



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. The 3 mm nominal sensing distance models are designed to ignore all sizes of nonferrous chips and foils. The 5 mm nominal sensing distance models 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 2-Wire or 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

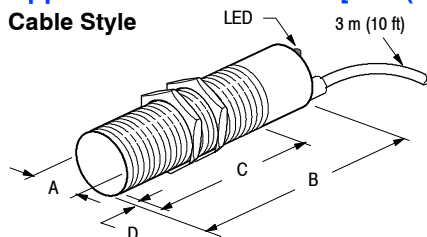
Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.	
					Cable Style	Mini QD Style
12 mm	2 (0.08)	Y	N.O.	2000	871T-R2A12	—
					871T-L2A12	—
	4 (0.16)	N		871T-R4B12	—	
				871T-L4B12	—	
18 mm	5 (0.20)	Y	N.O.	1000	871T-R5 A18	871T-R5J18
					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

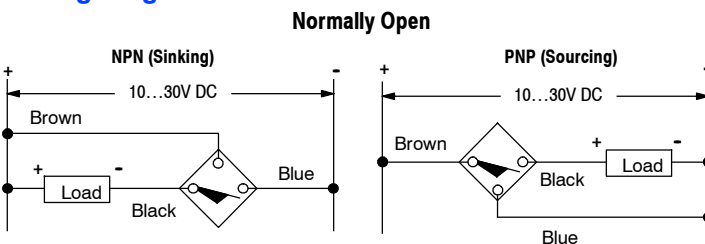
Description	Page Number	Description	Page Number
Other Cordsets Available	8-2	End Caps	2-220
Terminal Chambers	8-2	Mounting Nuts	2-221...2-222
Mounting Brackets	2-210...2-214	—	—

Approximate Dimensions [mm (in.)]

Cable Style

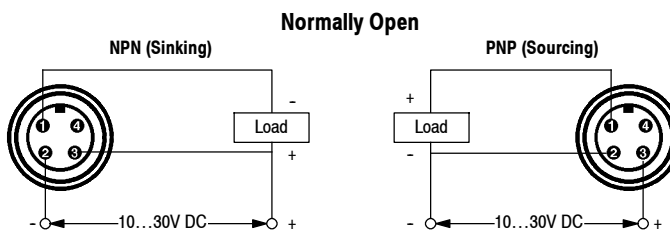
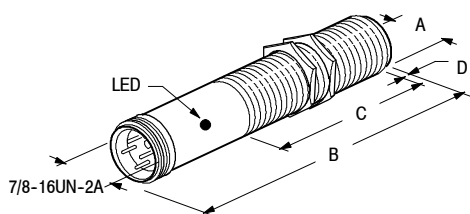


Wiring Diagrams



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		96.9 (3.81)	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

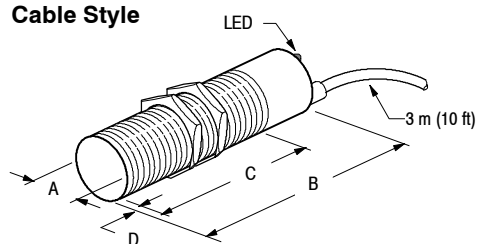
Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.	
					Cable Style	Mini QD Style
12 mm	2 (0.08)	Y	N.O.	50	871T-G2A12	—
	4 (0.16)	N			871T-G4B12	—
	2 (0.08)	Y	871T-H2A12		—	
	4 (0.16)	N	871T-H4B12		—	
18 mm	5 (0.20)	Y	N.O.		871T-G5 A18	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

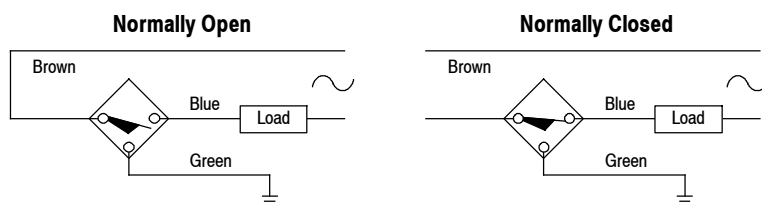
Description	Page Number	Description	Page Number
Other Cordsets Available	8-2	End Caps	2-220
Terminal Chambers	8-2	Mounting Nuts	2-221...2-222
Mounting Brackets	2-210...2-214	—	—

Approximate Dimensions [mm (in.)]

Cable Style



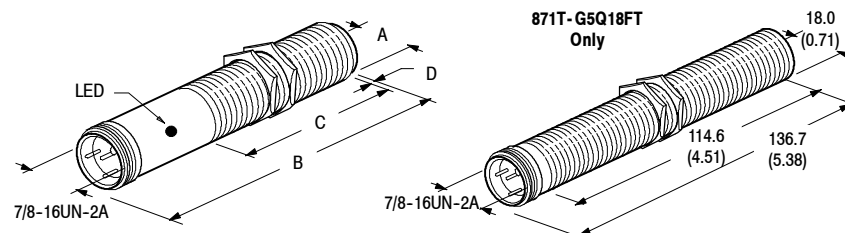
Wiring Diagrams



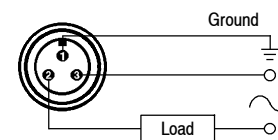
Note 1: No green wire on 12 mm. Attach housing to ground.
Note 2: Load can be switched to brown wire.

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			81.3 (3.20)	43.7 (1.72)

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 2-Wire or 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

- 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	≤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
False Pulse Protection	Incorporated (Delay on power-up ≤100 ms)
Transient Noise Protection	Incorporated
Certifications	CE Marked for all applicable directives
Enclosure	NEMA 3, 4, 12 and 13, IP67 (IEC529) Stainless steel face and barrel
Connections	Cable: 3.6 m (12 ft) length 5-conductor PVC Quick-Disconnect: 5-pin mini style 3-pin mini style
LEDs	Red: Output Energized Green: Power
Ambient Temperature [C (F)]	-0...+70° (+32...+158°)

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

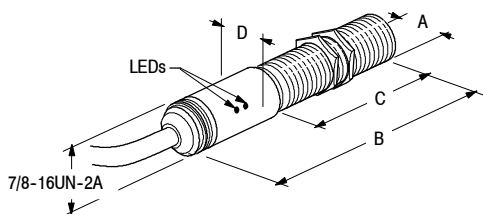
Barrel Diameter	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.		
					Cable Style	Mini QD 3-pin Style	Mini QD 5-pin Style
18 mm	3 (0.12)	Y	N.O. and N.C.	10	871T-A3 A18FE-12	—	871T-A3J18FE
	5 (0.20)				871T-A5 A18FE-12	—	871T-A5J18FE
	3 (0.12)		N.O.		—	871T-AX01	—
Recommended Standard QD Cordset (-6F = 1.8 m (6 ft))					889N-F3AFC-6F		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

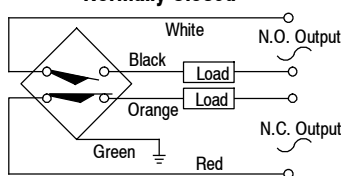
Approximate Dimensions [mm (in.)]

Cable Style



Wiring Diagrams

Complementary Normally Open and Normally Closed

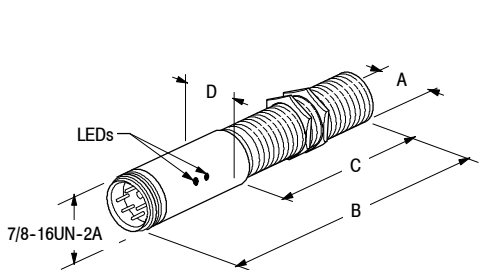


Notes:

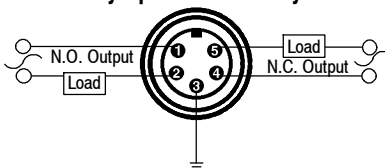
1. N.O. output must be wired for operation. N.C. output is optional.
2. N.O. load can be switched to white wire.
3. N.C. load can be switched to red wire.

Thread Size	[mm (in.)]				Cat. No.
	A	B	C	D	
M18x1	18.0 (0.71)	104.1 (4.10)	53.3 (2.10)	20.3 (0.80)	871T-A3 A18FE-12
		101.6 (4.00)	50.8 (2.00)		871T-A5 A18FE-12

Mini Quick-Disconnect Style



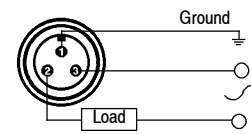
Normally Open and Normally Closed



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 (in.)]				Cat. No.
	A	B	C	D	
M18x1	18.0 (0.71)	104.1 (4.10)	53.3 (2.10)	20.3 (0.80)	871T-AX01
					871T-A3J18FE
		101.6 (4.00)	50.8 (2.00)		871T-A5J18FE