



### 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 4, 13 and IP67 (IEC 529) enclosure standards. 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

Complementary Output  
 DC 4-Wire Flat Pack . . . . . page 2–170  
 2-Wire AC/DC Flat Pack . . page 2–173  
 Weld Field Immune  
 AC/DC 2-Wire Flat Pack . . page 2–175  
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### Accessories

Quick-Disconnect Cables . . . page 5–1

### General Information

Metric/English  
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## 871F Flat Pack 4-Wire DC Complementary Output



871F DC Cable Style  
page 2-171



871F DC Mini  
Quick-Disconnect Style  
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871F DC Micro  
Quick-Disconnect Style  
page 2-172



## Specifications

Load Current	≤200mA
Minimum Load Current	1mA
Leakage Current	≤10μA
Operating Voltage	10-30V DC
Voltage Drop	≤2.5V
Repeatability	≤2%
Hysteresis	≤5% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Reverse Polarity Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
Approvals	UL listed, c-UL certified, and CE marked for all applicable all directives
Enclosure	NEMA 1, 2, 3, 4, 6, 6P, 12 and 13, IP67 (IEC 529), 1200psi (8270kPa) washdown; Housing material: Valox®
Connections	Cable: 2m (6.5ft) length 4-conductor #22AWG ToughLink™ Quick Disconnect: 4-pin mini style 4-pin micro style Conduit Opening: 1/2-14 NPT thread, PG13.5 thread
LEDs	Green: Power Orange: Output Energized
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Shock	30g, 11ms
Vibration	55Hz, 1mm 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

- 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, c-UL certified, and CE marked for all applicable directives
- DIN rail mounting option on quick-disconnect and cable models
- Adjustable sensing models available

# Inductive Proximity Sensors

## 871F Flat Pack 4-Wire DC Complementary Output

### Selection Guide

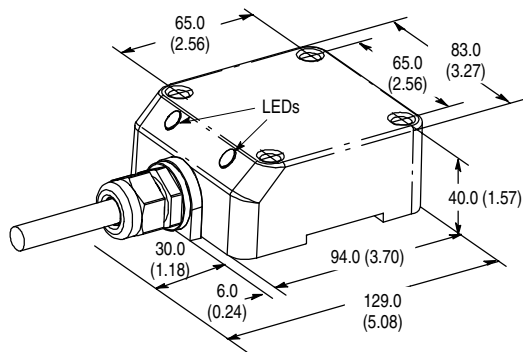
Head Size	Nominal Sensing Distance mm (in)	Shielded	Output Configuration		Switching Frequency (Hz)	Catalog Number				
						ToughLink™ Cable	Mini QD Style	Micro QD Style	Conduit 1/2 NPT	Conduit PG13.5
83 (3.27)	50 (1.97) ❶	Y	N.O. and N.C.	PNP	100	871F-P50BP80-H2	871F-P50BP80-N4	871F-P50BP80-D4	871F-P50BP80-T4	871F-P50BP80-Q4
				NPN		871F-P50BN80-H2	871F-P50BN80-N4	871F-P50BN80-D4	871F-P50BN80-T4	871F-P50BN80-Q4
	PNP	871F-N65BP80-H2		871F-N65BP80-N4		871F-N65BP80-D4	871F-N65BP80-T4	871F-N65BP80-Q4		
	65 (2.56)	N		NPN		871F-N65BN80-H2	871F-N65BN80-N4	871F-N65BN80-D4	871F-N65BN80-T4	871F-N65BN80-Q4
				Recommended Standard QD Cordset (–6F = 1.8m (6ft), –2 = 2m (6.5ft))					889N-F4AFC-6F	889D-F4AC-2

① 50mm when fully embedded in mild steel as shown

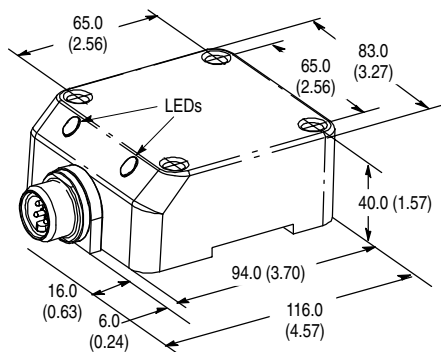


### Dimensions—mm (inches)

#### Cable Style

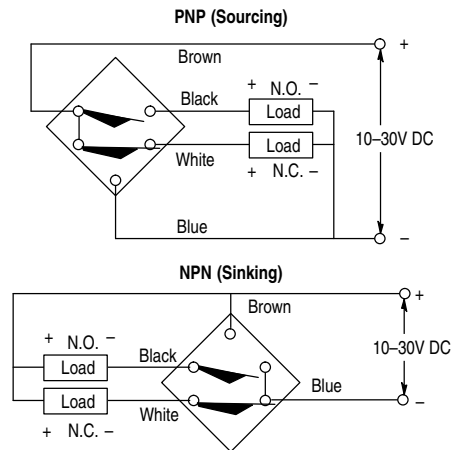


#### Mini QD Style

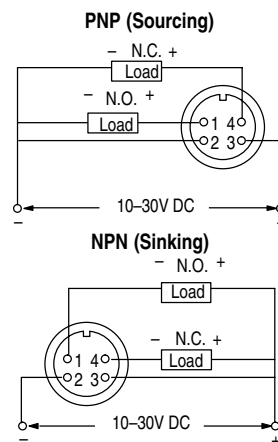


### Wiring Diagram

#### Complementary Normally Open and Normally Closed



#### Complementary Normally Open and Normally Closed Outputs

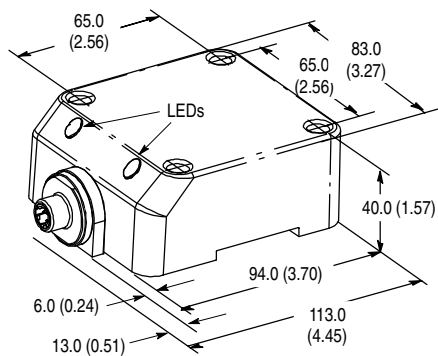


Inductive Proximity Sensors

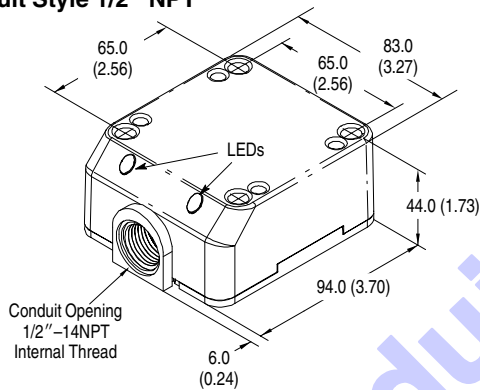
871F Flat Pack 4-Wire DC Complementary Output

Dimensions—mm (inches)

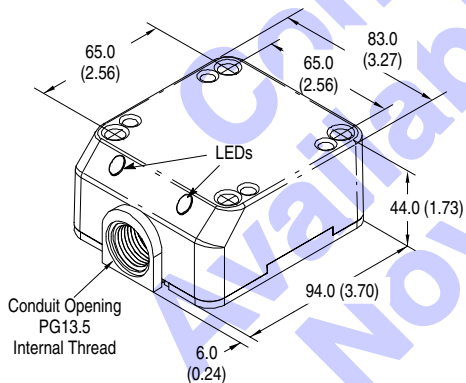
Micro QD Style



Conduit Style 1/2" NPT



Conduit Style PG13.5

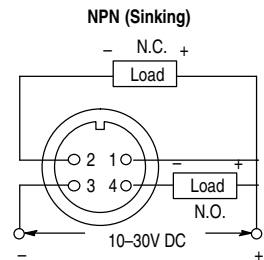
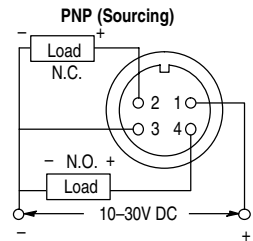


QD Cordsets and Accessories

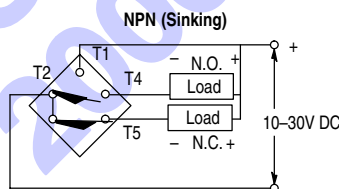
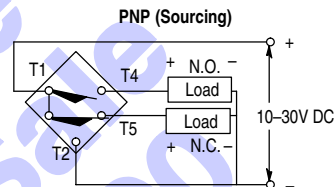
Description	Page Number
Other Cordsets Available	5-8, 5-44

Wiring Diagram

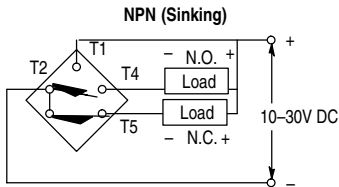
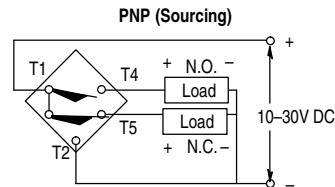
Complementary Normally Open and Normally Closed



Complementary Normally Open and Normally Closed Outputs



Complementary Normally Open and Normally Closed Outputs





871F AC Mini and Micro  
Quick-Disconnect Style  
page 2-174



871F AC Conduit Style  
page 2-174



### Specifications

Load Current	≤400mA
Minimum Load Current	1mA
Inrush Current (1 cycle)	≤8A
Leakage Current	≤2.0mA
Operating Voltage	40–250V AC/DC
Voltage Drop	≤5V
Repeatability	≤10%
Hysteresis	≤15% typical
Short Circuit Protection	Incorporated
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Approvals	CE marked for all applicable directives
Enclosure	NEMA 4, and 13 IP67 (IEC 529) Plastic body
Connections	Quick-Disconnect: 3-pin mini style, 3-pin micro style Conduit Opening: 1/2–14NPT internal thread with screw terminals
LEDs	Green: Power      Orange: Output Energized
Operating Temperature	–25°C to +70°C (–13°F to +158°F)
Shock	30g, 11ms
Vibration	55Hz, 1mm 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
- 40-250V AC/DC
- Normally open or normally closed output
- Short circuit, false pulse and transient noise protection

Inductive Proximity Sensors

871F 2-Wire AC/DC

Flat Pack Style

Selection Guide

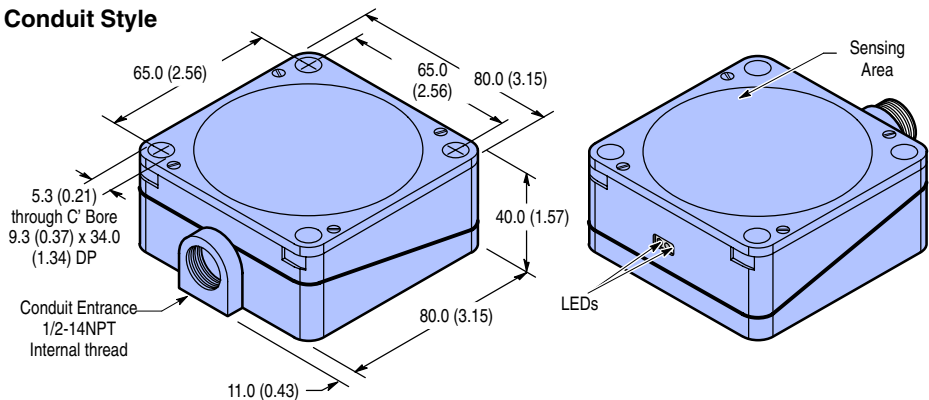
Head Size	Nominal Sensing Distance mm (inches)	Shielded	Output Configuration	Switching Frequency (Hz)	Catalog Number		
					Conduit Style	Mini QD Style	Micro QD Style
80	50 (1.97)	N	N.O.	15	871F-B50N80-T2	871F-B50N80-N3	871F-B50N80-R3
Recommended Standard QD Cordset (-6F = 1.8m (6ft), -2 = 2m (6.5ft))						889N-F3AFC-6F	889R-F3ACA-2

QD Cordsets and Accessories

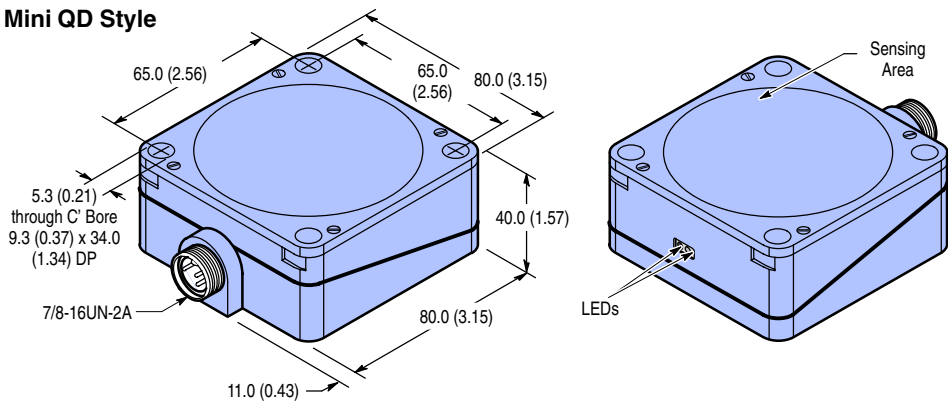
Description	Page Number
Other Cordsets Available	5-8, 5-44

Dimensions—mm (inches)

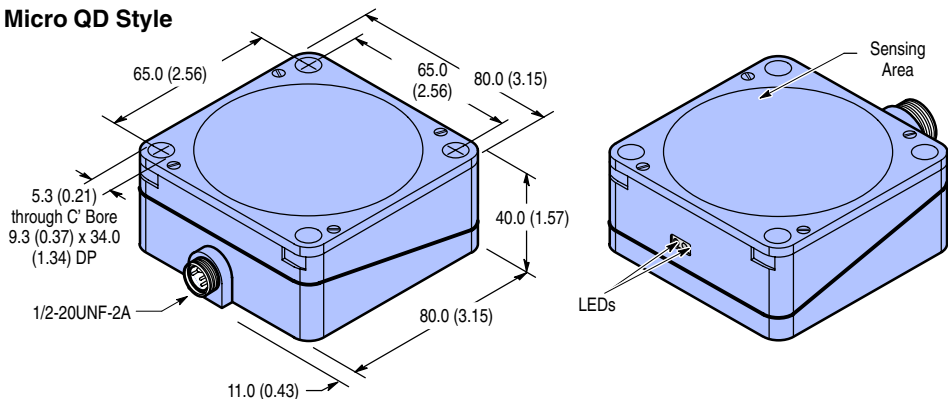
Conduit Style



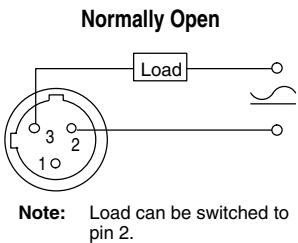
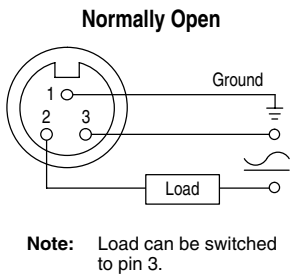
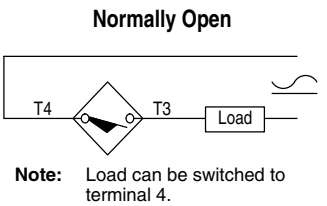
Mini QD Style



Micro QD Style



Wiring Diagram



## 871F 2-Wire AC/DC Weld Field Immune

Flat Pack Style



871F AC/DC Mini and Micro  
Quick-Disconnect Style  
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### 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 (IEC 529) 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 Note: 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	≤400mA
Minimum Load Current	3mA
Inrush Current (1 cycle)	≤8A
Leakage Current	≤1.5mA
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 in
Approvals	CE marked for all applicable directives
Enclosure	NEMA 4 and 13, IP67 (IEC 529) Aluminum body, teflon-coated sensing area
Connections	Quick-Disconnect: 3-pin mini style 3-pin micro style
LEDs	Green: Power Orange: Output Energized
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Shock	30g, 11ms
Vibration	55Hz, 1mm 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 2-Wire AC/DC Weld Field Immune
Flat Pack Style

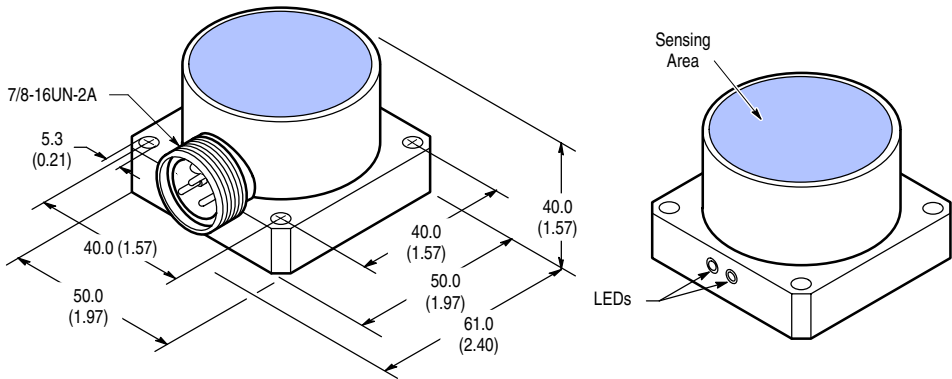
Selection Guide

Head Size	Nominal Sensing Distance mm (inches)	Shielded	Output Configuration	Switching Frequency (Hz)	Catalog Number	
					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 = 2m (6.5ft), –6F = 1.8m (6ft))					889N-F3AFC-6F	889R-F3ACA-2

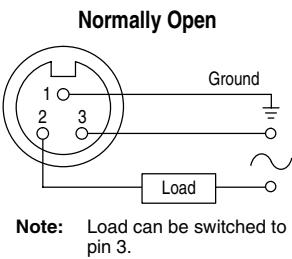
QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	5–8, 5–44

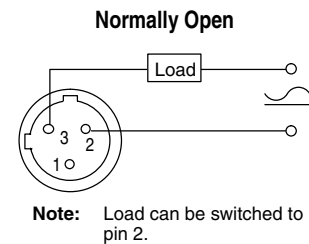
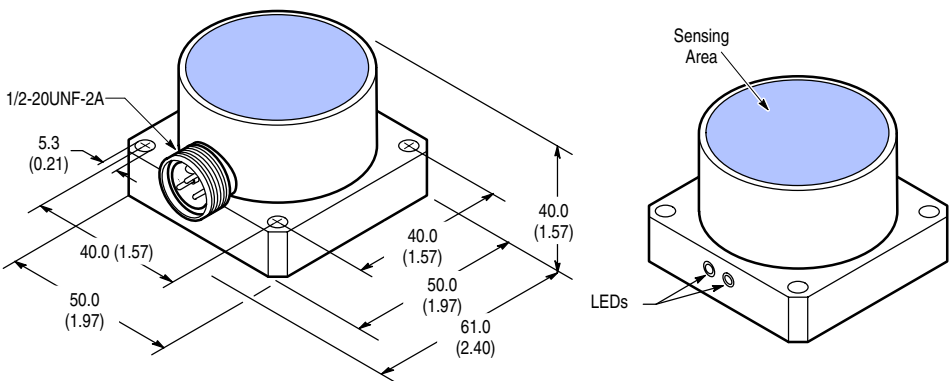
Dimensions—mm (inches)
Mini QD Style



Wiring Diagram



Micro QD Style







871F DC Cable Style  
page 2-178



871F DC Micro  
Quick-Disconnect Style  
page 2-178



### Specifications

Load Current	≤400mA
Minimum Load Current	1mA
Leakage Current	≤10μA
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
Approvals	CE marked for all applicable directives
Enclosure	NEMA 1, 2, 3, 4, 12, 13, IP67 (IEC 529) Aluminum Body
Connections	Cable: 2m (6.5ft) length 3-conductor PVC Quick-Disconnect: 4-pin micro style
LED	Orange: Output Energized
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Shock	30g, 11ms
Vibration	55Hz, 1mm amplitude, 3 planes

### 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

### 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 3-Wire DC

Block Style

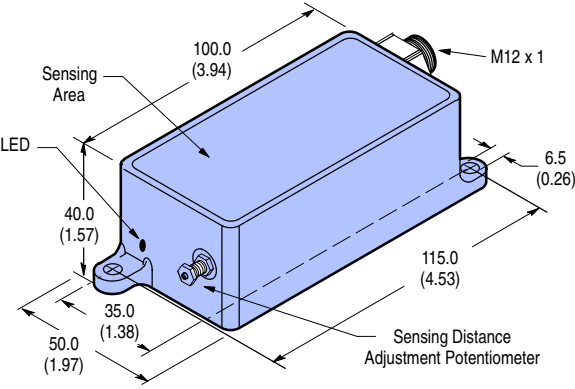
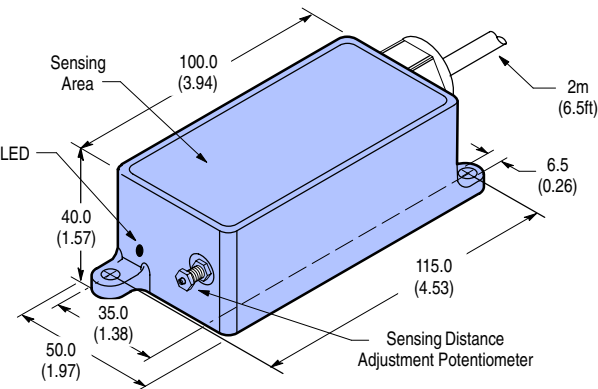
Selection Guide

Head Size	Nominal Sensing Distance mm (inches)	Shielded	Output Configuration		Switching Frequency (Hz)	Catalog Number	
						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 = 2m (6.5ft))							889D-F4AC-2

QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	5-8
Terminal Chambers	5-19

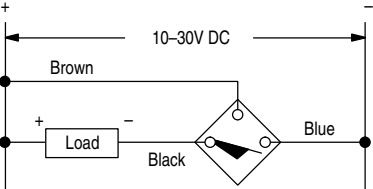
Dimensions—mm (inches)



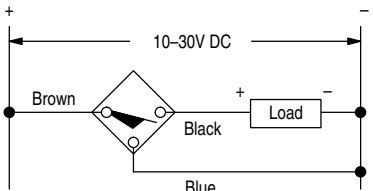
Wiring Diagrams

Cable Style

Normally Open  
NPN (Sinking)

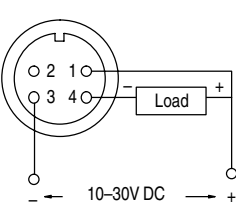


PNP (Sourcing)



Micro QD Style

Normally Open  
NPN (Sinking)



PNP (Sourcing)

