



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. It meets NEMA 1, 2, 3, 4, 12, 13 and IP67 (IEC 529) enclosure standards. The electronic circuitry is potted for protection against shock, vibration, and contamination.

These sensors are available in 12 and 18mm diameters. 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. The 3mm nominal sensing distance models are designed to ignore all sizes of nonferrous chips and foils. The 5mm nominal sensing distance models are designed to replace standard inductive proximities when sensing ferrous metals or ignoring nonferrous chips smaller than 0.125 (3mm).

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 500mA 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 R2–80.

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 R2–76
AC 2-Wire	page R2–78
AC 2-Wire or 4-Wire Ferrous Selective	page R2–80

Accessories

Quick-Disconnect Cables . .	page R8–1
Conduit Adaptor	page R2–195
Mounting Bracket, Spring Return Style	page R2–196
Mounting Bracket, Right Angle Style	page R2–199
Mounting Bracket, Clamp Style	page R2–200
End Caps	page R2–206
Mounting Nuts	page R2–207
Lock Washers	page R2–209

General Information

Torque Chart	page R2–211
Metric/English Conversion Chart	page R11–6

871T 3-Wire DC

Plastic Face/Threaded Stainless Steel Barrel



871T DC Cable Style
12, 18mm



871T DC Mini
Quick-Disconnect Style
18mm



Specifications

	12mm	18mm
Load Current	≤300mA	≤400mA
Leakage Current	≤10μA	
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	
Approvals	UL listed, CSA certified, and CE marked for all applicable directives	
Enclosure	NEMA 1, 2, 3, 4, 12 and 13 IP67 (IEC 529) 303 Stainless steel barrel	
Connections	Cable: 3m (10ft) length 3-conductor PVC Quick-Disconnect: 4-pin mini style	
LED	Red: Output Energized	
Operating Temperature	-40°C to +70°C (-40°F to +158°F)	

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

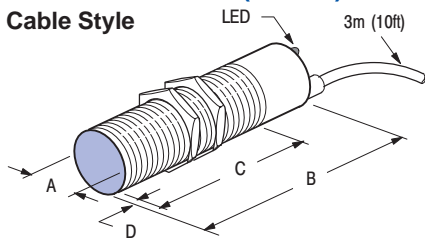
Product Selection

Barrel Diameter	Nominal Sensing Distance mm (inches)	Shielded	Output Configuration	Switching Frequency (Hz)	Catalog Number	
					Cable Style	Mini QD Style
12mm	2 (0.08)	Y	N.O.	2000	NPN	871T-R2A12
					PNP	871T-L2A12
	4 (0.16)	N		NPN	871T-R4B12	
				PNP	871T-L4B12	
18mm	5 (0.20)	Y	N.O.	1000	NPN	871T-R5A18
					PNP	871T-L5A18
	8 (0.31)	N		NPN	871T-R8B18	
				PNP	871T-L8B18	
Recommended Standard QD Cordset (-6F = 1.8m (6ft))						889N-F4AFC-6F

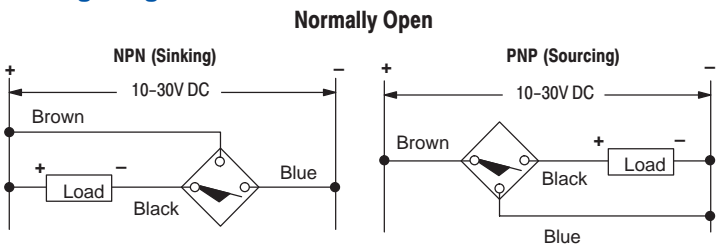
QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	R8-2
Terminal Chambers	R8-2
Mounting Brackets	R2-196 - R2-200
End Caps	R2-206
Mounting Nuts	R2-207 - R2-208

Dimensions—mm (inches)

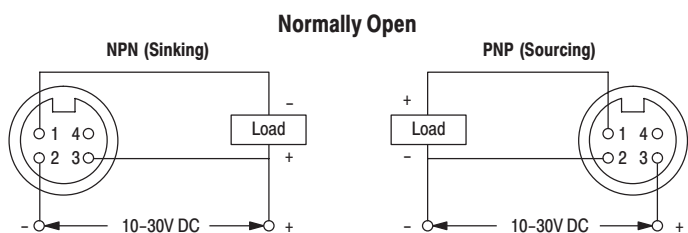
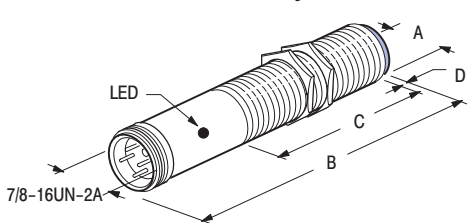


Wiring Diagrams



Thread Size	Shielded	mm (inches)			
		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



Thread Size	Shielded	mm (inches)			
		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, 18mm



871T AC Mini
Quick-Disconnect Style
18mm



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

Specifications

	12mm	18mm
Load Current	≤300mA	≤500mA
Inrush Current (1 cycle)	≤3A	≤5A
Leakage Current	≤1.5mA	
Supply Current (minimum)	5mA	
Operating Voltage	20–132V AC	
Voltage Drop	6.5V AC at 500mA, 10V AC at 20mA (RMS)	
Repeatability	≤10%	
Hysteresis	≤10% typical	
False Pulse Protection	Incorporated	
Transient Noise Protection	Incorporated	
Approvals	UL listed, CSA certified, and CE marked for all applicable directives	
Enclosure	NEMA 1, 2, 3, 4, 12 and 13 IP67 (IEC 529) 303 Stainless steel barrel	
Connections	Cable: 3m (10ft) length 12mm—2 conductor PVC 18mm—3 conductor PVC Quick-Disconnect: 3-pin mini style	
LED	Red: Output Energized (none on 871T-G5Q18FT)	
Operating Temperature	-40°C to +70°C (-40°F to +158°F)	
Shock	30g, 11ms	
Vibration	55Hz, 1mm amplitude, 3 planes	

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

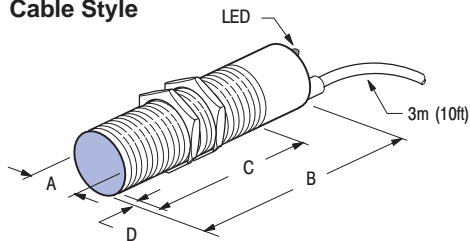
Barrel Diameter	Nominal Sensing Distance mm (inches)	Shielded	Output Configuration	Switching Frequency (Hz)	Catalog Number	
					Cable Style	Mini QD Style
12mm	2 (0.08)	Y	N.O.	50	871T-G2A12	—
	4 (0.16)	N			871T-G4B12	—
	2 (0.08)	Y	871T-H2A12		—	
	4 (0.16)	N	871T-H4B12		—	
18mm	5 (0.20)	Y	N.O.		871T-G5A18	871T-G5J18
	8 (0.31)	N			—	871T-G5Q18FT
	5 (0.20)	Y	N.C.		871T-G8B18	871T-G8K18
	8 (0.31)	N			871T-H5A18	871T-H5J18
				871T-H8B18	871T-H8K18	
Recommended Standard QD Cordset (-6F = 1.8m (6ft))						889N-F3AFC-6F

QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	R8-2
Terminal Chambers	R8-2
Mounting Brackets	R2-196 - R2-200
End Caps	R2-206
Mounting Nuts	R2-207 - R2-208

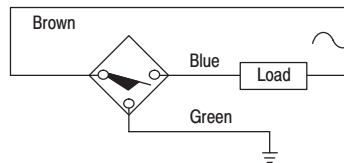
Dimensions—mm (inches)

Cable Style

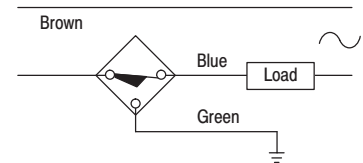


Wiring Diagrams

Normally Open



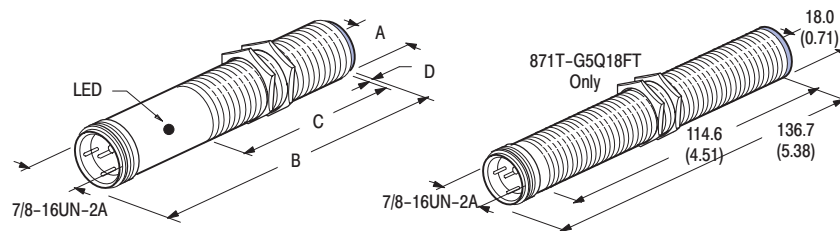
Normally Closed



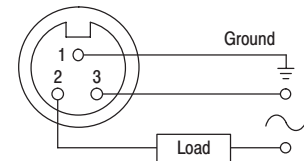
Note 1: No green wire on 12mm. Attach housing to ground.
Note 2: Load can be switched to brown wire.

Thread Size	Shielded	mm (inches)			
		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 (inches)			
		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 or 4-Wire AC Ferrous Selective

Stainless Steel Face/Threaded Stainless Steel Barrel



871T AC Cable Style
18mm



871T AC Mini
Quick-Disconnect Style
18mm



Features

- 2-wire or 4-wire operation
- 20–132V AC
- Normally open or 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	≤500mA
Inrush Current (1 cycle)	≤5A
Supply Current (minimum)	5mA
Leakage Current	≤1.7mA
Operating Voltage	20–132V AC
Voltage Drop	N.O. output: 6.5V AC at 500mA, 10V AC at 20mA (RMS) N.C. output: 1.7V AC at 500mA (RMS)
Isolation Voltage	800V AC (output to output); 1500V AC (output to housing)
Repeatability	≤10%
Hysteresis	≤10% typical
False Pulse Protection	Incorporated (Delay on power-up ≤100ms)
Transient Noise Protection	Incorporated
Approvals	CE marked for all applicable directives
Enclosure	NEMA 3, 4, 12 and 13, IP67 (IEC 529) Stainless steel face and barrel
Connections	Cable: 3.6m (12ft) length 5-conductor PVC Quick-Disconnect: 5-pin mini style 3-pin mini style
LEDs	Red: Output Energized Green: Power
Ambient Temperature	-0°C to +70°C (+32°F to +158°F)

Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel ^①	0.8–1.1
Brass	0.0
Aluminum	0.0
Copper	0.0

① Stainless Steel containing carbon

Inductive Proximity Sensors
871T 2-Wire or 4-Wire AC Ferrous Selective
 Stainless Steel Face/Threaded Stainless Steel Barrel

Product Selection

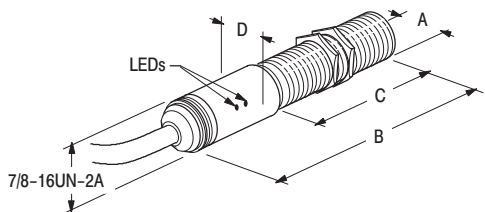
Barrel Diameter	Nominal Sensing Distance mm (inches)	Shielded	Output Configuration	Switching Frequency (Hz)	Catalog Number		
					Cable Style	Mini QD 3-pin Style	Mini QD 5-pin Style
18mm	3 (0.12)	Y	N.O. and N.C.	10	871T-A3A18FE-12	—	871T-A3J18FE
	5 (0.20)				871T-A5A18FE-12	—	871T-A5J18FE
	3 (0.12)		N.O.		—	871T-AX01	—
Recommended Standard QD Cordset (-6F = 1.8m (6ft))					889N-F3AFC-6F		889N-F5AFC-6F

QD Cordsets and Accessories

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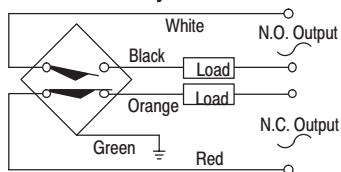
Dimensions—mm (inches)

Cable Style



Wiring Diagrams

Complementary Normally Open and Normally Closed

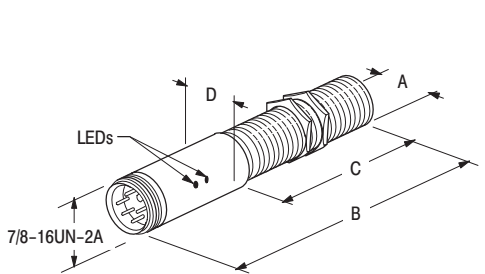


Notes:

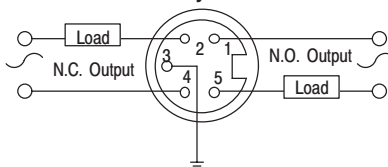
1. N.O. output must be wired for operation. N.C. output is optional.
2. N.O. load can be switched to white wire.
3. N.C. load can be switched to red wire.

Thread Size	mm (inches)				Catalog Number
	A	B	C	D	
M18x1	18.0 (0.71)	104.1 (4.10)	53.3 (2.10)	20.3 (0.80)	871T-A3A18FE-12
		101.6 (4.00)	50.8 (2.00)		871T-A5A18FE-12

Mini Quick-Disconnect Style



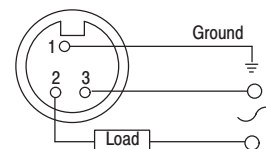
Normally Open and Normally Closed



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.

Normally Open



Note: Load can be switched to pin 3.

Thread Size	mm (inches)				Catalog Number
	A	B	C	D	
M18x1	18.0 (0.71)	104.1 (4.10)	53.3 (2.10)	20.3 (0.80)	871T-AX01
			50.8 (2.00)		871T-A3J18FE
		871T-A5J18FE			