed

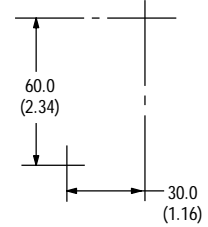


Note: Load can be switched to pin 3.

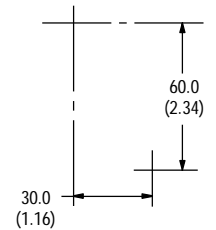
Approximate Dimensions [mm (in.)]



Front Mounting Hole Pattern Front View
Two Holes for #10 or M5 Screws



Rear Mounting Hole Pattern Front View
Two #10-32 Tapped Holes 9.5 (0.38) Deep (LA Version Only)



- Note 1:** Side sensing model heads can be turned in 90° increments to accommodate 4 side sensing positions.
- Note 2:** Low voltage models have 2 LEDs.

802PR 2-Wire AC High Output, Conduit Style

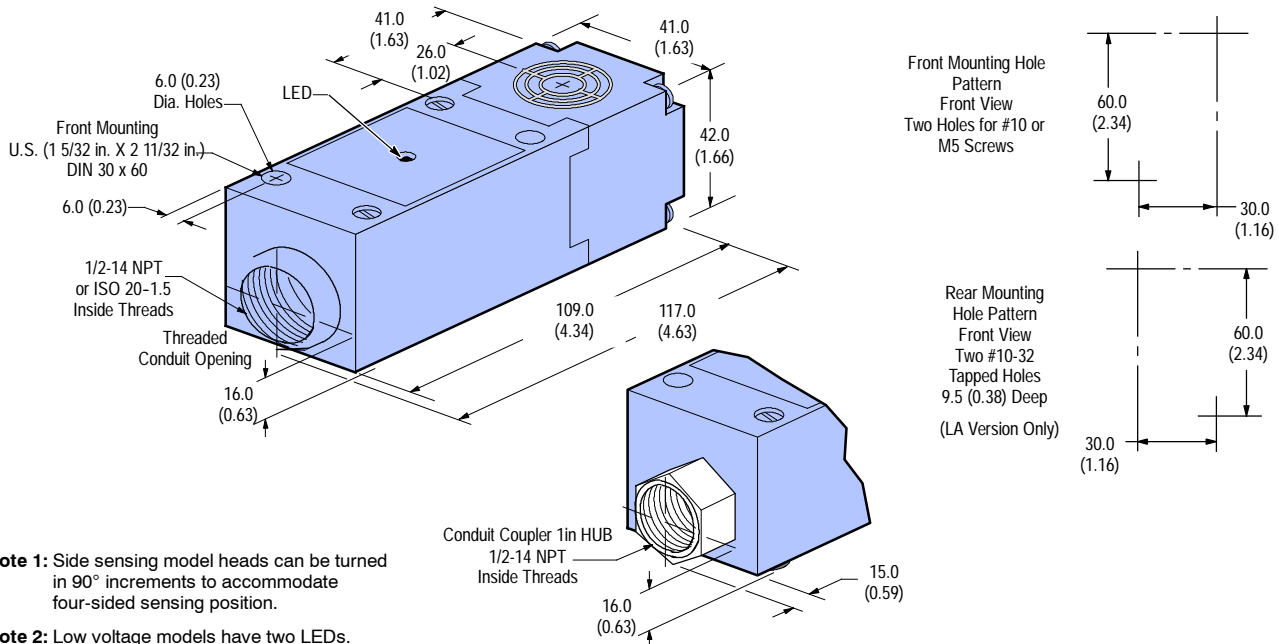
Limit Switch Style

Product Selection

Sensing Direction	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Corrosion Resistant	Voltage Range	Switching Freq. [Hz]	Connection	Cat. No. Conduit Style		
Side	13 (0.51)	Y	Selectable ①	N	60...132V AC	20	Conduit Coupler	802PR-LABA2		
							Threaded 1/2-14 NPT ③	802PR-LABB2		
Top							Conduit Coupler	802PR-LABJ2		
							Threaded 1/2-14 NPT ③	802PR-LABH2		
Side							Selectable ②	Conduit Coupler	802PR-LACA2	
								Threaded 1/2-14 NPT ③	802PR-LACB2	
Top			Conduit Coupler		802PR-LACJ2					
			Threaded 1/2-14 NPT ③		802PR-LACH2					
Side			N.O.		Y	102...132V AC		16	Conduit Coupler	802PR-LAAA1
									Threaded 1/2-14 NPT ③	802PR-LAAB1
Top							Conduit Coupler		802PR-LAAJ1	
							Threaded 1/2-14 NPT ③		802PR-LAAH1	
Side	Threaded 1/2-14 NPT ③	802PR-XAAB1								
Top	Threaded 1/2-14 NPT ③	802PR-XAAH1								

- ① Preset to N.O. at factory.
- ② Preset to N.C. at factory.
- ③ To order ISO 20-1.5 add '-S6' to cat. no.

Approximate Dimensions [mm (in.)]



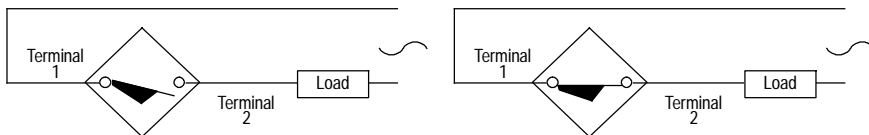
Note 1: Side sensing model heads can be turned in 90° increments to accommodate four-sided sensing position.

Note 2: Low voltage models have two LEDs.

Wiring Diagram

Normally Open

Normally Closed



Note: Load can be switched to Terminal 1.

802PR 2-Wire AC Hazardous Location, High Output Limit Switch Style



802PR AC
Conduit Style

Features

- 2-wire operation
- 2-terminal connection
- 102...132V AC
- Hazardous location rating
- High output (1 A)
- Normally open output
- Transient noise and false pulse protection
- UL Listed and CSA Certified

Specifications

Load Current	1 A at 40 °C linearly derated to 0.5 A at 75 °C
Inrush Current	≤10 A/1 s
Current Consumption	25 mA, min.
Leakage Current	≤6.5 mA
Operating Voltage	102...132V AC
Voltage Drop	≤8.5V
Repeatability	≤0.025 mm
Hysteresis	15% (max.)
Protection Type	False pulse, transient noise
Certifications	UL Listed and CSA Certified
Enclosure Type Rating	NEMA 1, 2, 3, 4, 12, 13; IP65 (IEC529) Division 2 Class I: Groups A, B, C & D; Class II: Groups F & G; Class III: All groups Self-extinguishing glass reinforced polyester body
Connection Type	Conduit Coupler: 1/2 -14NPT internal thread with screw terminals (use #18...14 AWG wire)
LED	Red: Output Energized
Operating Temperature [C (F)]	-25...+75 ° (-13...+167 °)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.80...0.85
Brass	0.50...0.55
Aluminum	0.45...0.50
Copper	0.40...0.45

Inductive Proximity Sensors

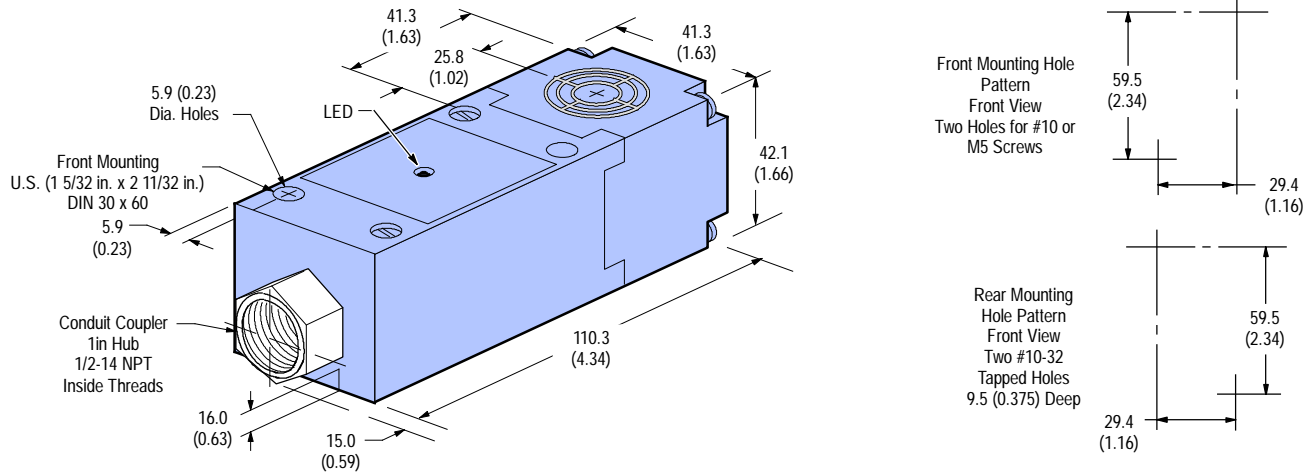
802PR 2-Wire AC Hazardous Location, High Output, Conduit Style

Limit Switch Style

Product Selection

Sensing Direction	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No. Conduit Style
Side	13 (0.51)	Y	N.O.	16	802PR-LAAA3
Top					802PR-LAAJ3

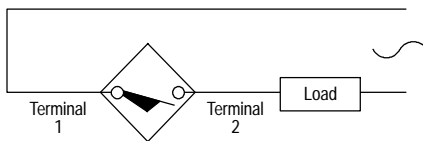
Approximate Dimensions [mm (in.)]



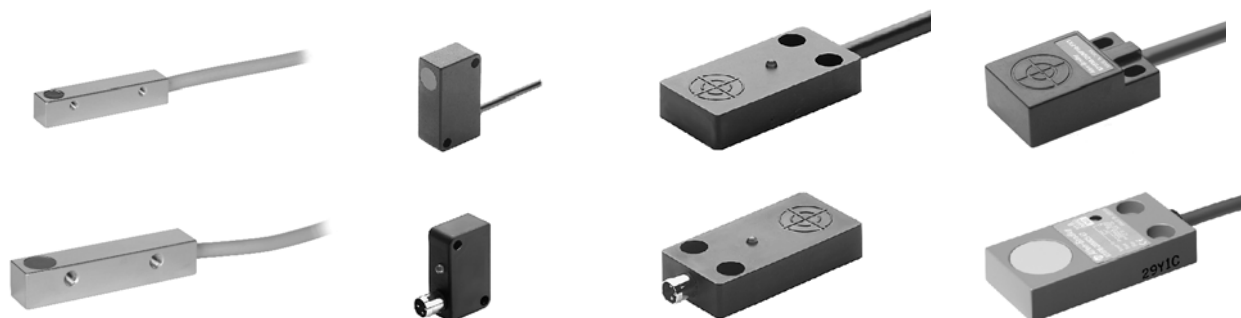
Note: Side sensing model heads can be turned in 90° increments to accommodate 4 side sensing positions.

Wiring Diagram

Normally Open



Note: Load can be switched to Terminal 1.



Description

Bulletin 871FM inductive flat pack proximity sensors are self-contained, general purpose, solid-state devices designed to sense the presence of ferrous and nonferrous metal objects without touching them.

These sensors are ideal for applications in which space is limited. Connection options include 3-conductor PVC cable or pico quick-disconnect.

Features

- Cable or quick-disconnect styles
- Short circuit protection
- Overload protection
- Transient noise protection
- False pulse protection
- Reverse polarity protection
- CE Marked for all applicable directives

Styles

- DC 3-wire metal page 2-176
- DC 3-wire plastic page 2-176

Accessories

- Cordsets page 8-1

General Information

- Metric/English
Conversion Chart page 14-6

871FM 3-Wire DC

Miniature Flat Pack Style—Metal Housing



871FM DC Cable
M5 Square



871FM DC Cable
M8 Square

Specifications

Load Current	≤200 mA
Leakage Current	≤1 mA
Operating Voltage	10...30V DC
Voltage Drop	≤2.4V
Repeatability	≤10%
Hysteresis	12% typical
Reverse Polarity Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
Certifications	cULus Listed and CE Marked for all applicable directives
Enclosure	IP 67, Chrome-plated brass housing, plastic sensing face
Connections	8 mm: PVC cable style/3-pin pico on 6 inch lead or pico QD style 5 mm: PUR cable style/3-pin pico on 6 inch lead or pico QD style
LED	Orange: Output energized
Operating Temperature [C (F)]	-25...+70° (32...+158°)
Shock	EN 60947-5-2; 7.4.1
Vibration	EN 60947-5-2; 7.4.2

Features

- 3-conductor, 3-pin pico or 3-pin pico on 6 inch lead connection
- Convenient flush mounting
- 10...30V DC
- Normally open
- Reverse polarity, short circuit, and overload protection
- Side sensing
- 2 mounting screws included
- cULus Listed and CE Marked for all applicable directives

Correction Factors

Target Material	Correction Factors
Steel	1.0
Stainless Steel	0.85
Brass	0.64
Aluminum	0.55
Copper	0.51

Product Selection

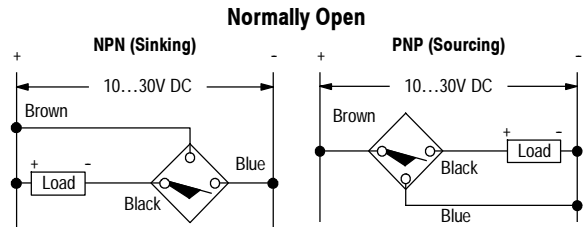
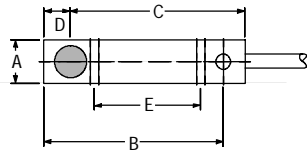
Housing Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.			
					Cable Style	Pico Style	Leaded Pico Style	
5 mm	0.8 (0.03)	Y	N.O.	NPN	5,000	871FM-M1NN5-E2	—	871FM-M1NN5-AP3
	0.8 (0.03)			PNP	5,000	871FM-M1NP5-E2	—	871FM-M1NP5-AP3
	1.5 (0.06)			NPN	3,000	871FM-M2NN5-E2	—	871FM-M2NN5-AP3
	1.5 (0.06)			PNP	3,000	871FM-M2NP5-E2	—	871FM-M2NP5-AP3
8 mm	2.0 (0.08)	N	N.O.	NPN	3,000	871FM-M2NN8-E2	871FM-M2NN8-P3	—
	2.0 (0.08)			PNP	3,000	871FM-M2NP8-E2	871FM-M2NP8-P3	—
	3.0 (.12)			NPN	1,000	871FM-N3NN8-E2	871FM-N3NN8-P3	—
	3.0 (.12)			PNP	1,000	871FM-N3NP8-E2	871FM-N3NP8-P3	—
Recommended standard QD cordset (-2 = 2 m (6.5 ft))							889P-F3AB-2	889P-F3AB-2



Approximate Dimensions [mm (in.)]

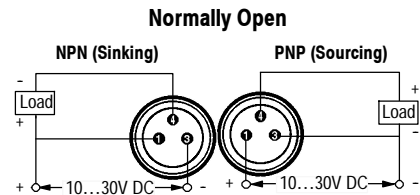
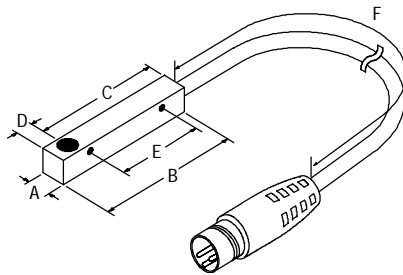
Wiring Diagram

M5 and M8 Square Cable



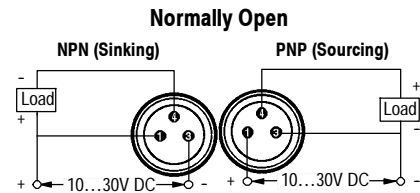
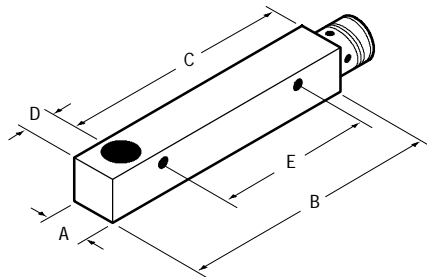
Housing Diameter	mm (inches)				
	A	B	C	D	E
5 mm	5.0 (0.2)	15 (0.59)	22 (0.87)	3 (0.12)	14 (0.55)
8 mm	8.0 (0.31)	37 (1.46)	35 (1.38)	5 (0.2)	20 (0.79)

M5 Square with 6 inch Lead



Housing Diameter	mm (inches)					
	A	B	C	D	E	F
5 mm	5.0 (0.2)	25 (0.98)	22 (0.87)	3 (0.12)	14 (0.55)	150 (6)

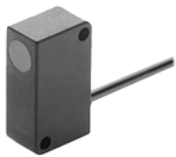
M8 Square 3-Pin Pico



Housing Diameter	mm (inches)				
	A	B	C	D	E
8 mm	8.0 (0.31)	50 (1.97)	45 (1.77)	5 (0.2)	20 (0.79)

871FM 3-Wire DC

Miniature Flat Pack Style—Plastic Housing



871FM DC Cable Style
28 x 16 x 11 mm



871FM DC Pico
Quick-Disconnect Style
28 x 16 x 11 mm



871FM DC Cable Style
25 x 50 x 10 mm



871FM DC Pico
Quick-Disconnect Style
30 x 18 x 10 mm

Specifications

	28x16x11 mm	25x50x10 mm	31x18x10 mm
Current Consumption	<11 mA	<8 mA	10 mA
Load Current	≤200 mA	≤200 mA	50 mA @ 12V DC 100 mA @ 24V DC
Leakage Current	<100 μA	<100 μA	<100 μA
Operating Voltage	10...30V DC	10...24V DC	10...30V DC
Voltage Drop	≤1.8V	≤2.5V	≤1V
Repeatability	≤5%		
Hysteresis	10% typical		
Protection Type	False pulse, transient noise, reverse polarity, short circuit, and overload		
Certifications	CE Marked for all applicable directives		
Enclosure Type Rating	NEMA 4, IP67 (IEC 529) Plastic		
Connection Type	Cable: 2 m (6.5 ft) length, 3-conductor PVC Quick-Disconnect: 3-pin pico style		
LED	Yellow: Output Energized	Red: Output Energized	
Operating Temperature [C (F)]	-25...+70 ° (-13...+158 °)		
Shock	30 g, 11 ms		50 g (approx)
Vibration	55 Hz, 1 mm amplitude, 3 planes		10...55Hz @ 1...5 mm

Features

- 3-wire operation
- 3-conductor or 3-pin connection
- 10...30V DC
- Normally open or normally closed output
- False pulse, transient noise, reverse polarity, short-circuit, and overload protection
- CE Marked for all applicable directives

Correction Factors

Target Material	Correction Factors
Steel	1.0
Stainless Steel	0.85
Brass	0.55
Aluminum	0.5
Copper	0.45



Product Selection

Dimensions	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.	Cat. No.
			N.O.	PNP		Cable Style	Pico QD Style
28 x 16 x 11 mm	2 (0.08)	Yes	N.O.	PNP	600	871FM-D2NP11-E2	871FM-D2NP11-P3
			N.C.	PNP		871FM-D2CP11-E2	871FM-D2CP11-P3
25 x 50 x 10 mm	5 (0.20)	Yes	N.O.	NPN	500	871FM-D5NN25-E2	—
			N.C.	PNP		871FM-D5NP25-E2	871FM-D5NP25-P3
	N.O.	PNP	871FM-D5CP25-E2	—			
	N.C.	PNP	871FM-D5CN25-E2	—			
31 x 18 x 10mm	5 (0.20)	No	N.O.	PNP	200	871FM-D8NP25-E2	871FM-D8NP25-P3
			N.C.	PNP		871FM-D8CP25-E2	—
Recommended Standard QD Cordset (-2 = 2 m (6.5 ft))							889P-F3AB-2

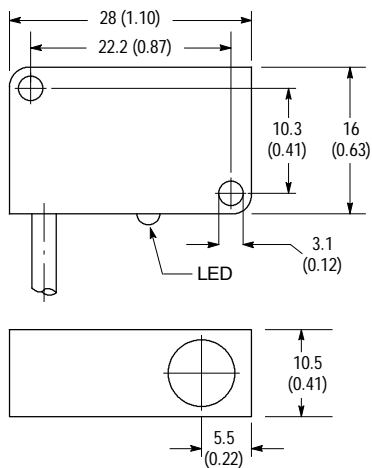
QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2

Approximate Dimensions [mm (inches)]

Cable & Pico QD Style

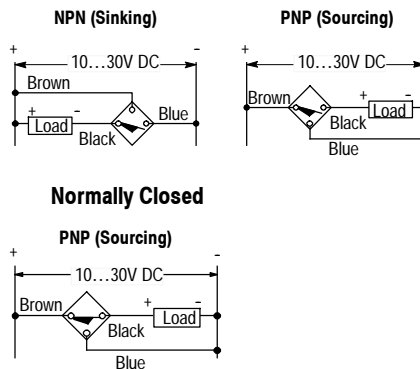
28 x 16 x 11 mm



Wiring Diagrams

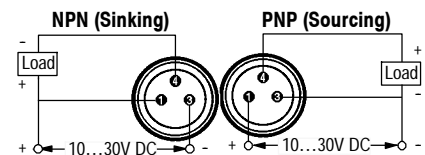
Cable Style

Normally Open



Pico QD Style

Normally Open or Normally Closed



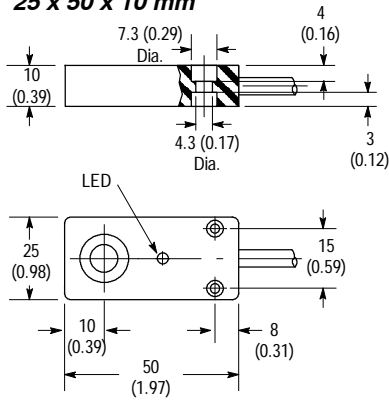
871FM 3-Wire DC

Miniature Flat Pack Style

Approximate Dimensions [mm (inches)]

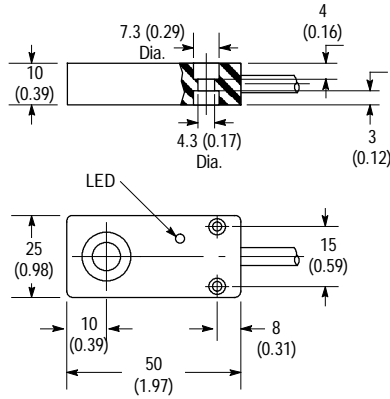
Unshielded Cable & Pico QD & Shielded Pico QD Style

25 x 50 x 10 mm



Shielded Cable Style

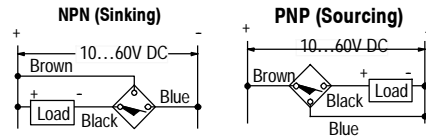
25 x 50 x 10 mm



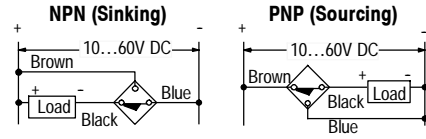
Wiring Diagram

Cable Style

Normally Open

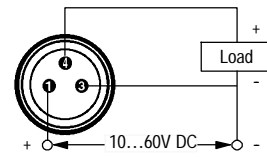


Normally Closed



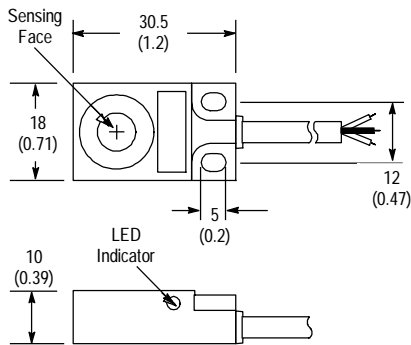
Pico QD Style

PNP (Sourcing)



Cable Style

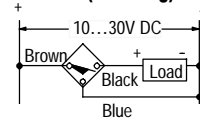
31 x 18 x 10 mm



Cable Style

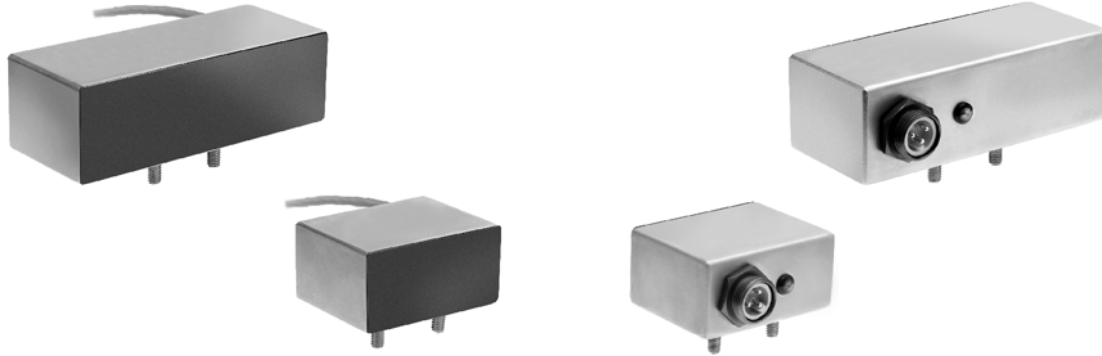
Normally Open

PNP (Sourcing)



Obsolete

Obsolete



Description

Bulletin 871P inductive proximity can sensors are self-contained solid-state devices, designed specifically for sensing size 202...704 metal cans without physical contact. These sensors have been specifically designed for the canning industry in terms of both functionality and environmental ratings.

Short- and long-range can sensor models are available. These sensors contain multiple coils to provide a wide sensing field which allows metal containers to be sensed on canning lines while the gaps between them are ignored. This type of sensor provides a "cans present" or "cans not present" signal and is the standard sensor type used in can line control. Rockwell Automation provides two models for varying can sizes.

A DC powered can motion sensor is also available for applications which require can movement sensing. Designed with the same multiple coils and wide sensing field as the standard can sensor, an extra coil is added as a separate circuit, which can be set to sense the gaps between the cans. The signal from the wide sensing field circuit (which ignores the gaps between the cans) is combined with the signal from the second circuit (which senses the gaps between the cans) to achieve an output indicating true can motion. If cans are present and not moving, the sensor output turns on. If cans are present and moving or if no cans are present, the sensor will remain off.

Depending on the specific canning line setup, Rockwell Automation can motion sensors can help improve line efficiency or address problem areas on canning line conveyor systems by providing control equipment with motion/no motion information.

The 871P can sensor family combines rugged construction and superior sensing capability to provide long lasting durability and performance in hostile manufacturing and filling environments.

Rockwell Automation can sensors are designed to withstand repeated 1200 psi washdowns common in the food and beverage industries and are mountable on industry standard brackets.

Features

- Short circuit protection
- Overload protection
- Transient noise protection
- False pulse protection
- Reverse polarity protection (DC models)
- Stainless steel housing
- NEMA 6P and IP67 enclosure
- 1200 psi (8270 kPa) washdown

Styles

- AC 2-Wire Long-Range . . . page 2-182
- DC 4-Wire Short-Range . . . page 2-184
- DC 4-Wire Long-Range . . . page 2-184
- DC 4-Wire Motion page 2-186

Accessories

- Cordsets page 8-1
- Mounting Bracket page 2-215

General Information

- Metric/English Conversion Chart page 14-6

871P Can Sensors 2-Wire AC



871P AC Short-Range
76 x 36 x 58 mm

Features

- 2-wire operation
- 3-conductor connection
- 30...150V AC
- Normally open
- Stainless steel housing
- 1200 psi (8270 kPa) washdown
- False pulse, transient noise, short circuit, and overload protection

Specifications

Outputs	Normally Open
Load Current	300 mA
Minimum Load Current	15 mA
Leakage Current	<1.5 mA
Inrush Current	<5 A (20 ms)
Operating Voltage	30...150V AC RMS
Line Frequency	40...60 Hz
Voltage Drop	<15V @ 300 mA
Repeatability	≤2%
Hysteresis	10% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
Certifications	UL Listed and CE Marked for all applicable directives
Enclosure	NEMA 1, 3, 4, 4X, 6, 6P, 12, 13, IP67 (IEC 529), 1200 psi (8270 kPa) washdown
Connections	3-pin mini style
LEDs	Red: Output Energized
Operating Temperature [C (F)]	-20...+70° (0...+160°)
Housing Material	Stainless steel, plastic face
Mounting	2 stainless steel studs



Product Selection

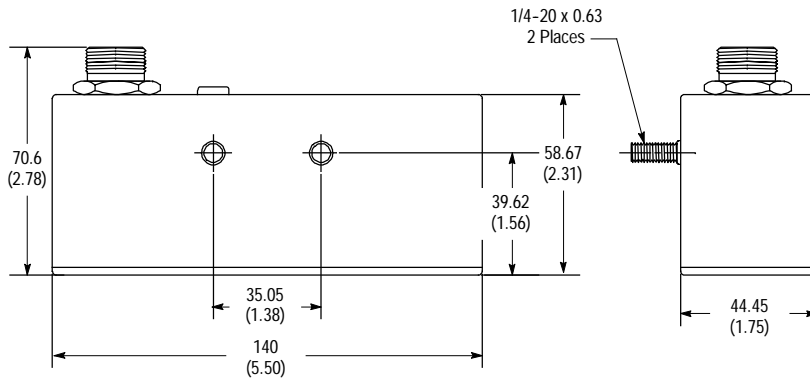
Style	Container Size	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.
						Mini QD Style
Long Range	202...704	Steel: 29 mm (1.15 in.), Aluminum: 15 mm (0.60 in.)	Yes	N.O.	25	871P-AC29N140-N3
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))						889N-F3AFC-6F

QD Cordsets

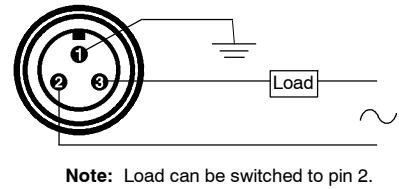
Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2

Approximate Dimensions [mm (in.)]

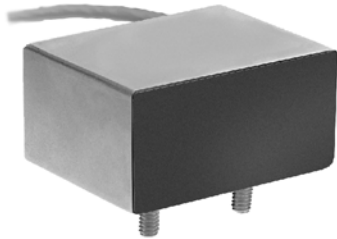
Long-Range Mini QD Style



Wiring Diagram



871P Can Sensors 4-Wire DC



871P DC Short Range
76 x 36 x 58 mm

Features

- 4-conductor plus shield or 4-pin mini connection
- 10...30V DC
- Normally open NPN and PNP outputs
- Short- and long-range models
- Stainless steel housing
- 1200 psi (8270 kPa) washdown
- False pulse, transient noise, reverse polarity, short circuit, and overload protection

Specifications

Outputs	Normally Open NPN and PNP
Load Current	300 mA
Operating Voltage	10...30V DC
Operating Current	25 mA (off), 55 mA (on)
Voltage Drop	≤2.5V
Repeatability	≤2%
Hysteresis	3...15%
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
Reverse Polarity Protection	Incorporated
Enclosure	NEMA 1, 3, 4, 4X, 6, 6P, 12, 13, IP67 (IEC 529), 1200 psi (8270 kPa) washdown
Connections	A2: 2 m shielded PVC jacketed cable, 4-wire, #22 AWG, 1/2 in. NPT N4: 4-pin mini quick-disconnect
LEDs	Red: Output energized
Operating Temperature [C (F)]	-20...+70° (0...+160°)
Housing Material	Stainless steel, plastic face
Mounting	2 stainless steel studs

Product Selection

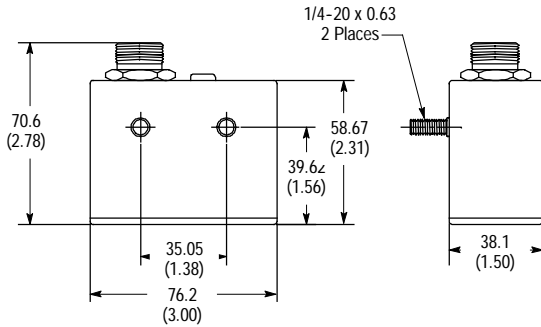
Style	Container Size	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.	
							Cable Style	Mini QD Style
Short Range	202...401	Steel: 19 (0.75), Aluminum: 13 (0.50)	Yes	N.O.	NPN and PNP	35	—	871P-DC19NB76-N4
Long Range	202...704	Steel: 29 (1.15), Aluminum: 15 (0.60)					871P-DC29NB140A2	871P-DC29NB140N4
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))								889N-F4AFC-6F

QD Cordsets

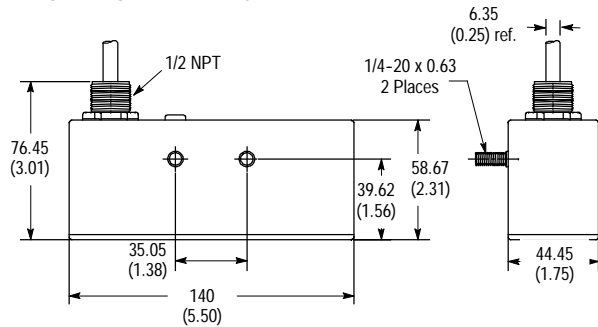
Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2

Approximate Dimensions [mm (inches)]

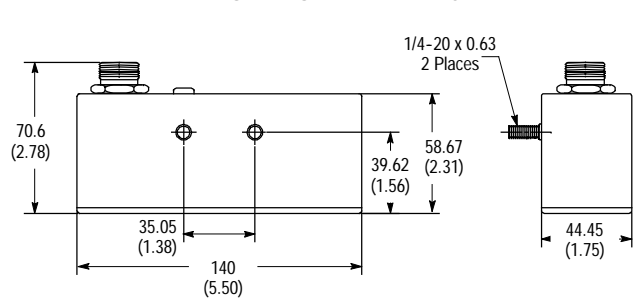
Short-Range Mini QD Style



Long-Range Cable Style

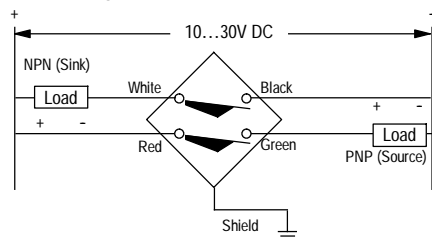


Long-Range Mini QD Style

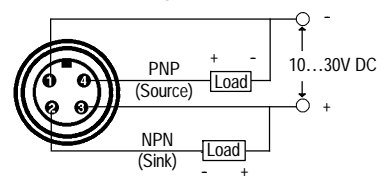


Wiring Diagram

Cable Style

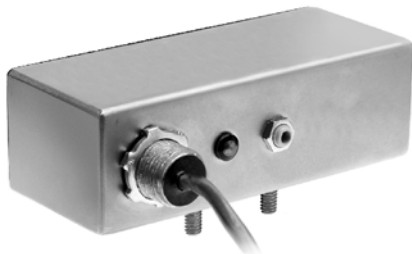


Mini QD Style



ATTENTION Red and black wires must be connected for proper operation.

871P Can Sensors 4-Wire DC Motion



871P DC Motion Style
140 x 45 x 58 mm

Features

- 4-conductor plus shield or 4-pin mini connection
- 10...30V DC
- Normally open NPN and PNP outputs
- Stainless steel housing
- 1200 psi (8270 kPa) washdown
- Dual function output LED
Dim blink: cans moving
Bright steady: no motion
- Adjustable sensing distance
- False pulse, transient noise, reverse polarity, short circuit, and overload protection

Specifications

Outputs	Normally Open NPN and PNP
Load Current	300 mA
Operating Voltage	10...30V DC
Operating Current	25 mA (off), 55 mA (on)
Voltage Drop	≤2.5V
Repeatability	≤2%
Hysteresis	3...15%
Output Time Delay	0.5 s after motion stops
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
Reverse Polarity Protection	Incorporated
Enclosure	NEMA 1, 3, 4, 4X, 6, 6P, 12, 13, IP67 (IEC 529), 1200 psi (8270 kPa) washdown
Connections	A2: 2 m shielded PVC jacketed cable, 4-wire, #22 AWG, 1/2 in. NPT N4: 4-pin mini quick-disconnect
LED	Red: Output Energized Dim Blink: Cans moving Bright Steady: No motion
Potentiometer	Sensing range adjust
Operating Temperature [C (F)]	-20...+70° (0...+160°)
Housing Material	Stainless steel, plastic face
Mounting	2 stainless steel studs

Product Selection

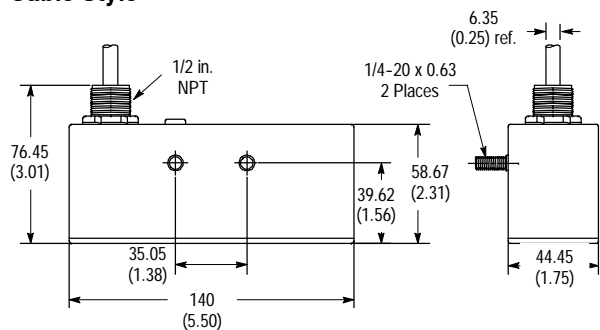
Container Sizes	Nominal Presence Sensing Distance [mm (in.)]	Nominal Motion Sensing Distance [mm (in.)]	Shielded	Output Configuration	Cat. No.	
					Cable Style	Mini QD Style
202-704	Steel: 29 (1.15) Aluminum: 15 (0.60)	Steel: 19 (0.75) Aluminum: 13 (0.50)	Y	Normally Open NPN and PNP	871P-DD29NB140A2	871P-DD29NB140N4
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft))						889N-F4AFC-6F

QD Cordsets

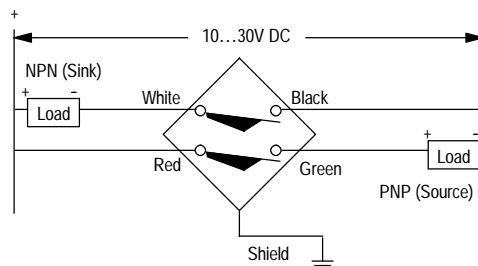
Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2

Approximate Dimensions [mm (in.)]

Cable Style



Wiring Diagram

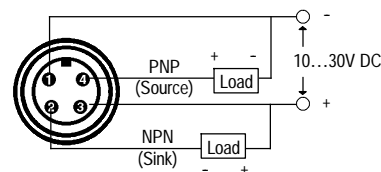
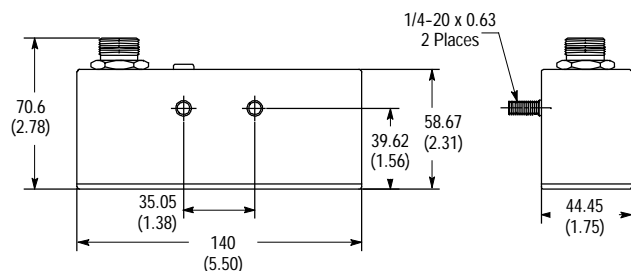


ATTENTION

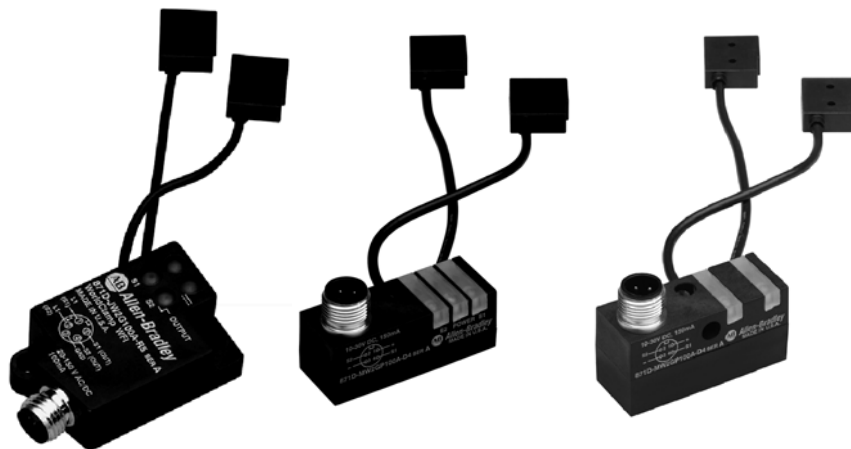


Red and black wires must be connected for proper operation.

Mini QD Style



Notes



Description

Bulletin 871D WorldClamp™ proximity sensors are specifically designed for use in power clamp and gripper applications. These devices incorporate two sensors into one unit, reducing the number of sensors and connection systems required for applications. Each sensor has two sensing coils (chicklets) that are used to detect whether the clamp/gripper is in the open or closed position.

The 871D WorldClamp has a compatible mounting configuration for the cartridges used by the major clamp manufacturers. These models are weld-field immune and have full electrical protections including short circuit, overload, false pulse, reverse polarity (DC models), and transient noise protection. All units meet IEC IP67 enclosure standards and are CE Marked for all applicable directives.

Bulletin 871D WorldClamp™ proximity sensors are available in both 4-wire DC and 5-wire AC/DC micro quick-disconnect styles. Each sensor type is available in 100 mm, 165 mm, and 200 mm lead lengths with either the large or small chicklet size.

Features

- Superior LED visibility
- Weld-field immune
- Shielded construction
- Short circuit protection
- Overload protection
- Transient noise protection
- False pulse protection
- Reverse polarity protection (DC models)
- UL Listed, cUL Certified and CE Marked for all applicable directives

Styles

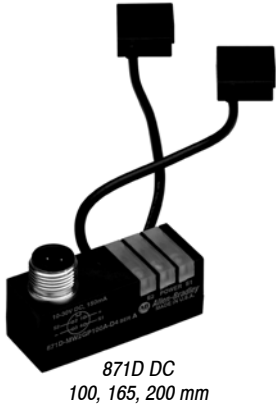
- DC 4-wire page 2-190
- AC/DC 5-wire page 2-192

Accessories

- Cordsets page 8-1

General Information

- Torque Chart page 2-225
- Metric/English Conversion Chart page 14-6



Specifications

Load Current	150 mA max
Leakage Current	< 10 µA
Operating Voltage	10...30V DC
Voltage Drop	< 2.5V
Repeatability	< 2%
Hysteresis	5% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
Weld Field Immunity	1600 Gauss
Certifications	UL Listed, cUL Certified and CE Marked for all applicable directives
Enclosure	IP67
Connections	4-pin micro quick-disconnect
LED	Green: power; orange: S1 output; red: S2 output
Operating Temperature [C (F)]	-25...+70° (-13...+158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Features

- 2 normally open outputs
- Superior LED visibility
- 10...30V DC
- Weld field immune
- Short circuit, overload, false pulse, reverse polarity, and transient noise protection
- Standard 100, 165, and 200 mm lead length for chicklets
- Special 40 mm one lead and 100 mm second lead
- Small or large chicklet sizes
- Impact resistant housing
- 4-pin micro quick-disconnect
- UL Listed, cUL Certified and CE Marked for all applicable directives

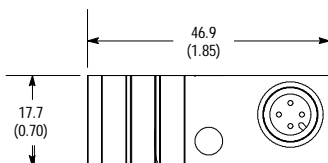
Product Selection

Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Lead Length [mm (in.)]	Chicklet Size	Cat. No.
2 (0.08)	Y	2 N.O. PNP Outputs	15	100 (3.94)	Large	871D-MW2GP100A-D4
					Small	871D-MW2GP100B-D4
					Cylindrical	871D-MW2GP100C-D4
				165 (6.50)	Large	871D-MW2GP165A-D4
					Small	871D-MW2GP165B-D4
				200 (7.88)	Large	871D-MW2GP200A-D4
					Small	871D-MW2GP200B-D4
				40 (S1)/100 (S2)	Large	871D-MW2GP40A-D4❶
Small	871D-MW2GP40B-D4❶					
Recommended standard QD cordset (-2 = 2 m (6.5 ft))						889D-F4AC-2

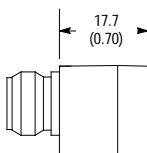
❶ Special length of cable leads, one is 40 mm and the second is 100 mm.

Approximate Dimensions [mm (in.)]

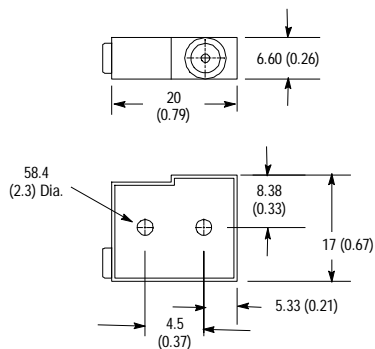
Front View



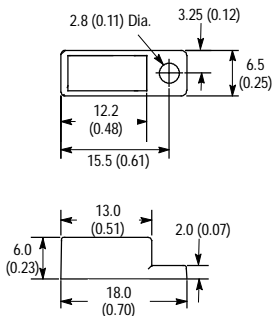
Side View



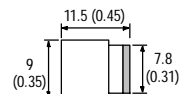
Large Chicklet



Small Chicklet

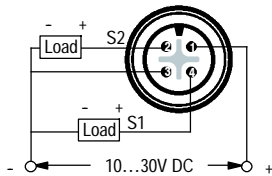


Cylindrical Chicklet



Wiring Diagram

**Normally Open Output
PNP (Sourcing)**





871D AC/DC
100, 165, 200 mm

Specifications

Load Current	100 mA max
Inrush Current (1 cycle)	≤ 2 A (1 cycle)
Leakage Current	< 1.7 mA
Operating Voltage	20...150V AC/DC
Voltage Drop	< 10V
Repeatability	< 2%
Hysteresis	5% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
Weld Field Immunity	1600 Gauss
Certifications	cULus Listed and CE Marked for all applicable directives
Enclosure	IP67
Connections	5-pin AC micro quick-disconnect
LED	2 green: power S1 and S2; red: S1 output; orange: S2 output
Operating Temperature [C (F)]	-25...+70° (-13...+158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes

Features

- 2 normally open outputs
- 20...150V AC/DC
- Weld field immune
- Short circuit, overload, false pulse, and transient noise protection
- Standard 100, 165, and 200 mm lead length for chicklets
- Special 40 mm one lead and 100 mm second lead
- Small or large chicklet sizes
- Impact resistant housing
- 5-pin micro quick-disconnect
- cULus Listed and CE Marked for all applicable directives



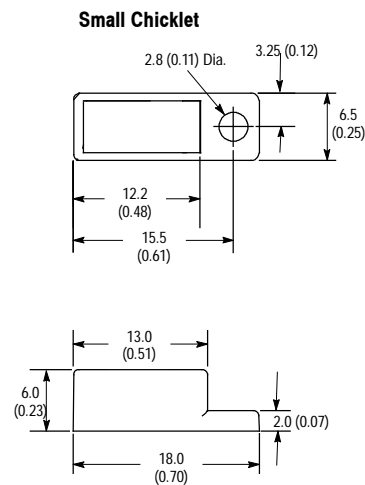
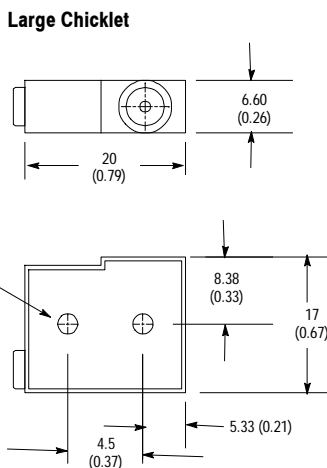
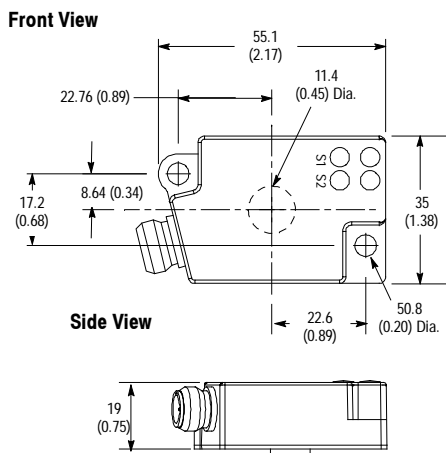
Product Selection

Sensor	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency (Hz)	Lead Length [mm (in.)]	Chicklet Size	Cat. No.
Standard	2 (0.08)	Y	2 N.O. Outputs	20	100 (3.94)	Large	871D-JW2G100A-R5
						Small	871D-JW2G100B-R5
					165 (6.50)	Large	871D-JW2G165A-R5
						Small	871D-JW2G165B-R5
					40 (1.57) - S1 100 (3.94) - S2	Large	871D-JW2G200A-R5
						Small	871D-JW2G200B-R5
	2 (0.08)	Y	2 N.O. Outputs	20	200 (7.88)	Large	871D-JW2G40A-R5
						Small	871D-JW2G40B-R5
Recommended standard QD cordset (-2 = 2 m (6.5 ft))							889R-F5AEA-2

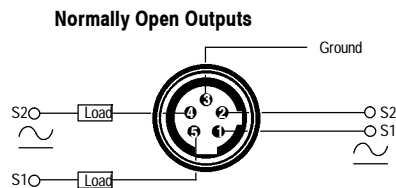
Special length of cable leads, one is 40 mm and the second is 100 mm.

Approximate Dimensions [mm (in.)]

Standard Sensor



Wiring Diagram



Note: Load can be switched to pin 1 (S1) and pin 2 (S2).

Notes



Description

Bulletin 871D cylinder position inductive proximity sensors are self-contained solid state devices. These devices are designed for sensing metal objects without physical contact. Bulletin 871D cylinder position sensors are specifically designed for end of stroke detection of both hydraulic and pneumatic cylinders.

The innovative design of the 871D product family allows 304° of rotational movement of the sensor body during installation without breaking the seal. The sensor body is locked into place through the use of one set screw on the sensor mounting flange. This system provides simpler and faster sensor installation as well as neat cable runs.

Each 871D sensor mounts into the industry standard in-port cylinder position sensor bolt pattern with two (1/4 in.-20UNC x 3/4 in.) grade 8 screws and is sealed with an o-ring to withstand pressures up to 3000 psi (207 BAR). All models are weld field immune and employ full electrical protections including short circuit, overload, false pulse, reverse polarity (DC models), and transient noise protection. All units meet IEC IP67 enclosure standards and are CE Marked for all applicable directives.

Bulletin 871D sensors are available in both 3-wire DC and 2-wire AC/DC versions with either mini- or micro-style connectors. DC sensors are available in five industry-standard probe lengths from 26...95.9 mm (1.025...3.775 in.). AC/DC sensors are available in six industry-standard probe lengths from 26...115.9 mm (1.025...4.560 in.). Special spacers are also available to effectively alter the probe length for specific applications.

Features

- Stainless steel probe with ceramic face
- Low profile housing can be rotated 304° during installation without breaking pressure seal
- Shielded construction
- Weld-field immune
- Short circuit protection
- Overload protection
- Transient noise protection
- False pulse protection
- Reverse polarity protection (DC models)
- UL Listed, cUL Certified, and CE Marked for all applicable directives

Styles

- DC 3-wire page 2-196
- AC/DC 2-wire page 2-198

Accessories

- Cordsets page 8-1
- Spacer Kits page 2-224

General Information

- Torque Chart page 2-225
- Metric/English Conversion Chart page 14-6



871D DC Mini
Quick-Disconnect Style
12 mm



871D DC Micro
Quick-Disconnect Style
12 mm

Specifications

Outputs	Normally Open
Max. Load Current	<200 mA
Leakage Current	< 80 μ A
Operating Voltage	10...30VDC
Voltage Drop	< 2.5V DC @ 200 mA
Switching Frequency	10 Hz
Repeatability	5% typical
Hysteresis	15% typical
Reverse Polarity Protection	Incorporated
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
Weld Field Immunity	20,000 A at 1 inch
Certifications	cULus Listed and CE Marked for all applicable directives
Enclosure	NEMA 1, 2, 3, 3R, 4, 6, 12, 13, IP67 (IEC 529)
Connections	Quick Disconnect: 4-pin mini style 4-pin micro style
LED	Green: Power; Orange: Output
Operating Temperature [C (F)]	-25...70° (-13...158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes
Housing Material	Machined aluminum
Probe Material	Stainless steel, ceramic face
Non-activated Current Draw	\leq 10 mA
Activated Current Draw	\leq 18 mA

Features

- Rugged low profile housing
- 3-wire operation
- Housing 304° rotatable during installation without breaking pressure seal
- 10...30V DC
- Normally open output
- Weld-field immune
- Short circuit, overload, false pulse, transient noise, and reverse polarity protection
- cULus Listed and CE Marked for all applicable directives



Product Selection

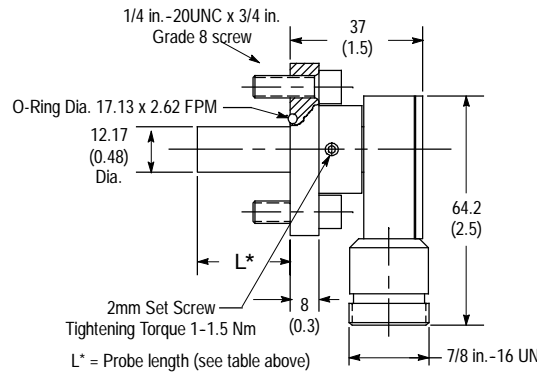
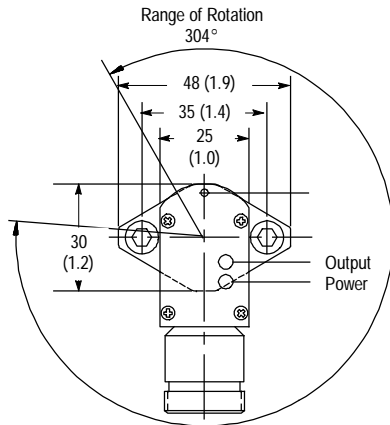
Barrel Dia.	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Probe Length [mm (in.)]	Cat. No.s	
					Mini QD	Micro QD
12 mm	2 (0.08)	Y	N.O.	26.0 (1.025)	871D-DW2NP260-N4	871D-DW2NP260-D4
				31.7 (1.250)	871D-DW2NP317-N4	871D-DW2NP317-D4
				52.4 (2.062)	871D-DW2NP524-N4	871D-DW2NP524-D4
				73.0 (2.875)	—	871D-DW2NP730-D4
				95.9 (3.775)	871D-DW2NP959-N4	871D-DW2NP959-D4
Recommended standard QD cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))					889N-F4AFC-6F	889D-F4AC-2

QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Spacer Kits	2-224

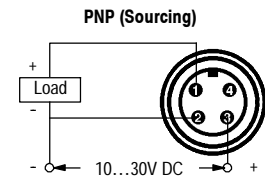
Approximate Dimensions [mm (in.)]

Mini Connector Models

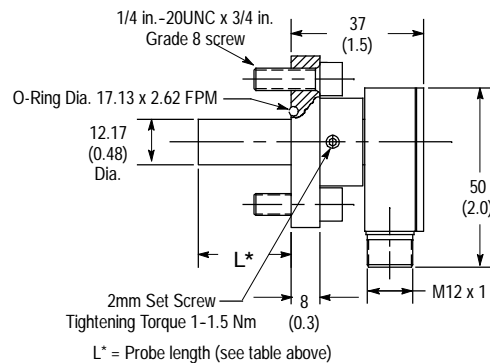
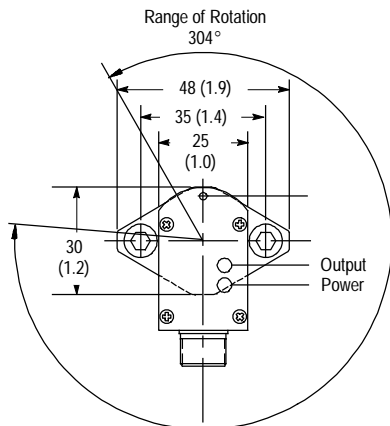


Wiring Diagrams

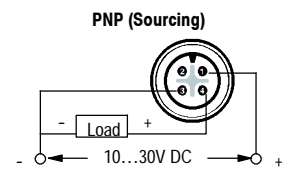
Mini Quick-Disconnect Style
Normally Open



Micro Connector Models



Micro Quick-Disconnect Style
Normally Open





*871D AC/DC Mini
Quick-Disconnect Style*



*871D AC/DC Micro
Quick-Disconnect Style*

Specifications

Outputs	Normally Open
Load Current	5...400 mA
Inrush Current (1 cycle)	< 3 A (t < 20 msec)
Leakage Current	< 1.7 mA @ 120V AC
Operating Voltage	20...250V AC/DC
Voltage Drop	< 6V at 400 mA
Switching Frequency	50 Hz
Repeatability	5% typical
Hysteresis	15% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
Weld Field Immunity	20,000 A at 1 inch
Certifications	UL Listed, cUL Certified for Canada and CE Marked for all applicable directives
Enclosure	NEMA 1, 2, 3, 3R, 4, 6, 12, 13, IP67 (IEC 529)
Connections	Quick Disconnect: 3-pin mini style 3-pin micro style
LED	Green: Power; Orange: Output
Operating Temperature [C (F)]	-25...70° (-13...158°)
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm amplitude, 3 planes
Housing Material	Nickel plated brass
Probe Material	Stainless steel, ceramic face

Features

- Rugged low profile housing
- 2-wire operation
- Housing 304° rotatable during installation without breaking pressure seal
- 20...250V AC/DC
- Normally open output
- Weld-field immune
- Short circuit, overload, false pulse, and transient noise protection
- UL Listed, cUL Certified and CE Marked for all applicable directives

Product Selection

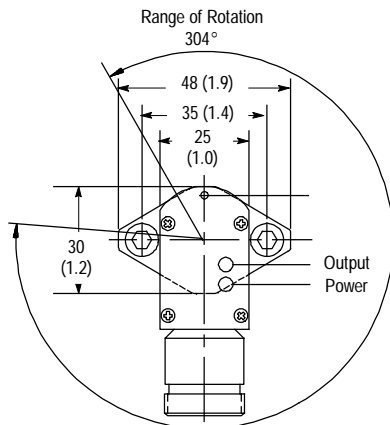
Barrel Dia.	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Probe Length [mm (in.)]	Cat. No.	
					Mini QD	Micro QD
12mm	2 (0.08)	Y	N.O.	26.0 (1.025)	871D-BW2N260-N3	871D-BW2N260-R3
				31.7 (1.250)	871D-BW2N317-N3	871D-BW2N317-R3
				52.4 (2.062)	871D-BW2N524-N3	871D-BW2N524-R3
				73.0 (2.875)	871D-BW2N730-N3	871D-BW2N730-R3
				95.9 (3.775)	871D-BW2N959-N3	871D-BW2N959-R3
				115.9 (4.560)	871D-BW2N1159-N3	871D-BW2N1159-R3
Recommended standard QD cordset (-6F = 1.8m (6ft), -2 = 2 m (6.5 ft))					889N-F3AFC-6F	889R-F3ECA-2

QD Cordsets and Accessories

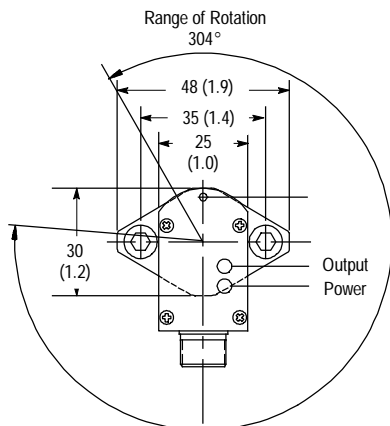
Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2
Spacer Kits	2-224

Dimensions—mm (in.)

Mini Connector Models

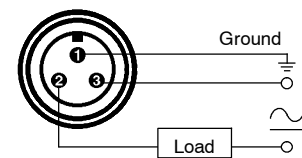


Micro Connector Models

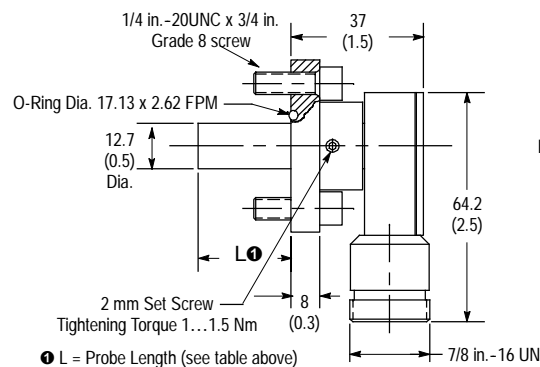


Wiring Diagrams

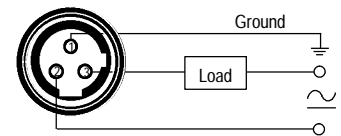
Mini Quick-Disconnect Style
Normally Open



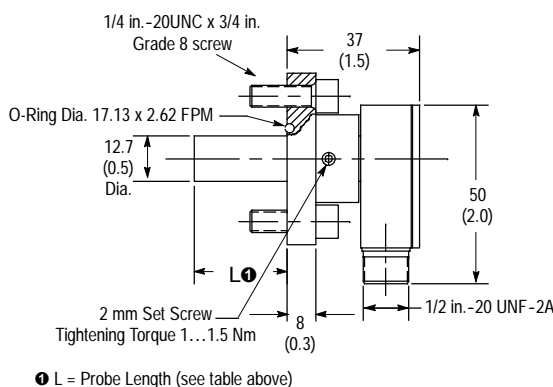
Note 1: Load can be switched to pin 3.

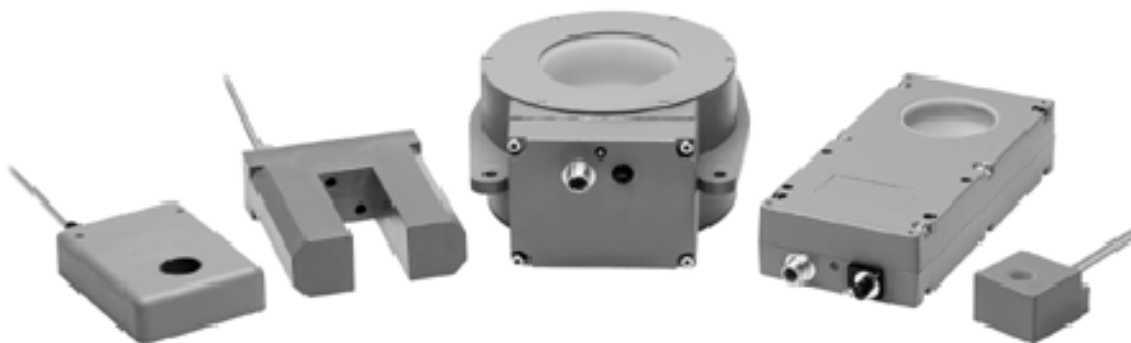


Micro Quick-Disconnect Style
Normally Open or Normally Closed



Note 1: Load can be switched to pin 2.





Description

Bulletin 871R Ring and 871S Slot sensors are self-contained, general purposed, solid-state devices designed to sense the presence of ferrous and nonferrous metal objects that pass through their sensing field.

Ring sensors are available in 12, 20, 50 and 100 mm ring diameter sizes with minimum ball sizes ranging from 2.5...8.0 mm.

Slot sensors are available in 30 mm slot gap. When mounting two slot sensors side by side, it is necessary to use different models with different operating frequencies.

Features

- Cable or micro QD style
- Short circuit protection
- Reverse polarity protection
- CE Marked for all applicable directives

Styles

- 871R DC 3-Wire Ring page 2-202
- 871S DC 3-Wire Slot page 2-205

QD Cordsets

- Cordsets page 8-1

General Information

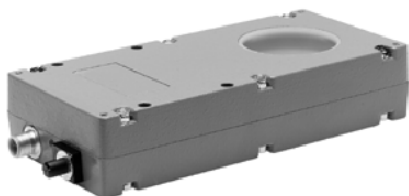
- Torque Chart page 2-225
- Metric/English
- Conversion Chart page 14-6

871R 3-Wire DC

Ring Style



871R DC Cable Style
12, 20 mm



871R DC Micro
Quick-Disconnect Style
50 mm



871R DC Micro
Quick-Disconnect Style
100 mm

Specifications

Load Current	≤200 mA
Leakage Current	≤10 μA
Operating Voltage	10...30V DC
Voltage Drop	≤2.4V
Repeatability	≤2%
Hysteresis	10% typical
Reverse Polarity Protection	Incorporated
Transient Noise Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
False Pulse Protection	Incorporated
Certifications	CE Marked for all applicable directives
Enclosure	NEMA 4 IP67 (IEC 529)
Connections	Cable: 2 m (6.5 ft) length 3-conductor #26 AWG PVC Quick-Disconnect: 4-pin micro style
LED	Red: Output energized
Operating Temperature [C (F)]	-25...+70° (-13...+158°)
Shock and Vibration	5 g, 10...55 Hz

Features

- 3-wire operation
- 3-conductor, 4-pin micro QD style
- 10...30V DC
- Reverse polarity, short circuit, overload, false pulse, and transient noise protection
- CE Marked for all applicable directives

Product Selection

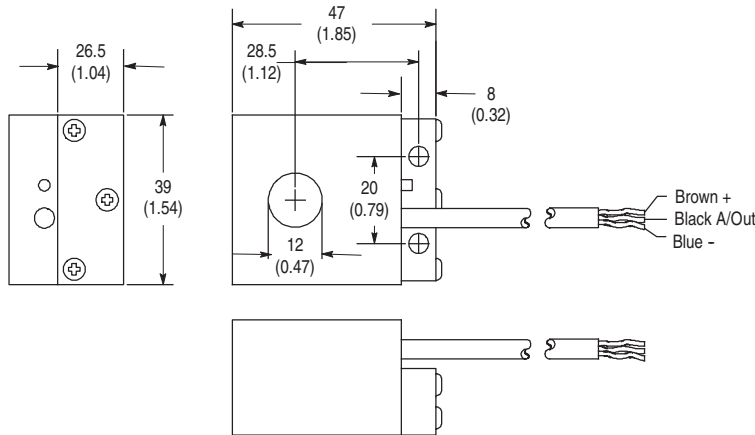
Ring Diameter	Minimum Ball Size [mm (in.)]	Output Configuration		Switching Frequency [Hz]	Cat. No.	
					Cable Style	Micro QD Style
12 mm	2.5 (0.10)	N.O.	PNP	800	871R-D12NP39-E2	—
20 mm	6 (0.24)			1000	871R-D20NP73-E2	
50 mm	3 (0.12)	N.O. and N.C.	PNP	500	—	871R-D50NP90-D4
			NPN			871R-D50NN90-D4
100 mm	8 (0.31)	N.O. and N.C.	PNP	500		871R-D100NP120D4
			NPN			871R-D100NN120D4
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft), -2 = 2 m (6.5 ft))						889D-F4AC-2

QD Cordsets

Description	Page Number
Other Cordsets Available	8-2
Terminal Chambers	8-2

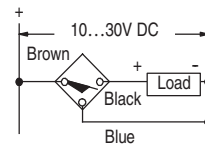
Approximate Dimensions [mm (in.)]

Cable Style (Cat. No. 871R-D12NP39-E2)

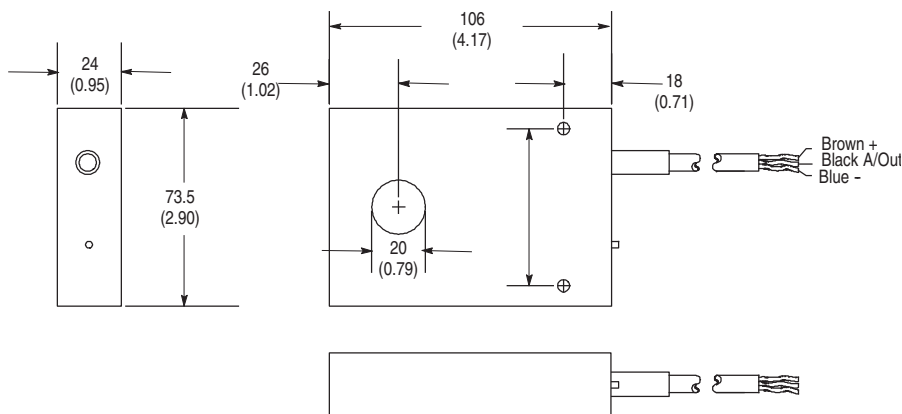


Typical Wiring Diagrams

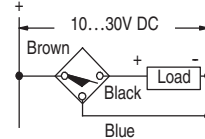
Normally Open
PNP (Sourcing)



Cable Style (Cat. No. 871R-D20NP73-E2)



Normally Open
PNP (Sourcing)

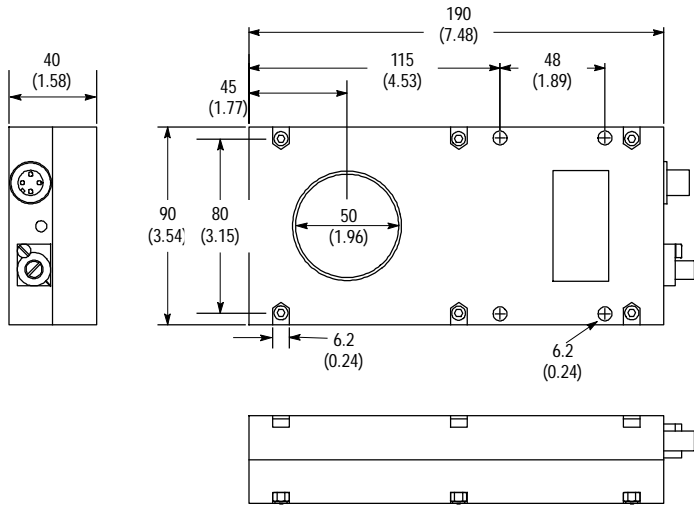


871R 3-Wire DC

Ring Style

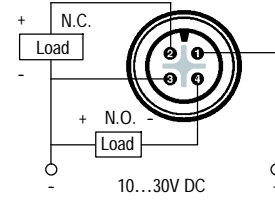
Approximate Dimensions [mm (in.)]

Micro Quick-Disconnect Style (871R-D50NP90-D4 & 871R-D50NN90-D4)

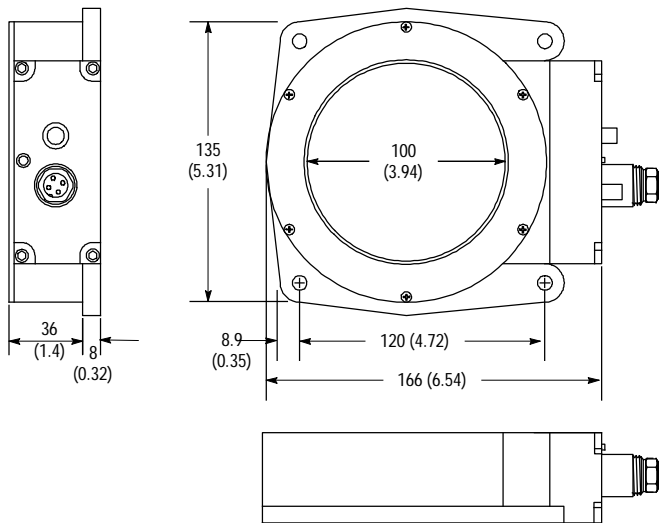


Wiring Diagrams

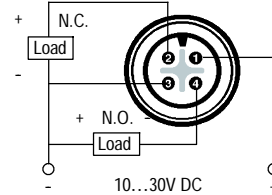
Complementary Normally Open and Normally Closed
PNP (Sourcing)



Micro Quick-Disconnect Style (871R-D100NP120-D4 & 871R-D100NN120-D4)



Complementary Normally Open and Normally Closed
PNP (Sourcing)





871R DC Cable Style
30 mm Slot Gap

Features

- 3-wire operation
- 3-conductor
- 18...30V DC
- False pulse and transient noise protection
- CE Marked for all applicable directives

Specifications

Load Current	≤200 mA
Leakage Current	≤10 μA
Operating Voltage	18...30V DC
Voltage Drop	≤2.4V
Repeatability	≤2%
Hysteresis	15% typical
Transient Noise Protection	Incorporated
False Pulse Protection	Incorporated
Certifications	CE Marked for all applicable directives
Enclosure	NEMA 4 IP65 (IEC 529)
Connections	Cable: 2 m (6.5 ft) length 3-conductor #26 AWG PVC
LED	None
Operating Temperature [C (F)]	-25...+70° (-13...+158°F)
Shock and Vibration	5 g, 10...55 Hz

Inductive Proximity Sensors

871S 3-Wire DC

Slot Style

Product Selection

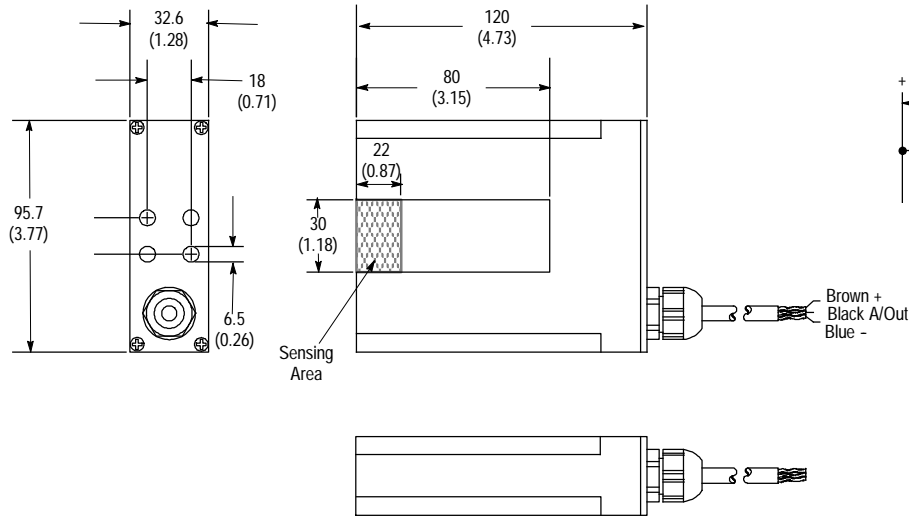
Slot Gap	Output Configuration		Switching Frequency [Hz]	Operating Frequency [KHz]	Cat. No.
					Cable Style
30 mm	N.O.	PNP	500	75	871S-D20NP30-E2
				110	871S-DX20NP30-E2

QD Cordsets

Description	Page Number
Terminal Chambers	8-2

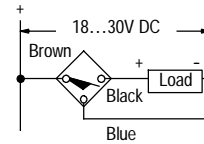
Approximate Dimensions [mm (in.)]

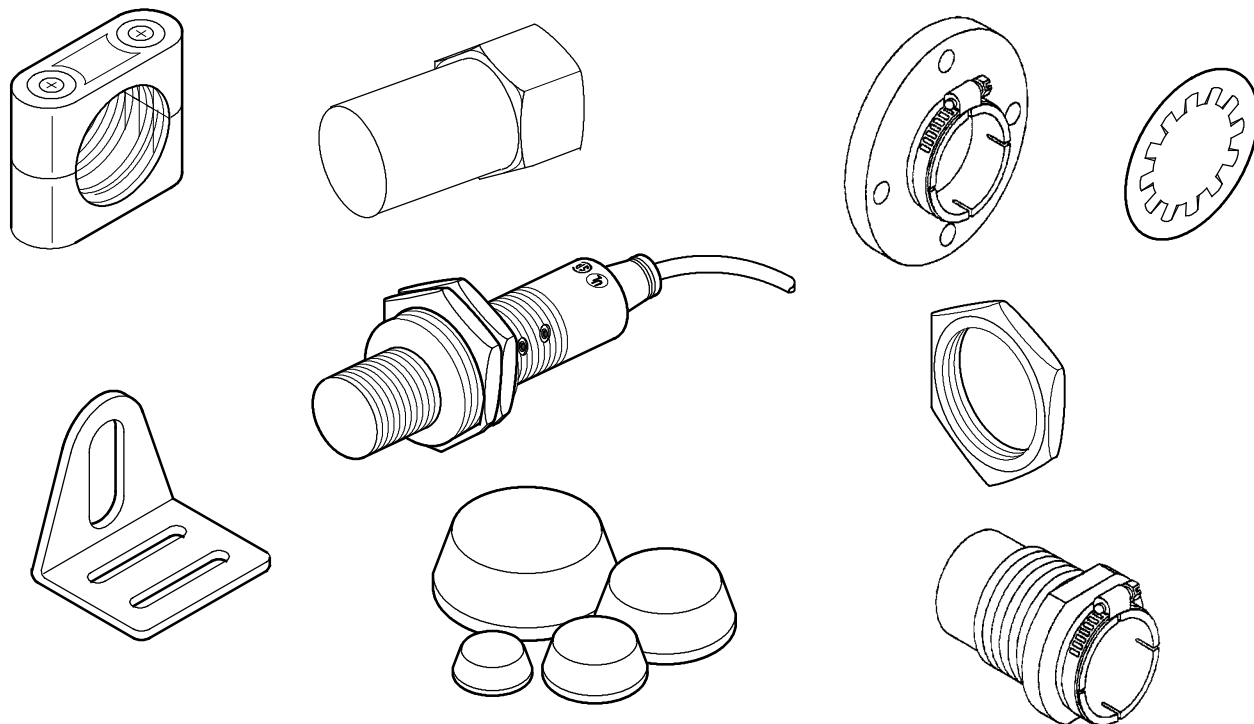
Cable Style



Wiring Diagrams

Normally Open PNP (Sourcing)





Accessories

Banking Screw Adaptors	page 2-208
Conduit Adaptors	page 2-209
Mounting Brackets, Spring Return Style	page 2-210
Mounting Brackets, Quick-Change Style	page 2-211
Mounting Brackets, Snap Clamp Style	page 2-212
Mounting Brackets, Swivel/Tilt Style	page 2-212
Mounting Brackets, Right Angle Style	page 2-213
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Mounting Bracket, Can Sensor Style	page 2-215
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Mounting Bracket, Limit Switch Style, VersaCube	page 2-217
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End Caps	page 2-220
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General Information

Torque Chart	page 2-225
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Description

A large variety of accessories are available for use with Rockwell Automation/Allen-Bradley products offering convenience in mounting and applying proximity sensors.

Conduit adaptors allow easy connection of most threaded-barrel models to a conduit line. Banking screw adaptors provide a mechanical interface to applications allowing a proximity sensor to be utilized as a mechanical stop switch.

Our clamp, swivel/tilt, and right-angle brackets are designed for convenient mounting and adjustable positioning of tubular-style proximity sensors. Quick-change sensor mounting brackets are designed to allow quick and simple sensor replacement without readjustment. The spring return mounting bracket and end caps help to protect your sensor from damage due to collisions.

VersaCube mounting hardware provides superior mounting stability and convenience when retrofitting rectangular or limit switch style proximity sensors.

Plastic and PTFE end caps and covers provide additional protection to sensors from abrasion corrosion, chemicals, other weld slag and debris.

Sensor wells allow for quick and easy mounting of capacitive sensors in tanks and silos for level detection. Sight-glass mount sensor brackets allow convenient and simple mounting of capacitive sensors to sight tubes for level detection.

All threaded-barrel sensors are shipped with mounting nuts and lock washers. Replacement hardware is available if these become lost or damaged.

Accessories

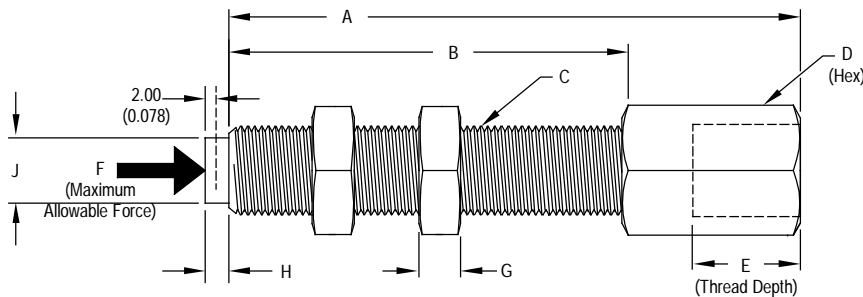
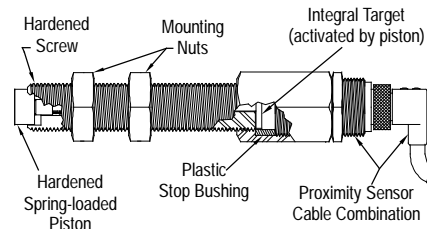
Banking Screw Adaptors

Description

Banking screw adaptors provide the flexibility to utilize inductive proximity sensors as mechanical stop switches. These banking screw adaptors are designed for use only with shielded sensors. Each banking screw adaptor is made of heat treated alloy steel

components and comes complete with two mounting nuts. Standard models require 252 g (9 oz) of force to activate the switch.

NOTE: Models are available requiring more force to activate the switch, contact factory for details.



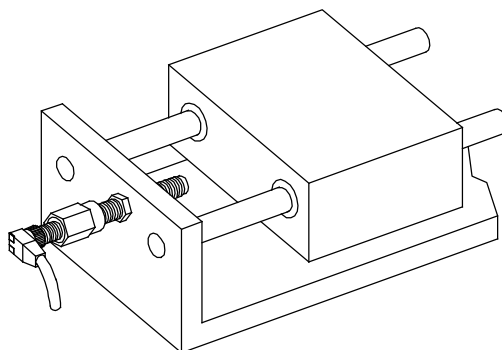
Approximate Dimensions [mm (in.)]

For Use with:	A	B	C	D	E	F	G	H	J	Cat. No.
8 mm Shielded Sensors	57.2 (2.25)	25.0 (1.00)	M8 x 1	11.0 (0.43)	18.4 (0.72)	2,000 N (450 lb)	5.08 (0.20)	2.93 (0.115)	5.84	871A-AK8-25
	82.6 (3.25)	50.0 (2.00)								871A-AK8-50
12 mm Shielded Sensors	57.2 (2.25)	25.0 (1.00)	M12 x 1	15.7 (0.62)	17.4 (0.67)	20,500 N (4,608 lb)	6.35 (0.25)	4.22 (0.166)	9.40	871A-AK12-25
	82.6 (3.25)	50.0 (2.00)								871A-AK12-50
	108 (4.25)	75.0 (3.00)								871A-AK12-75
	133 (5.25)	100 (4.00)								871A-AK12-100
18 mm Shielded Sensors	57.2 (2.25)	25.0 (1.00)	M18 x 1	22.1 (0.87)	22.1 (0.87)	45,000 N (10,115 lb)	6.35 (0.25)	4.22 (0.166)	14.2	871A-AK18-25
	82.6 (3.25)	50.0 (2.00)								871A-AK18-50
	108 (4.25)	75.0 (3.00)								871A-AK18-75
	133 (5.25)	100 (4.00)								871A-AK18-100

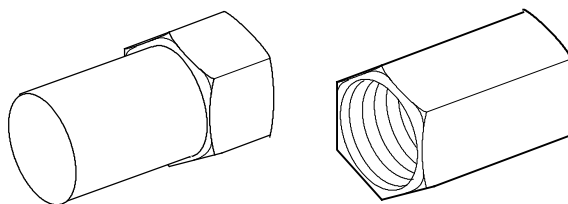
Sensors for use with Banking Screw Adaptors

Sensor Diameter	Sensing Range [mm (in.)]	Specifications	Cat. No.
8 mm	1.5 (0.06)	(10...30V DC, N.O., PNP, Micro QD)	872C-DX15-D4
12 mm	2.0 (0.08)		872C-DX34-D4
18 mm	3.0 (0.12)		872C-DX33-D4
12 mm	1.0 (0.04)	(20...250V AC, N.O., Micro QD)	872C-A2N12-R3
18 mm	4.0 (0.16)		872C-A5N18-R3

Typical Application



Conduit Adaptors for Tubular Proximity Sensors—Nickel-Plated Brass



12, 18, 30 mm

For All Bulletin Numbers Except 871U

Tube Diameter [mm (in.)]	Tube Thread Size	Approximate Dimensions [mm (in.)]	Cat. No.
12 (0.47)	M12 x 1		871C-N13
18 (0.71)	M18 x 1		871C-N19
30 (1.18)	M30 x 1.5		871C-N31
12 (0.47)	M12 x 1		871T-N5
18 (0.71)	M18 x 1		871T-N6
30 (1.18)	M30 x 1.5		871T-N7

Accessories

Mounting Brackets for Tubular Proximity Sensors—Spring Return Style

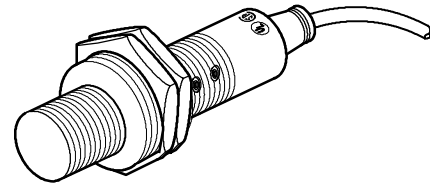
Description

Spring return mounting brackets provide protection for the sensor in the event of a target collision. The bracket is designed to allow the sensor to retract axially when force is applied to its face, then to return to its original position when the force is removed. The bracket is simply threaded onto a

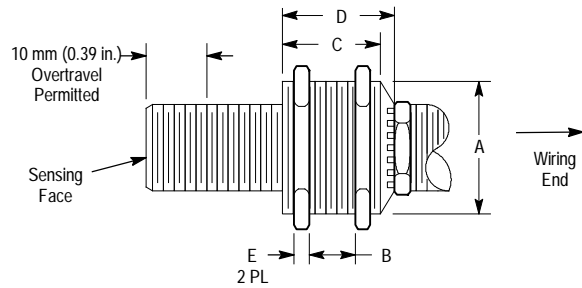
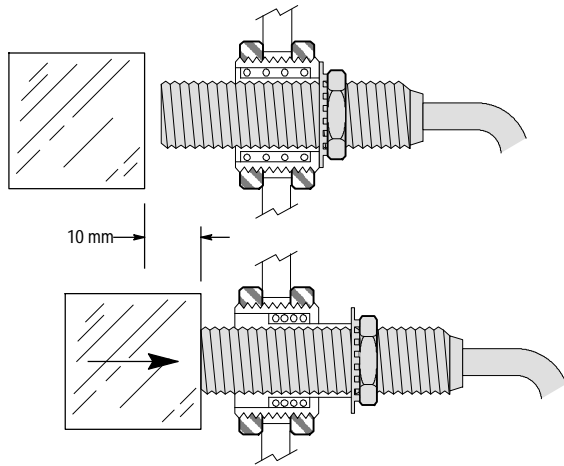
tubular proximity sensor and locked into place by using the mounting nut provided with the sensor.

For protection against lateral collisions, the addition of a plastic deflecting cap is recommended (see page 2-220).

Note: Right angle mounting brackets are available for use with these spring return brackets (see page 2-213).



8, 12, 18, 30 mm



NOTE 1: Any overtravel greater than 10 mm (0.39 in.) or improper installation can damage sensor and/or mount. **Do not exceed** torque specifications listed or distortion of mounting sleeve will result.

NOTE 2: Use a single jam nut, provided with the sensor, to lock the inner sleeve to the sensor body. A bonding agent such as low strength Loctite adhesive is recommended. Tip holes for retaining ring pliers are provided for grasping the inner sleeve.

Approximate Dimensions [mm (in.)]


Sensor Diameter	[mm (in.)]						Cat. No.	
	Clearance Hole Diameter	A	B	C	D	E	Anodized Aluminum	Stainless Steel
8 mm	15.9 (0.63)	M16 X 1.5	11.0 (0.43)	19.0 (0.75)	22.0 (0.87)	3.5 (0.14)	871A-BXN8	871A-BXS8
12 mm	22.2 (0.88)	M22 X 1.5	11.0 (0.43)	19.0 (0.75)	22.0 (0.87)	4.0 (0.16)	871A-BXN12	871A-BXS12
12 mm	17.9 (0.70)	M18 X 1	10.0 (0.40)	19.0 (0.75)	21.2 (0.84)	4.0 (0.16)	—	871A-BXS12-LP
18 mm	31.0 (1.22)	M30 X 1.5	15.0 (0.59)	26.0 (1.02)	30.0 (1.18)	5.0 (0.20)	871A-BXN18	871A-BXS18
30 mm	47.5 (1.87)	M47 X 1.5	25.4 (1.0)	35.0 (1.38)	37.9 (1.49)	5.0 (0.20)	871A-BXN30	871A-BXS30

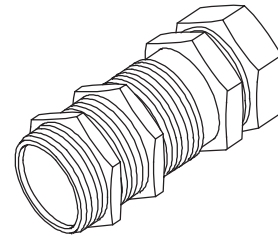
Note: Each spring return mounting bracket is supplied with two mounting nuts.

Mounting Brackets for Tubular Proximity Sensors—Quick-Change Style

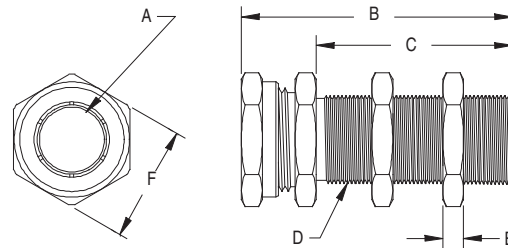
Description

Quick-change sensor brackets provide the ability to install or remove shielded proximity sensors quickly and easily. Quick sensor change-out is achieved with a single collet-style locknut, while maintaining the original sensing distance setup thus eliminating time consuming readjustments. Each quick-change sensor bracket is made of zinc-plated brass components and comes complete with two mounting nuts.

ATTENTION	Not for use with ferrous selective proximity sensors.
	



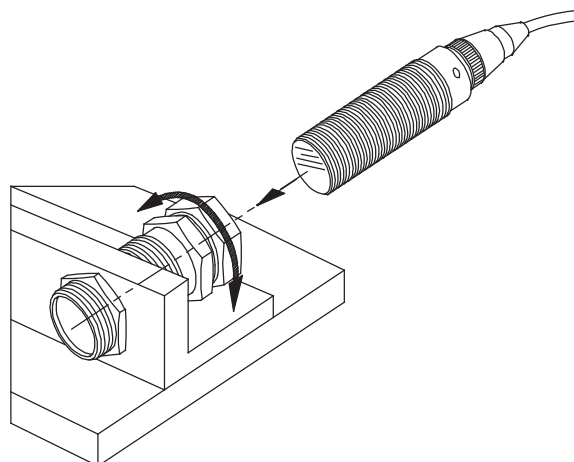
8, 12, 18, 30 mm



Approximate Dimensions [mm (in.)]

Sensor Diameter	A	B	C	D	E	F	Cat. No.
8 mm	8 (0.31)	32.0 (1.25)	18.0 (0.71)	M12 X 1	3.05 (0.12)	17.4 (0.68)	871A-BQN8
		48.0 (1.89)	34.0 (1.34)				871A-BQN8-L
12 mm	12 (0.47)	34.0 (1.34)	20.0 (0.79)	M16 X 1	3.30 (0.13)	22.2 (0.88)	871A-BQN12
		44.0 (1.73)	30.0 (1.18)				871A-BQN12-L
18 mm	18 (0.71)	38.0 (1.50)	20.0 (0.79)	M24 X 1.5	5.08 (0.20)	30.2 (1.19)	871A-BQN18
		58.0 (2.28)	40.0 (1.57)				871A-BQN18-L
30 mm	30 (1.18)	38.0 (1.50)	20.0 (0.79)	M36 X 1.5	5.84 (0.23)	41.3 (1.63)	871A-BQN30
		58.0 (2.28)	40.0 (1.57)				871A-BQN30-L

Typical Application

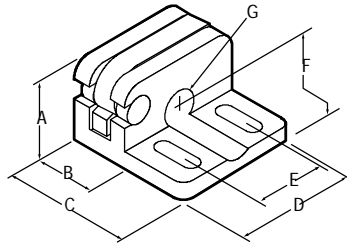


Accessories

Snap-Clamp Style Mounting Bracket for Tubular Proximity Sensors

Description

The snap-clamp style mounting bracket for tubular inductive proximity sensors provides easy, tool-free installation for 12 and 18 mm barrel diameters. This plastic bracket allows fast, simple installation and removal of the sensor, and is ideal for general purpose applications.



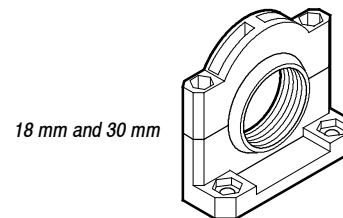
Approximate Dimensions and Product Selection [mm (in.)]

Sensor Diameter	A	B	C	D	E	F	G	Cat. No.
12 mm	25.3 (0.99)	22.1 (0.87)	39.9 (1.57)	35.5 (1.4)	22.0 (0.87)	8.1 (0.32)	12 mm	871A-SCBP12
18 mm	30.5 (1.2)	22.9 (0.9)	42.9 (1.69)	39.6 (1.56)	26.0 (1.02)	11.2 (0.44)	18 mm	871A-SCBP18

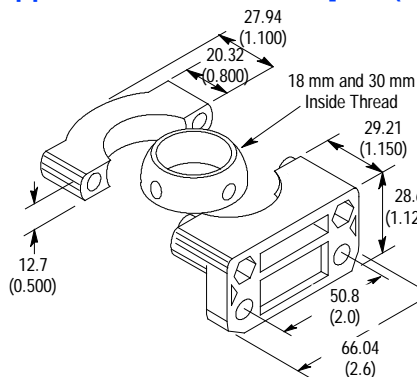
Mounting Brackets for Tubular Proximity Sensors—Swivel/Tilt Style

Description

The swivel/tilt mounting bracket provides both axial and 10° tilt adjustment for our 18 mm and 30 mm tubular-style products. It is ideal for convenient mounting and alignment of 873C ultrasonic sensors.



Approximate Dimensions [mm (in.)]



Description	Cat. No.
30 mm Mounting Bracket	60-2439
18 mm Mounting Bracket	60-2649

Note: Each swivel/tilt mounting bracket is supplied with two screws and two locking nuts.

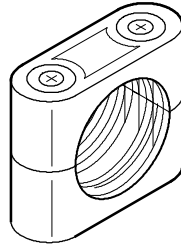
Mounting Brackets for Tubular Proximity Sensors—Right Angle Style

Proximity Tube Diameter [mm (in.)]	Approximate Dimensions [mm (in.)]	Material	Cat. No.
8 (0.31)		Zinc-Plated Steel	871A-BRN8
		Stainless Steel	871A-BRS8
12 (0.047)		Zinc-Plated Steel	871A-BRN12
		Stainless Steel	871A-BRS12
18 (0.071) Also for use with the 871A-BXN8 or 871A-BXS8 Spring Return Brackets		Zinc-Plated Steel	871A-BRN18
		Stainless Steel	871A-BRS18
For use with 871A-BXN12 or 871A-BXS12 Spring Return Brackets		Zinc-Plated Steel	871A-BRN22
		Stainless Steel	871A-BRS22
30 (1.18) Also for use with the 871A-BXN18 or 871A-BXS18 Spring Return Brackets		Zinc-Plated Steel	871A-BRN30
		Stainless Steel	871A-BRS30
For use with 871A-BXN30 or 871A-BXS30 Spring Return Brackets		Zinc-Plated Steel	871A-BRN47
		Stainless Steel	871A-BRS47

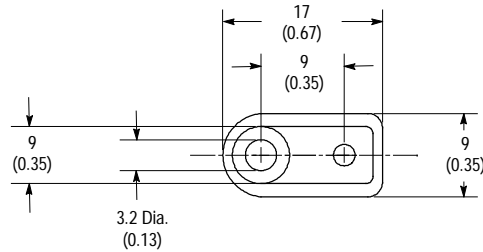
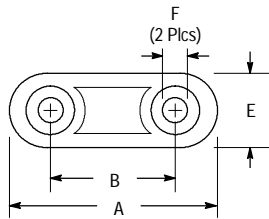
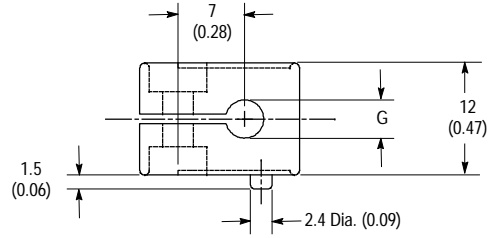
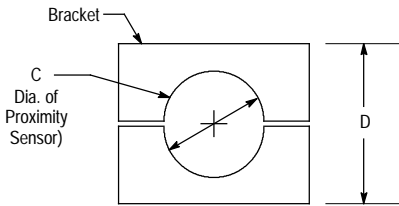
Accessories

Mounting Brackets for Tubular Proximity Sensors—Clamp Style

Stainless Steel Mounting Hardware
and Chemical Resistant Material
for Harsh Environment



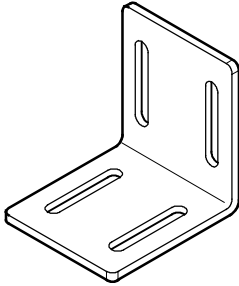
5, 6.5, 8, 12, 18, 30, 34 mm



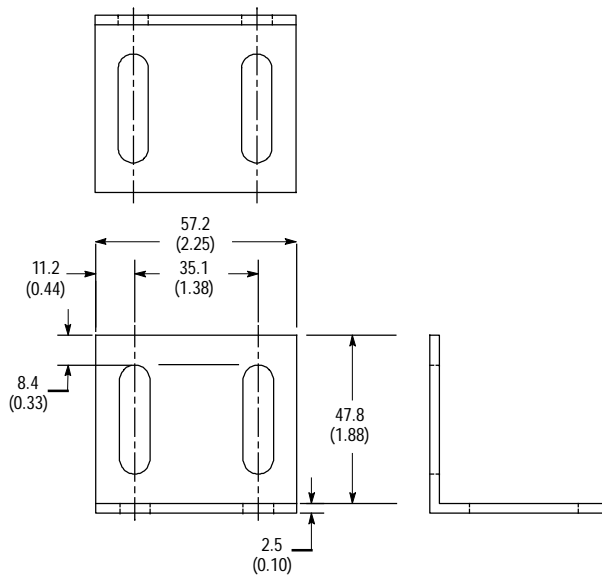
Approximate Dimensions [mm (in.)]

Sensor Diameter	A	B	C	D	E	F	G	Cat. No.
5 mm	—	—	—	—	—	—	5 (0.20)	871A-BP5
6.5 mm	—	—	—	—	—	—	6.5 (0.26)	871A-BP7
8 mm	29.0 (1.14)	18.0 (0.708)	8.0 (0.31)	18.3 (0.72)	11.0 (0.432)	4.4 (0.172)	—	871A-BP8
12 mm	36.0 (1.42)	24.0 (0.944)	12.0 (0.47)		12.0 (0.472)		—	871A-BP12
18 mm	45.0 (1.772)	32.0 (1.26)	18.0 (0.71)	29.4 (1.16)	13.0 (0.512)	5.4 (0.212)	—	871A-BP18
30 mm	60.0 (2.40)	45.0 (1.772)	30.0 (1.18)	48.4 (1.91)	15.8 (0.624)	5.5 (0.218)	—	871A-BP30
34 mm	65.8 (2.59)	50.0 (1.97)	34.0 (1.34)	48.3 (1.90)			—	871A-BP34

Stainless Steel Mounting Bracket Assembly



Approximate Dimensions [mm (in.)]



Description	Cat. No.
Mounting Bracket	871A-BR58

Accessories

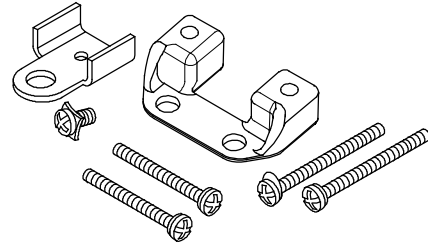
Mounting Bracket for VersaCube™ Proximity Sensors

Description

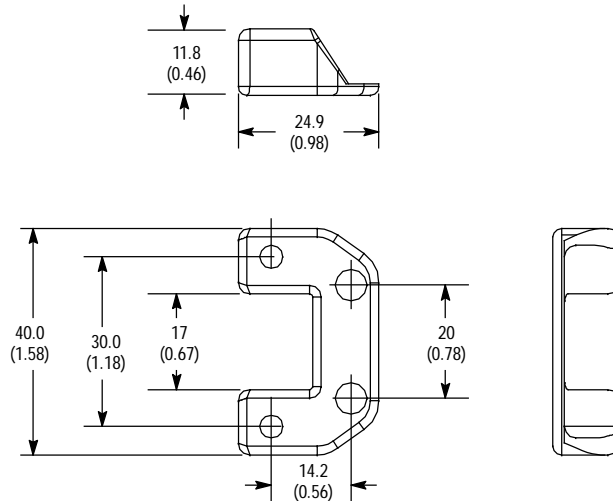
The mounting kit for VersaCube sensors provides additional mounting flexibility to 871P VersaCube style sensors. This kit includes an accessory mounting bracket that allows the VersaCube to bolt in place of existing 871P rectangular and similar competitive sensors. Appropriately sized mounting screws are also supplied. Additionally a ground lug terminal and green color-coded binding screw are provided for grounding the VersaCube sensor in the event that the unit is not mounted to a grounded metal frame.

Kit includes:

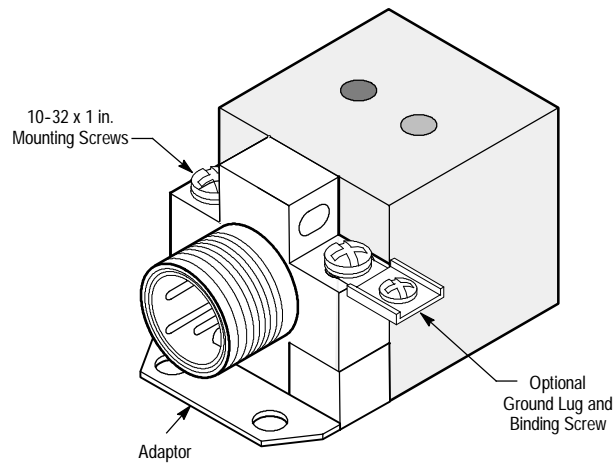
- (1) Threaded mounting bracket
- (1) Through-hole mounting bracket
- (2) 10-32 x 1 in. mounting screw
- (2) 10-32 x 1½ in. mounting screw
- (1) Ground terminal lug
- (1) Green color-coded binding screw



Approximate Dimensions [mm (in.)]



Typical Application



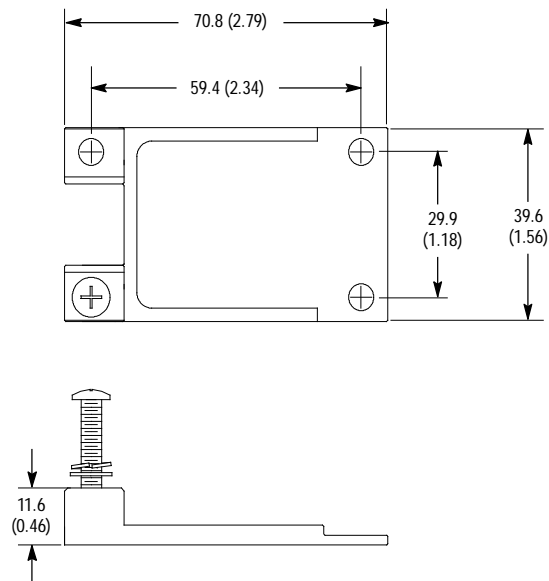
Description	Cat. No.
Mounting Kit	871A-PKIT

Limit Switch Style Mounting Bracket for VersaCube™ Proximity Sensors

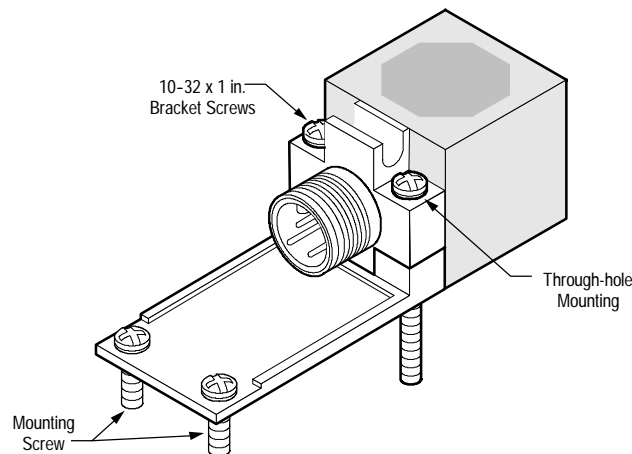
Description

The limit switch style mounting bracket (**871A-PKITLS**) has the same mounting pattern as limit switch style proximity sensors. It provides superior mounting stability and convenience when retrofitting a limit switch style proximity sensor with a VersaCube.

Approximate Dimensions [mm (in.)]



Typical Application



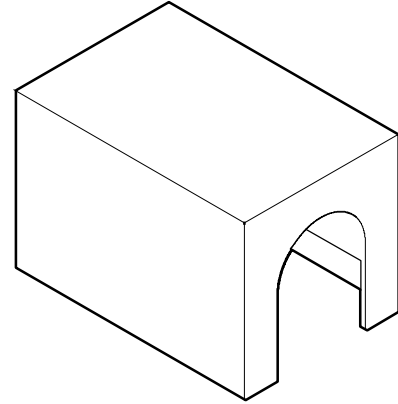
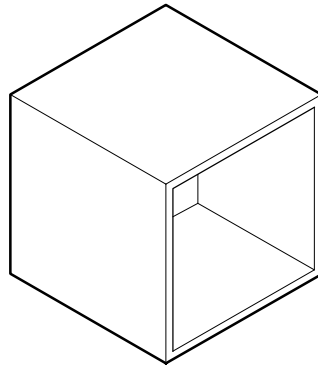
Description	Cat. No.
Mounting Kit	871A-PKITLS

Accessories

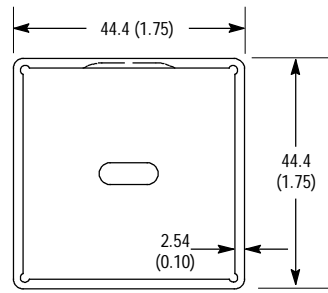
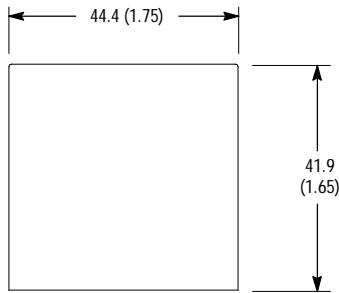
PTFE Cover for VersaCube

Description

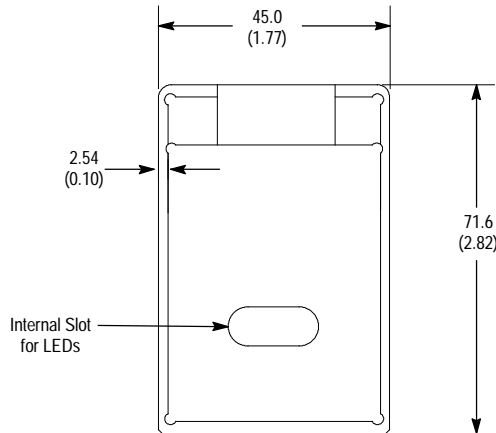
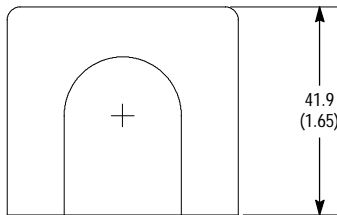
These PTFE covers are designed to protect the VersaCube from weld slag and other debris.



871A-KCT40-F



871A-KCT40-T



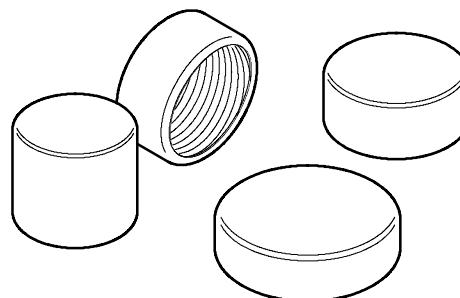
NOTE: Internal slot for LED visibility.

Description	Cat. No.
Short PTFE Cover	871A-KCT40-F
Long PTFE Cover	871A-KCT40-T

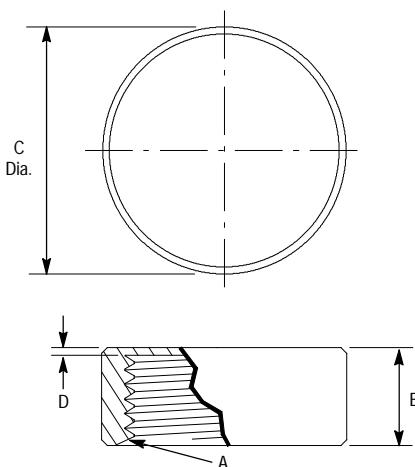
PTFE End Caps for Tubular Proximity Sensors

Description

PTFE end caps protect tubular proximity sensors from abrasion, corrosion, chemical exposure, weld slag, and other debris.



8, 12, 18, 30 mm



Approximate Dimensions [mm (in.)]

Shielded

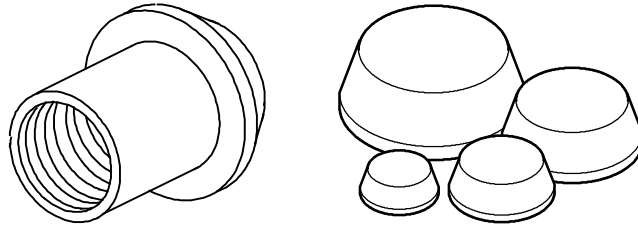
Sensor Diameter	A	B	C	D	Cat. No.
8 mm	M8 x 1	5.0 (0.20)	10.8 (0.43)	0.50 (0.02)	871A-KT8
12 mm	M12 x 1	8.9 (0.35)	14.8 (0.58)	0.89 (0.035)	871A-KT12
18 mm	M18 x 1	8.8 (0.35)	24.4 (0.96)	1.27 (0.05)	871A-KT18
30 mm	M30 x 1.5	10.0 (0.39)	38.1 (1.50)	2.03 (0.08)	871A-KT30

Unshielded

Sensor Diameter	A	B	C	D	Cat. No.
8 mm	M8 x 1	9.6 (0.38)	10.8 (0.43)	0.50 (0.02)	871A-KUT8
12 mm	M12 x 1	15.0 (0.60)	14.8 (0.58)	0.89 (0.035)	871A-KUT12
18 mm	M18 x 1	18.8 (0.70)	24.4 (0.96)	1.27 (0.05)	871A-KUT18
30 mm	M30 x 1.5	23.0 (0.90)	38.1 (1.50)	2.03 (0.08)	871A-KUT30

Accessories

End Caps for Tubular Proximity Sensors



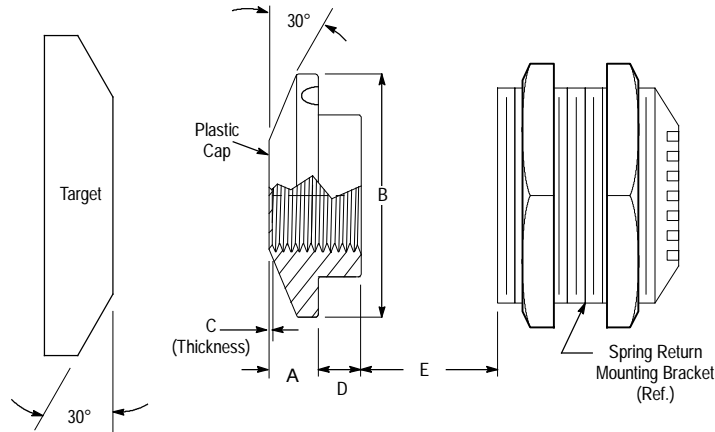
8, 12, 18, 30 mm

Description

Plastic deflecting caps are designed to be utilized with spring return brackets when lateral collisions might occur. The

cap is simply threaded onto the front of the proximity sensor. The 30° slope

allows the sensor and spring bracket to retract when a lateral collision occurs.



Approximate Dimensions [mm (in.)]

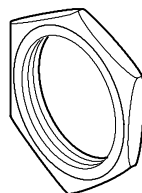
Shielded

Sensor Diameter	A	B	C	D	E	Cat. No.
8 mm	5.1 (0.20)	15.1 (0.59)	0.25 (0.01)	0	10.0 (0.39)	871A-KP8
12 mm	6.4 (0.25)	22.9 (0.90)	0.89 (0.04)			871A-KP12
18 mm	8.0 (0.31)	31.4 (1.34)				871A-KP18
30 mm		44.5 (1.75)	12.7 (0.50)		871A-KP30	

Unshielded

Sensor Diameter	A	B	C	D	E	Cat. No.
8 mm	5.1 (0.20)	15.1 (0.59)	0.25 (0.01)	9.51 (0.37)	10.0 (0.39)	871A-KPU8
12 mm	6.4 (0.25)	22.9 (0.90)	0.89 (0.04)	17.3 (0.68)		871A-KPU12
18 mm	8.0 (0.31)	31.4 (1.34)		20.0 (0.79)		871A-KPU18
30 mm		44.5 (1.75)	12.7 (0.50)	871A-KPU30		

Mounting Nuts for Tubular Proximity Sensors—Brass, Stainless Steel, and Plastic



8, 12, 18, 30 mm

Brass

Proximity Tube Diameter [mm (in.)]	Thread Size ISO Metric	Approximate Dimensions [mm (in.)]	Cat. No.
8 (0.31)	M8 x 1		871C-N1 Nickel-Plated 871A-NBT12 PTFE-Coated
12 (0.47)	M12 x 1		871C-N2 Nickel-Plated 871A-NBT12 PTFE-Coated
18 (0.71)	M18 x 1		871C-N3 Nickel-Plated 871A-NBT18 PTFE-Coated
30 (1.18)	M30 x 1.5		871C-N4 Nickel-Plated 871A-NBT30 PTFE-Coated

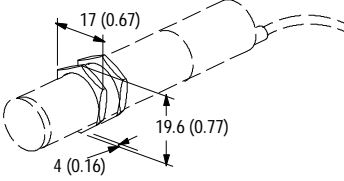
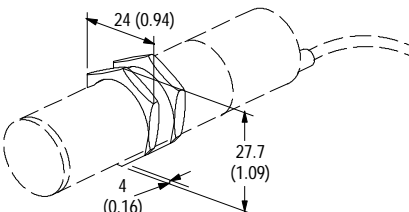
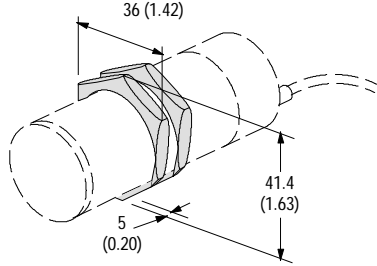
Note: Each cat. no. includes two mounting nuts.

Proximity Sensors

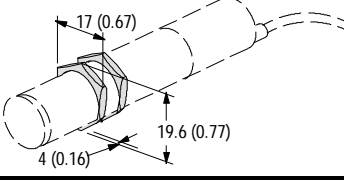
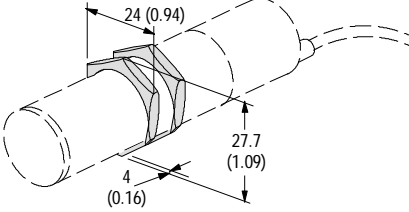
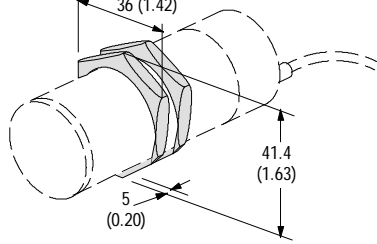
Accessories

Mounting Nuts for Tubular Proximity Sensors—Brass, Stainless Steel, and Plastic

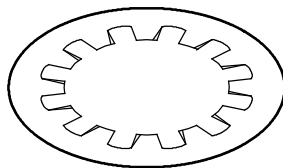
Stainless Steel

Proximity Tube Diameter [mm (in.)]	Thread Size ISO Metric	Approximate Dimensions [mm (in.)]	Cat. No.
12 (0.47)	M12 x 1		871T-N2
18 (0.71)	M18 x 1		871T-N4
30 (1.18)	M30 x 1.5		871T-N8

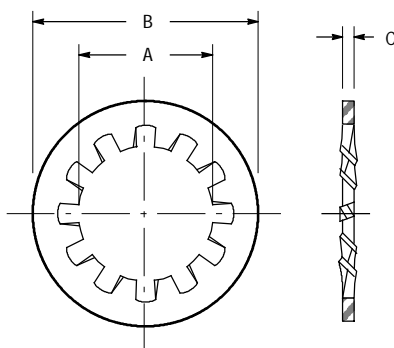
Plastic

Proximity Tube Diameter [mm (in.)]	Thread Size ISO Metric	Approximate Dimensions [mm (in.)]	Cat. No.
12 (0.47)	M12 x 1		871T-N1
18 (0.71)	M18 x 1		871T-N3
30 (1.18)	M30 x 1.5		871C-N5

Note: Each cat. no. includes two mounting nuts.



8, 12, 18, 30 mm



Approximate Dimensions [mm (in.)]

Nominal Washer Size [mm (in.)]	A		B		C		Cat. No.
	Inside Diameter [mm (in.)]		Outside Diameter [mm (in.)]		Material Thickness [mm (in.)]		
8.0 (0.031)	8.5 (0.33)	8.2 (0.32)	15.5 (0.61)	14.75 (0.58)	0.85 (0.03)	0.7 (0.03)	871A-LWN8
12.0 (0.047)	12.7 (0.5)	12.3 (0.48)	20.25 (0.8)	19.5 (0.77)	1.0 (0.04)	0.8 (0.03)	871A-LWN12
18.0 (0.071)	19.1 (0.75)	18.5 (0.73)	29.6 (1.17)	28.6 (1.13)	1.3 (0.051)	1.1 (0.04)	871A-LWN18
30.0 (1.18)	31.4 (1.24)	30.6 (1.2)	46.3 (1.82)	45.1 (1.78)	1.7 (0.07)	1.5 (0.06)	871A-LWN30

Note: Each cat. no. includes two lock washers.

Selection Guide

Spacer kits are available for use with 871D in-port tubular position sensors for nonstandard tubular probe lengths. Example from chart below: Sensor probe length required is 101.6 mm

(4.00 in.). Using sensor 871D-DW2NP1159-D4 and spacer 871A-S1427 results in a probe length of 101.5 mm (3.998 in.). Any difference between desired probe length and

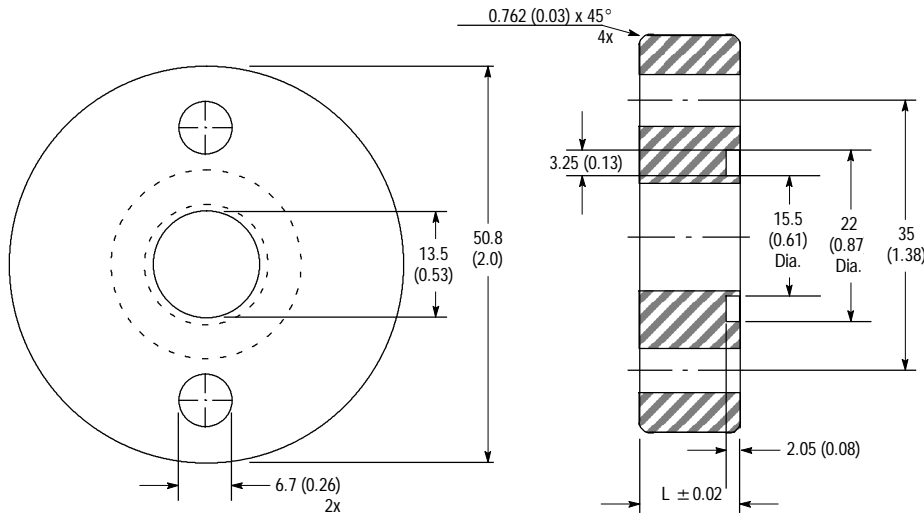
length resulting from sensor and spacer combination should be carefully considered to ensure proper clearance in application.

Spacer Kit Cat. No.	Sensor Cat. No.	871D-xxxxx260-xx	871D-xxxxx317-xx	871D-xxxxx524-xx	871D-xxxxx730-xx	871D-xxxxx959-xx	871D-xxxxx1159-xx
	Probe Length [mm (in.)]						
	Spacer Height [mm (in.)]	26.0 (1.025)	31.7 (1.250)	52.4 (2.062)	73.0 (2.875)	95.9 (3.775)	115.9 (4.560)
871A-S478	4.78 (0.188)	21.26 (0.837)	26.97 (1.062)	47.60 (1.874)	68.25 (2.687)	91.11 (3.587)	111.05 (4.372)
871A-S572	5.72 (0.225)	20.32 (0.800)	26.04 (1.025)	46.66 (1.837)	67.31 (2.650)	90.17 (3.550)	110.11 (4.335)
871A-S780	7.80 (0.307)	18.24 (0.718)	23.95 (0.943)	44.58 (1.755)	65.23 (2.568)	88.09 (3.468)	108.03 (4.253)
871A-S945	9.45 (0.372)	16.59 (0.653)	22.30 (0.878)	42.93 (1.690)	63.58 (2.503)	86.44 (3.403)	106.38 (4.188)
871A-S953	9.53 (0.375)	16.51 (0.650)	22.23 (0.875)	42.85 (1.687)	63.50 (2.500)	86.36 (3.400)	106.30 (4.185)
871A-S1270	12.70 (0.500)	13.34 (0.525)	19.05 (0.750)	39.67 (1.562)	60.33 (2.375)	83.19 (3.275)	103.12 (4.060)
871A-S1382	13.82 (0.544)	12.22 (0.481)	17.93 (0.706)	38.56 (1.518)	59.21 (2.331)	82.07 (3.231)	102.01 (4.016)
871A-S1427	14.27 (0.562)	11.76 (0.463)	17.48 (0.688)	38.10 (1.500)	58.75 (2.313)	81.61 (3.213)	101.55 (3.998)
871A-S1524	15.24 (0.600)	10.80 (0.425)	16.51 (0.650)	37.13 (1.462)	57.79 (2.275)	80.65 (3.175)	100.58 (3.960)
871A-S1737	17.37 (0.684)	8.66 (0.341)	14.38 (0.566)	35.00 (1.378)	55.65 (2.191)	78.51 (3.091)	98.45 (3.876)
871A-S1809	18.09 (0.712)	7.95 (0.313)	13.67 (0.538)	34.29 (1.350)	54.94 (2.163)	77.80 (3.063)	97.74 (3.848)
871A-S2057	20.57 (0.810)	5.46 (0.215)	11.18 (0.440)	31.80 (1.252)	52.45 (2.065)	75.31 (2.965)	95.25 (3.750)
871A-S2380	23.80 (0.937)	2.24 (0.088)	7.95 (0.313)	28.58 (1.125)	49.23 (1.938)	72.09 (2.838)	92.02 (3.623)

Each spacer kit contains:

- (1) Spacer
- (1) O-ring
- (2) Appropriate length mounting bolts

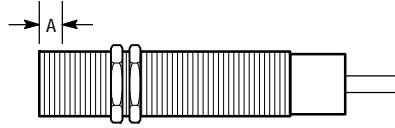
Approximate Dimensions [mm (in.)]



L = Spacer height as indicated in Selection Guide above.

Spring Loaded Brackets

Mounting Nut Torque	Sensor Nut Torque	Cat. No.
8.4 N•m (75 in•lbs)	3.3 N•m (30 in•lbs)	871A-BXN8
15.2 N•m (136 in•lbs)	5.5 N•m (50 in•lbs)	871A-BXN12
22.0 N•m (195 in•lbs)	11.3 N•m (100 in•lbs)	871A-BXN18



Bulletin 871C/872C

Diameter	Shielded	"A" Length			Remainder of Thread Length	
		A [mm (in.)]	Torque N•m (in•lbs)	Turns	Torque N•m (in•lbs)	Turns
8 mm	Y	4.6 (0.18)	1.7 (15)	1 1/2	2.8 (25)	1 1/2
12 mm	Y	11.7 (0.46)	4.0 (35)	1/4	9.6 (85)	1/2
	N	5.6 (0.22)				
18 mm	Y	13.7 (0.54)	11.3 (100)	1/3	19.8 (175)	1/2
	N	5.6 (0.22)				
30 mm	Y/N	-	33.9 (300)	1/8	33.9 (300)	1/8

Bulletin 871T

Diameter	Shielded	"A" Length			Remainder of Thread Length	
		A [mm (in.)]	Torque N•m (in•lbs)	Turns	Torque N•m (in•lbs)	Turns
12 mm	Y	11.7 (0.46)	9.0 (80)	2/3	14.1 (125)	3/4
	N	5.6 (0.22)				
18 mm	Y	13.7 (0.54)	19.8 (175)	1/2	28.3 (250)	2/3
	N	5.6 (0.22)				

Bulletin 871TM

Diameter	Shielded	Torque N•m (in•lbs)	Turns
12 mm	Y	14.1 (125)	3/4
	N		
18 mm	Y	28.3 (250)	2/3
	N		
30 mm	Y	33.9 (300)	1/8
	N		

① For metal housing using supplied hardware.

Torque Chart ①

Bulletin 871Z

Diameter	Shielded	Remainder of Thread Length	
		Torque N•m (in•lbs)	Turns
12 mm	Y	9.6 (85)	1/2
	N		
18 mm	Y	19.8 (175)	1/2
	N		
30 mm	Y	33.9 (300)	1/8
	N		

① For metal housing using supplied hardware.

Bulletin 871ZC

Diameter	Shielded	Remainder of Thread Length	
		Torque N•m (in•lbs)	Turns
12 mm	Y	13.4 (120)	1/2
18 mm		16.8 (150)	
30 mm		19.8 (175)	1/8