



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)
- UL listed, c-UL certified, and CE marked for all applicable directives

Styles

General Purpose DC 3-Wire VersaCube	page 2-122
Weld Field Immune DC 3-Wire VersaCube	page 2-122
General Purpose AC/DC 2-Wire VersaCube	page 2-125
Weld Field Immune AC/DC 2-Wire VersaCube	page 2-125
Equal Sensing DC 3-Wire VersaCube	page 2-128

Accessories

Quick-Disconnect Cables . . .	page 5-1
Mounting Kit	page 2-194
Limit Switch Style Mounting Bracket	page 2-195
Teflon Covers	page 2-196

General Information

Metric/English Conversion Chart	page 11-1
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871P DC General Purpose
Micro Quick-Disconnect Style
page 2–123



871P DC Mini
Quick-Disconnect Style
page 2–123



871P DC WFI Micro
Quick-Disconnect Style
page 2–123



Features

- New rugged housing
- Weld field immune models
- Burn and weld-slag resistant body on weld field immune models
- 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, c–UL certified, and CE marked for all applicable directives

Specifications

	General Purpose	Weld Field Immune
Load Current	≤200mA	≤200mA
Leakage Current	≤10μA	≤10μA
Operating Voltage	10–60V DC	10–60V DC
Voltage Drop	<2.5V @ 200mA	<2.5V @ 200mA
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 ①
Connections	Quick-Disconnect: 4-pin mini style 4-pin micro style	Quick-Disconnect: 4-pin mini style 4-pin micro style
Approvals	UL listed, c–UL certified and CE marked for all applicable directives	
Enclosure	NEMA 1, 2, 3, 4, 6, 6P, 12, 13; IP67 (IEC 529), 1200 psi (8270kPa) washdown; Plastic body, zinc base	
LED	Orange: Output Energized Green: Power	
Operating Temperature	–25°C to +70°C (–13°F to +158°F)	
Shock	30g, 11ms	
Vibration	55Hz, 1mm amplitude, 3 planes	

① Measured with field perpendicular to 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

Selection Guide

Head Size	Weld Field Immune	Nominal Sensing Distance mm (inches)	Shielded	Output Configuration		Switching Frequency (Hz)	Catalog Number		
							Mini QD Style	Micro QD Style	
40mm	N	20 (0.79)	Y	N.O.	PNP	100	871P-D20NP40-N4	871P-D20NP40-D4	
					NPN		871P-D20NN40-N4	871P-D20NN40-D4	
			N	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		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	N.C.	PNP			871P-DW15CP40-N4	871P-DW15CP40-D4
					NPN			871P-DW15CN40-N4	871P-DW15CN40-D4
25 (0.98)		N	N.O.	PNP	871P-DW25NP40-N4	871P-DW25NP40-D4			
				NPN	871P-DW25NN40-N4	871P-DW25NN40-D4			
	N	N.C.	PNP	871P-DW25CP40-N4	871P-DW25CP40-D4				
			NPN	871P-DW25CN40-N4	871P-DW25CN40-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 to 33mm.

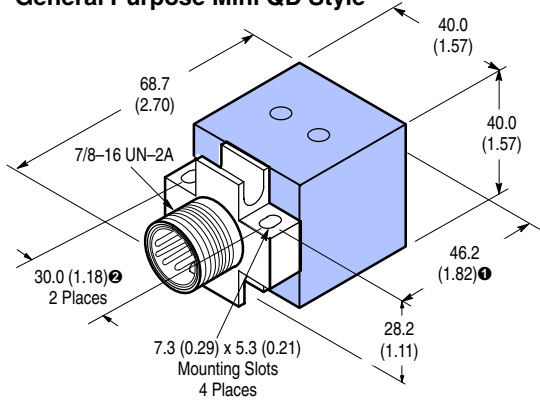
QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	5-8, 5-26
Terminal Chambers	5-19
Mounting Kit ②	2-194
Limit Switch Style Mounting Brackets	2-195
Teflon Covers	2-196

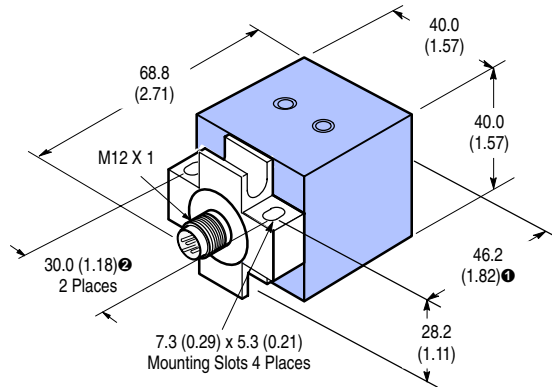
② Each Weld Field Immune unit is supplied with mounting hardware, a ground lug, a ground screw, and an optional adaptor for competitive retrofits. Additional sets of hardware are available under catalog number **871A-PKIT**.

Dimensions—mm (inches)

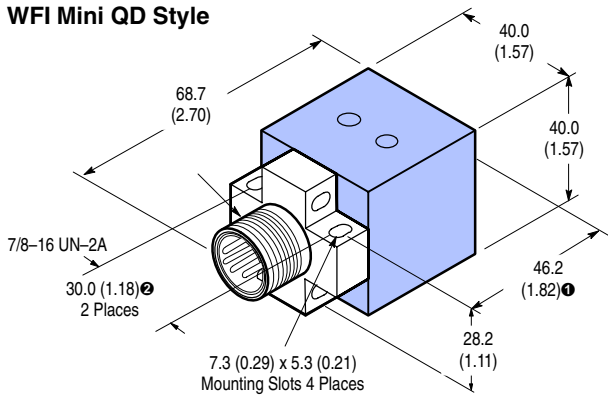
General Purpose Mini QD Style



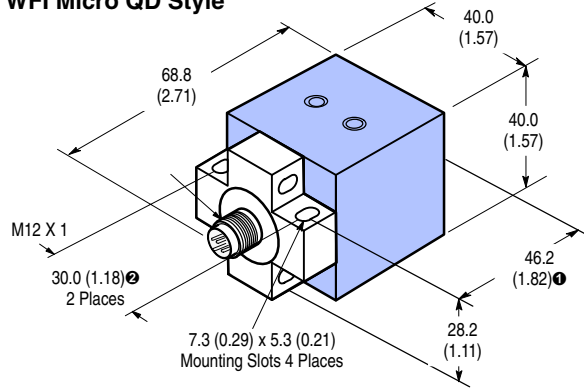
General Purpose Micro QD Style



WFI Mini QD Style



WFI Micro QD Style

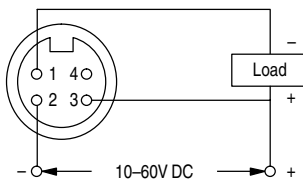


- ❶ With retrofit adaptor, distance from face to mounting holes becomes 60.0 (2.36).
- ❷ With retrofit adaptor, spacing between mounting holes becomes 20.0 (0.79).

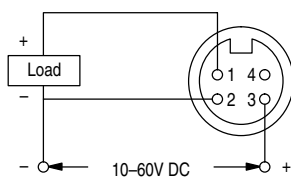
Wiring Diagrams

Mini QD Style

**Normally Open or Normally Closed
NPN (Sinking)**

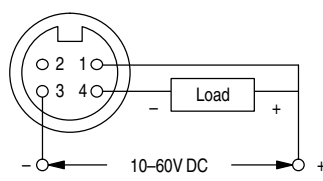


PNP (Sourcing)

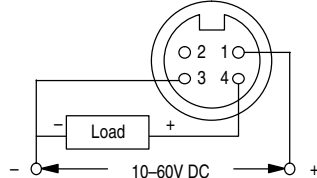


Micro QD Style

**Normally Open or Normally Closed
NPN (Sinking)**



PNP (Sourcing)



Note: 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.



871P AC/DC General Purpose
Micro Quick-Disconnect Style
page 2–126



871P AC/DC WFI Mini
Quick-Disconnect Style
page 2–126



871P AC/DC WFI Micro
Quick-Disconnect Style
page 2–126



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, c–UL certified, and CE marked for all applicable directives

Specifications

	General Purpose	Weld Field Immune
Load Current	2–100mA	2–300mA
Inrush Current (1 cycle)	≤ 2A	≤ 2A
Leakage Current	≤1.5mA@20V ≤1.7mA@120V ≤2.0mA@250V	≤1.5mA@20V ≤1.7mA@120V ≤2.0mA@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 ❶
Approvals	UL listed, c–UL certified, and CE marked for all applicable directives	
Enclosure	NEMA 1, 2, 3, 4, 6, 6P, 12, 13; IP67 (IEC 529), 1200 psi (8270kPa) washdown; Plastic body, zinc base	
Connections	Quick-Disconnect: 3-pin mini style 3-pin micro style	
LED	Red: Output Energized Green: Power (short circuit if flashing)	
Operating Temperature	–25°C to +70°C (–13°F to +158°F)	
Shock	30g, 11ms	
Vibration	55Hz, 1mm amplitude, 3 planes	

❶ Measured with field perpendicular to sensing 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

Selection Guide

Head Size	Weld Field Immune	Nominal Sensing Distance mm (inches)	Shielded	Output Configuration	Switching Frequency (Hz)	Catalog Number		
						Mini QD Style	Micro QD Style	
40mm	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 = 1.8m (6ft), -2 = 2m (6.5ft))						889N-F3AFC-6F	889R-F3ACA-2

① Assured operating distance for general purpose unshielded models is 0 to 33mm.

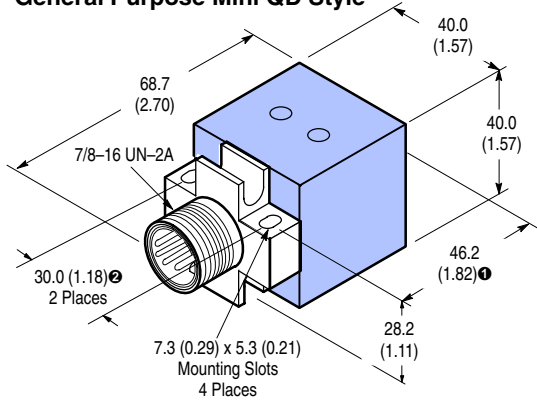
QD Cordsets and Accessories

Description	Page Number
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Terminal Chambers	5-19
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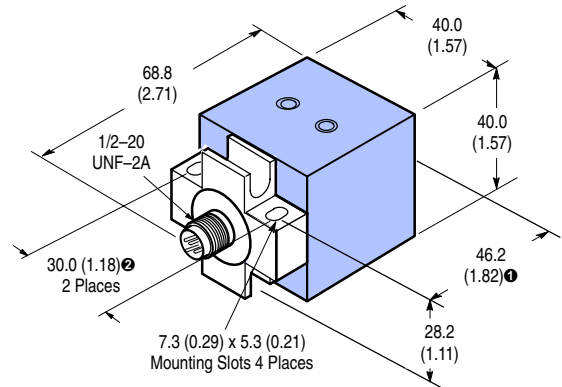
② Each Weld Field Immune unit is supplied with mounting hardware, a ground lug, a ground screw, and an optional adaptor for competitive retrofits. Additional sets of hardware are available under catalog number 871A-PKIT.

Dimensions—mm (inches)

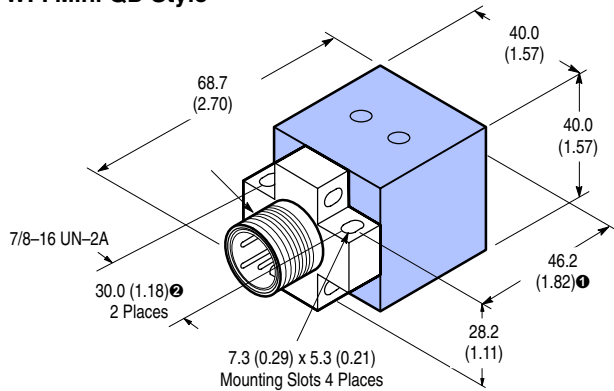
General Purpose Mini QD Style



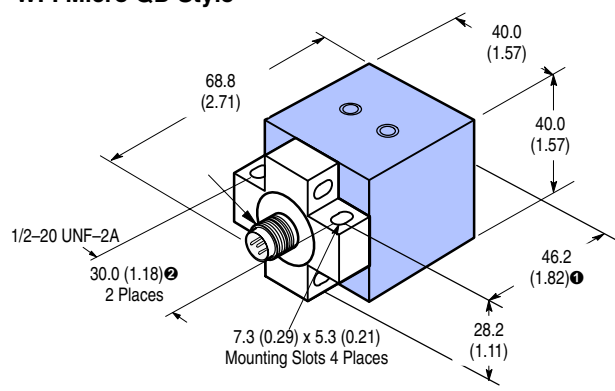
General Purpose Micro QD Style



WFI Mini QD Style



WFI Micro QD Style

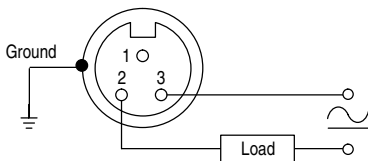


- ❶ With retrofit adaptor, distance from face to mounting holes becomes 60.0 (2.36).
- ❷ With retrofit adaptor, spacing between mounting holes becomes 20.0 (0.79).

Wiring Diagrams

Mini QD Style

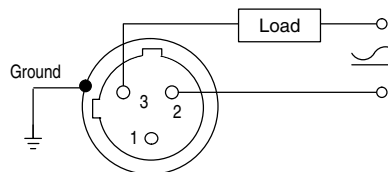
Normally Open or Normally Closed



Note: Load can be switched to pin 3.

Micro QD Style

Normally Open or Normally Closed



Note: Load can be switched to pin 2.

Note: 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.

871P Equal Sensing VersaCube™ 3-Wire DC



871P DC Mini
Quick-Disconnect Style
page 2-129



871P DC Micro
Quick-Disconnect Style
page 2-129



Specifications

	General Purpose
Load Current	≤200mA
Leakage Current	≤10μA
Operating Voltage	10–30V DC
Voltage Drop	<2.5V @ 200mA
Repeatability	≤2%
Hysteresis	5% typical
False Pulse Protection	Incorporated
Transient Noise Protection	Incorporated
Short Circuit Protection	Incorporated
Overload Protection	Incorporated
Reverse Polarity Protection	Incorporated
Weld Field Immunity	1000 Gauss
Connections	Quick-Disconnect: 4-pin mini style 4-pin micro style
Approvals	UL listed, c-UL certified, and CE marked for all applicable directives
Enclosure	NEMA 1, 2, 3, 4, 6, 6P, 12, 13; IP67 (IEC 529), 1200 psi (8270kPa) washdown; Plastic body, zinc base
LED	Orange: Output Energized Green: Power
Operating Temperature	–25°C to +70°C (–13°F to +158°F)
Shock	30g, 11ms
Vibration	55Hz, 1mm amplitude, 3 planes

Features

- Equal sensing distance from all metals
- Rugged housing
- Convenient mounting base
- Short circuit, overload, false pulse, transient noise, and reverse polarity protection
- Weld field immune
- UL listed, c-UL certified, and CE marked for all applicable directives

Correction Factors

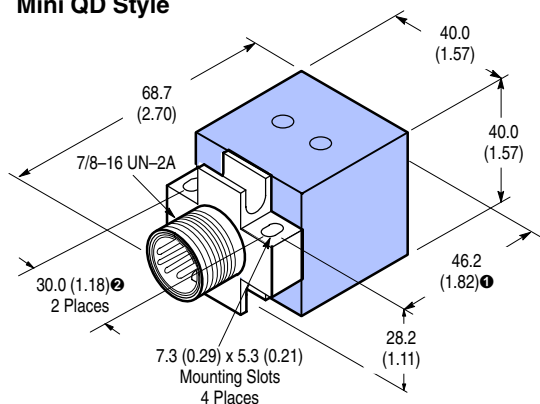
Target Material	Correction Factor
Steel	1.0
Stainless Steel	1.0
Brass	1.0
Aluminum	1.0
Copper	1.0

Selection Guide

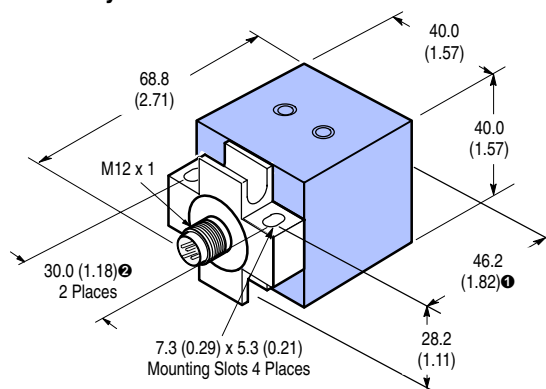
Head Size	Weld Field Immune	Nominal Sensing Distance mm (inches)	Shielded	Output Configuration		Switching Frequency (Hz)	Catalog Number	
							Mini QD Style	Micro QD Style
40mm	Y	25 (0.98)	N	N.O.	PNP	100	871P-DB25NP40-N4	871P-DB25NP40-D4
					NPN		871P-DB25NN40-N4	871P-DB25NN40-D4
				N.C.	PNP		871P-DB25CP40-N4	871P-DB25CP40-D4
					NPN		871P-DB25CN40-N4	871P-DB25CN40-D4
Recommended Standard QD Cordset (-6F = 1.8m (6ft), -2 = 2m (6.5ft))							889N-F4AFC-6F	889D-F4AC-2

Dimensions—mm (inches)

Mini QD Style



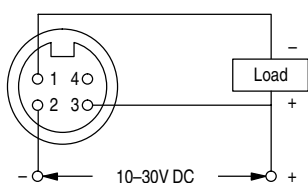
Micro QD Style



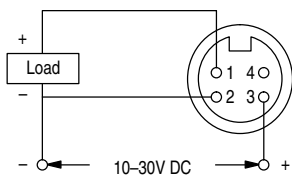
Wiring Diagrams

Mini QD Style

Normally Open or Normally Closed
NPN (Sinking)

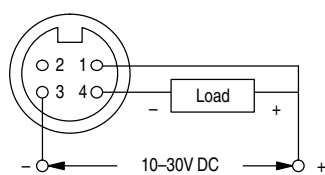


PNP (Sourcing)

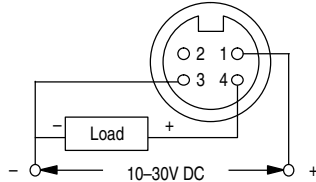


Micro QD Style

Normally Open or Normally Closed
NPN (Sinking)



PNP (Sourcing)



Note: 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**.

Notes
