



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
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DC 3-Wire Block	page 2-150

Accessories

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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

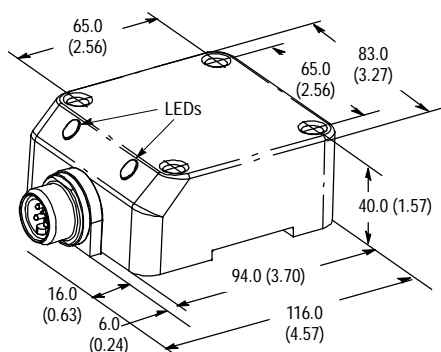
Head Size [mm (in.)]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.			
						Mini QD Style	Micro QD Style	Conduit 1/2 NPT	Conduit PG13.5
83 (3.27)	50 (1.97) ★	Yes	N.O. and N.C.	PNP	100	871F-P50BP80-N4	871F-P50BP80-D4	871F-P50BP80-T4	871F-P50BP80-Q4
				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.



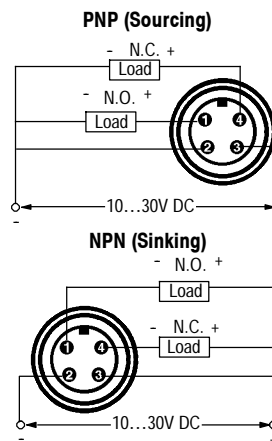
Approximate Dimensions [mm (in.)]

Mini QD Style



Wiring Diagram

Complementary Normally Open and Normally Closed Outputs

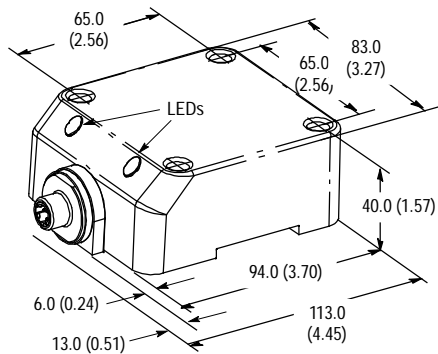


871F 4-Wire DC Complementary Output

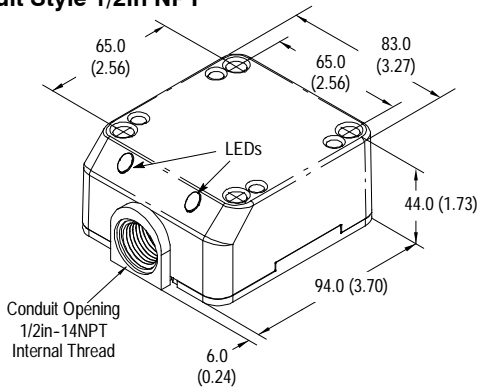
Flat Pack Style

Approximate Dimensions [mm (in.)]

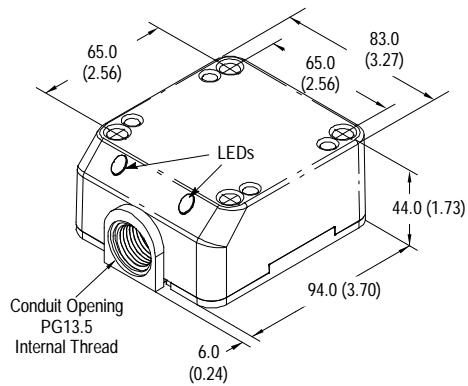
Micro QD Style



Conduit Style 1/2in NPT



Conduit Style PG13.5

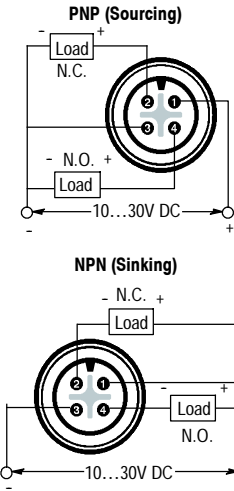


QD Cordsets and Accessories

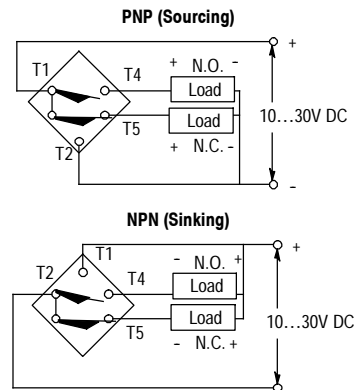
Description	Page Number
Other Cordsets Available	8-2

Wiring Diagram

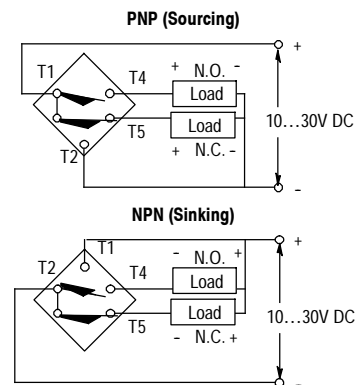
Complementary Normally Open and Normally Closed



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*

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

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

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

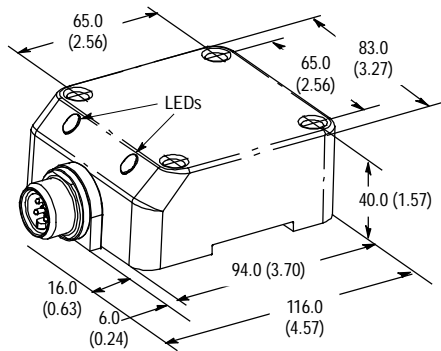
Head Size	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.	
					Mini QD Style	Micro QD Style
83 (3.27)	40 (1.57) ★	Y	N.O. and N.C.	15	871F-PW40BP80-N4	871F-PW40BP80-D4
					871F-PW40BN80-N4	871F-PW40BN80-D4
	50 (1.97)	N			871F-NW50BP80-N4	871F-NW50BP80-D4
					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.

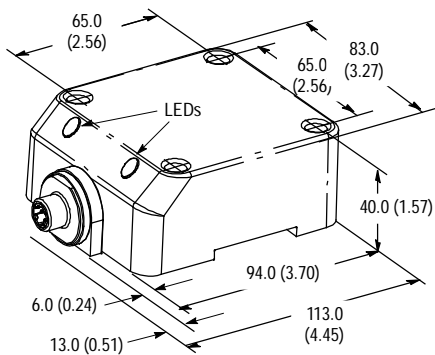


Approximate Dimensions [mm (in.)]

Mini QD Style

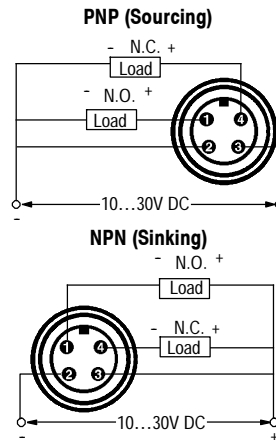


Micro QD Style

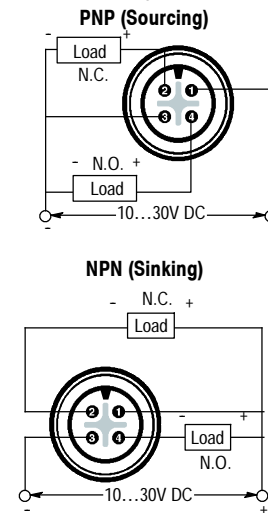


Wiring Diagram

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

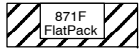
871F 2-Wire AC/DC

Flat Pack Style

Selection Guide

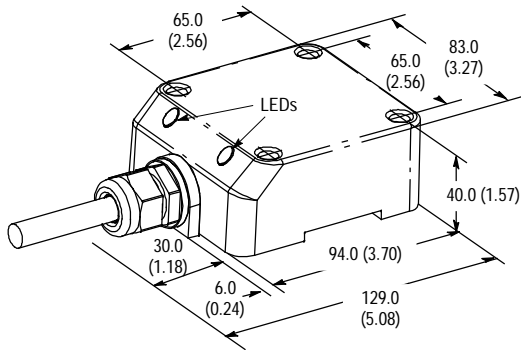
Head Size	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No.				
					ToughLink™ Cable	Mini QD Style	Micro QD Style	Conduit 1/2 NPT	Conduit PG13.5
83 (3.27)	50 (1.97) 1	Y	N.O.	10	871F-R50N80-C2	871F-R50N80-N3	871F-R50N80-R3	871F-R50N80-T2	871F-R50N80-Q2
	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

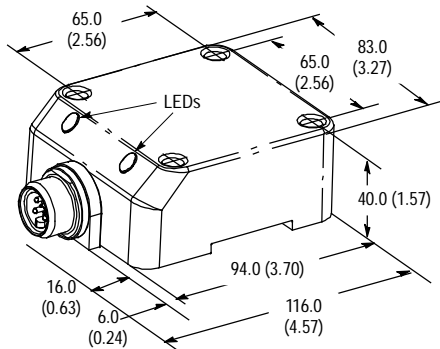


Approximate Dimensions [mm (in.)]

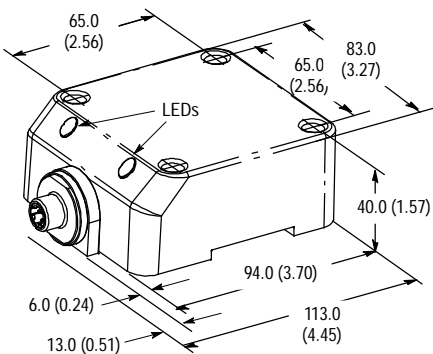
Cable Style



Mini QD Style

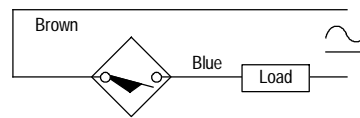


Micro QD Style



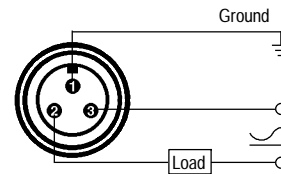
Wiring Diagram

Normally Open



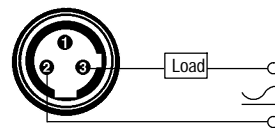
Note: Load can be switched to brown wire.

Normally Open



Note: Load can be switched to pin 3.

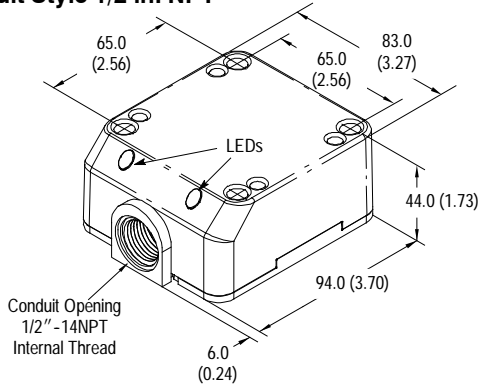
Normally Open



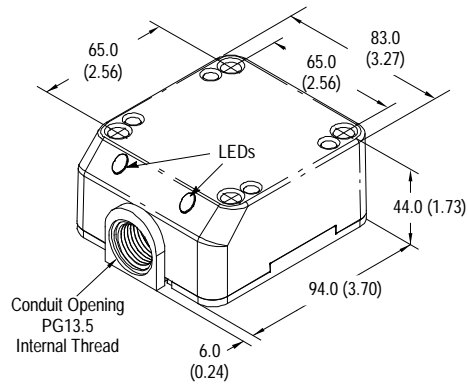
Note: Load can be switched to pin 2.

Approximate Dimensions [mm (in.)]

Conduit Style 1/2 in. NPT

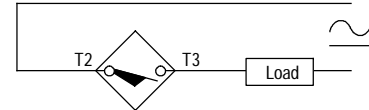


Conduit Style PG13.5



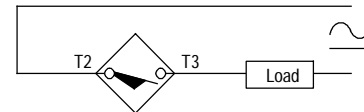
Wiring Diagram

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

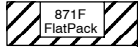
Description	Page Number
Other Cordsets Available	8-2

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

Product Selection

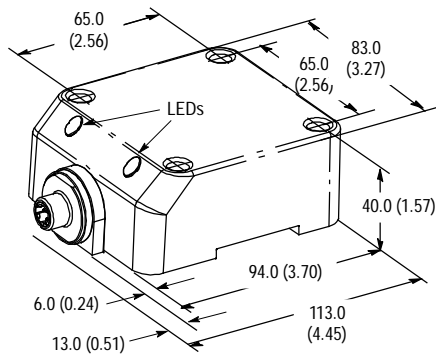
Head Size	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration	Switching Frequency [Hz]	Cat. No. Micro QD Style
83 (3.27)	40 (1.57) 1	Y	N.O.	10	871F-JW40N80-R3
	50 (1.97)	N	N.O.	10	871F-KW50N80-R3
Recommended Standard QD Cordset (-2 = 2 m (6.5 ft))					889R-F3WEA-2

1 40 mm when fully embedded in mild steel as shown

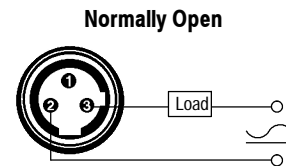


Approximate Dimensions [mm (in.)]

Micro QD Style



Wiring Diagram



Note: Load can be switched to pin 2.