



Description

The 42CA is a family of general purpose photoelectric sensors intended for light to medium duty industrial applications. They are packaged in an industry standard 18mm cylindrical housing.

Five possible modes of sensing include transmitted beam, diffuse, retroreflective, polarized retroreflective, and background suppression, allowing the 42CA to be used in a variety of complex applications.

Presence of target is provided through a discrete NPN or PNP output which is compatible with most measurement and control circuits found in today's factory automation systems. Outputs are short-circuit protected to provide continuous operation even under unexpected conditions.

As an alternative to the 18mm cylindrical package, Rockwell Automation/Allen Bradley offers the RightSight™ photoelectric sensor. That product provides a right angle design to conserve space in many applications. Refer to page 1–31 for further information on this product.

General Specifications

Light Source	Infrared 880nm or visible red 650nm
Unit Protection	Reverse polarity, output short-circuit and overload protection (SCP)
Supply voltage	10–30V DC
Current Consumption	30mA maximum
Output Type	NPN or PNP
Output Mode	Light or dark operate selectable
Output Rating	100mA
Response Time	2ms (0.5ms for background suppression)
Housing Material	PBT
Lens Material	PMMA 8N 33701 ROHM
LED Indicators	Yellow–output
Connection Types	2m cable, 4-pin DC micro QD
Supplied Accessories	18mm fastening nuts
Optional Accessories	Mounting brackets, reflectors, cordsets
Operating Environment	IP67
Vibration	10–55Hz, 0.5mm amplitude, Meets or exceeds IEC 60947–5–2
Shock	30g with 11ms pulse duration, Meets or exceeds IEC 60947–5–2
Operating Temperature	–25°C to +70°C (–13°F to +158°F)
Ambient Light Immunity	3000 Lx
Approvals	CE marked for all applicable directives

Features

- 18mm industry standard package
- Wide selection of sensing modes
- 24V DC operation
- NPN or PNP outputs
- Fast response time
- Variety of connection types

General Information

- Typical Wiring Diagrams . . . page 1–62
- Dimensions page 1–62

Sensing Modes

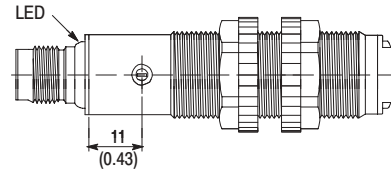
- Retroreflective page 1–63
- Polarized Retroreflective . . . page 1–64
- Standard Diffuse page 1–65
- Background Suppression . . . page 1–66
- Transmitted Beam page 1–67

Accessories

- Quick-Disconnect Cables . . . page 7–1
- Mounting Assemblies page 1–375
- Reflectors, Reflective Tape . . . page 1–386

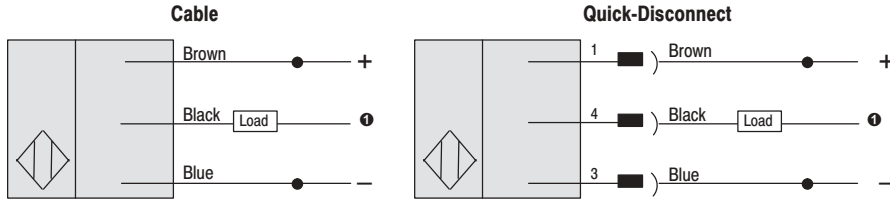
User Interface

Label	Color	State	Status
Output	Orange	OFF	Sensor output de-activated
		ON	Sensor output activated



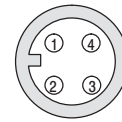
Wiring Diagrams

Diffuse, Retroreflective, Polarized Retroreflective

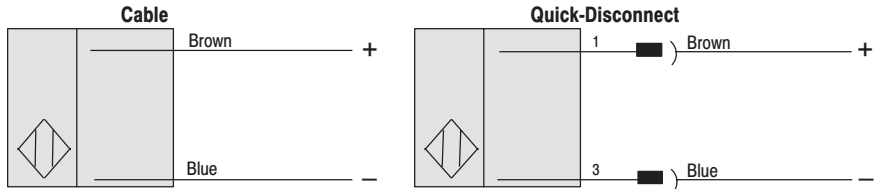


⊙ For NPN type tie the load to Brown (+). For PNP type tie the load to Blue (-).

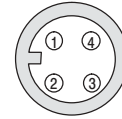
Face View Male Receptacle (Sensor) DC Micro



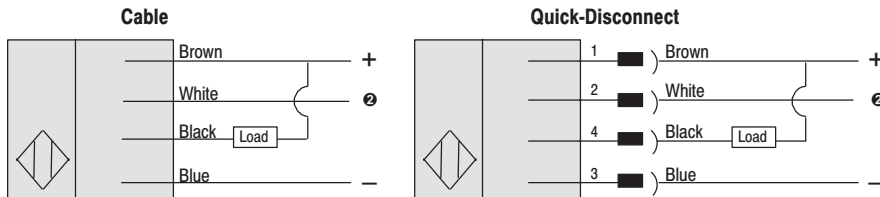
Background Suppression, Transmitted Beam



Face View Male Receptacle (Sensor) DC Micro

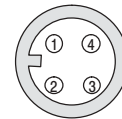


NPN Output

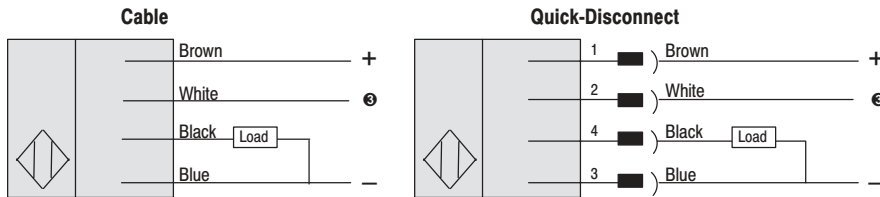


⊙ Tie white (2) and brown (1) conductors together for LO. Tie white (2) and blue (3) conductors together for DO.

Face View Male Receptacle (Sensor) DC Micro

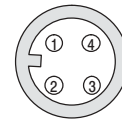


PNP Output

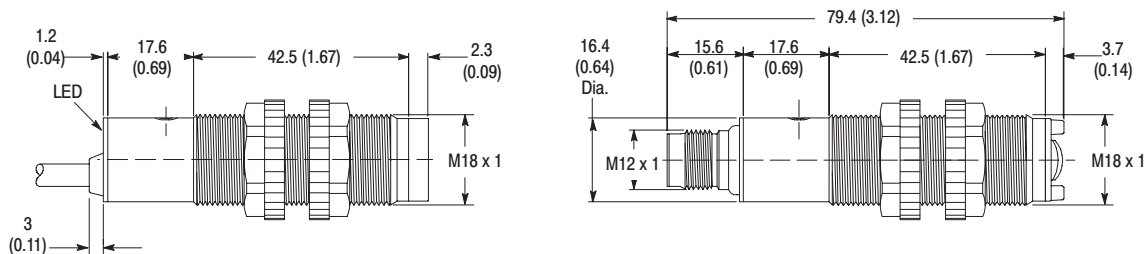


⊙ Tie white (2) and brown (1) conductors together for LO. Tie white (2) and blue (3) conductors together for DO.

Face View Male Receptacle (Sensor) DC Micro

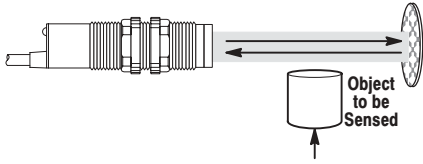


Dimensions—mm (inches)



42CA Retroreflective

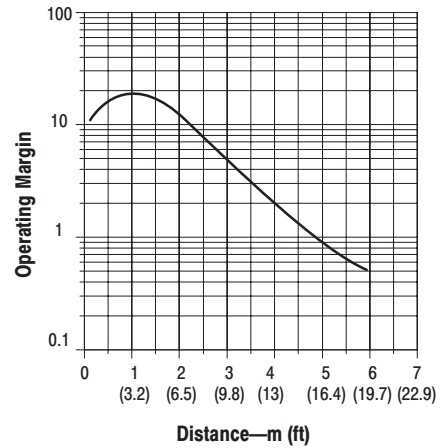
General Purpose 18mm Cylindrical Style



QD Cordsets and Accessories

Description	Catalog/Page Number
DC Micro QD Cordset, 4-pin, 2m	889D-F4AC-2
Other Cordsets Available	7-1
Mounting Assemblies	1-375
Reflectors, Reflective Tape	1-386

Typical Response Curve



Specifications

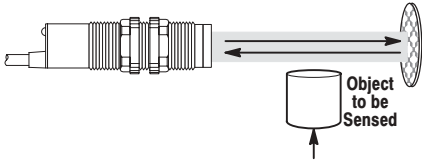
Field of View	1.9°
Emitter LED	Infrared 880nm

Product Selection

Operating Voltage Supply Current	Sensing Distance @ 2X Margin	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
10-30V DC 30mA	3mm (0.12in) to 4m (13.2ft)	Light	NPN 100mA 4ms	<10µA	2m 300V cable	42CA-U1JNB-A2
		Dark			4-pin DC micro QD	42CA-U1JNB-D4
		Light	PNP 100mA 4ms		2m 300V cable	42CA-U1KNB-A2
		Dark			4-pin DC micro QD	42CA-U1KNB-D4
		Light			2m 300V cable	42CA-U1JPB-A2
		Dark			4-pin DC micro QD	42CA-U1JPB-D4
		Light			2m 300V cable	42CA-U1KPB-A2
		Dark			4-pin DC micro QD	42CA-U1KPB-D4

42CA Polarized Retroreflective

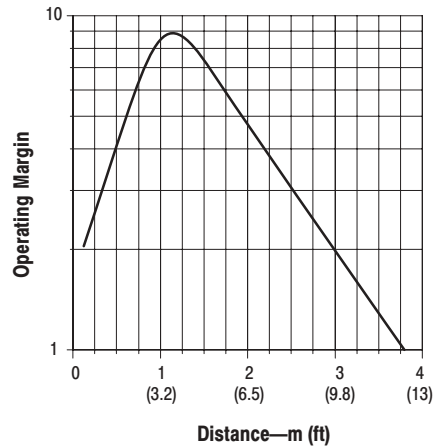
General Purpose 18mm Cylindrical Style



QD Cordsets and Accessories

Description	Catalog/Page Number
DC Micro QD Cordset, 4-pin, 2m	889D-F4AC-2
Other Cordsets Available	7-1
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Typical Response Curve

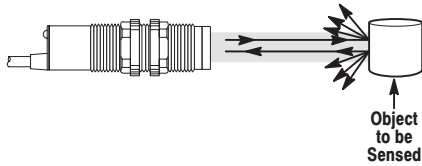


Specifications

Field of View	1.8°
Emitter LED	Visible red 660nm

Product Selection

Operating Voltage Supply Current	Sensing Distance @ 2X Margin	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
10-30V DC 30mA	3mm (0.12in) to 3m (9.9ft)	Light	NPN 100mA 2ms	<10µA	2m 300V cable	42CA-P2JNB-A2
		Dark			4-pin DC micro QD	42CA-P2JNB-D4
		Light	PNP 100mA 2ms		2m 300V cable	42CA-P2KNB-A2
		Dark			4-pin DC micro QD	42CA-P2KNB-D4
		Light			2m 300V cable	42CA-P2JPB-A2
		Dark			4-pin DC micro QD	42CA-P2JPB-D4
		Light			2m 300V cable	42CA-P2KPB-A2
		Dark			4-pin DC micro QD	42CA-P2KPB-D4



QD Cordsets and Accessories

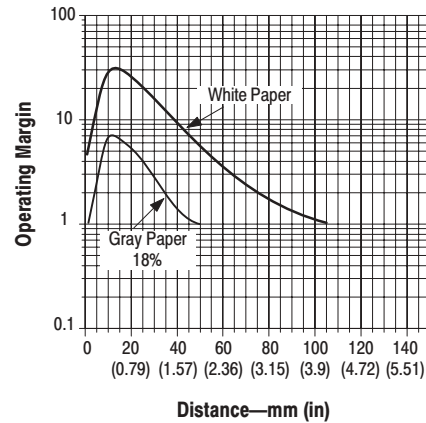
Description	Catalog/Page Number
DC Micro QD Cordset, 4-pin, 2m	889D-F4AC-2
Other Cordsets Available	7-1
Mounting Assemblies	1-375

Specifications

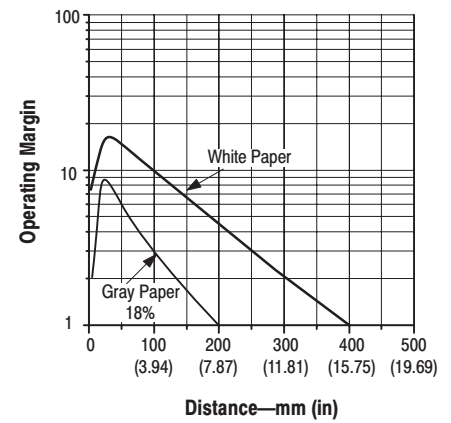
Field of View	6.6°
Emitter LED	Infrared 880nm

Typical Response Curve

100mm



400mm

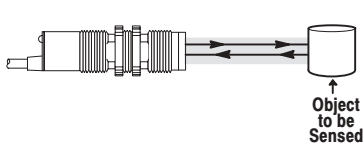


Product Selection

Operating Voltage Supply Current	Sensing Distance @ 1X Margin	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
10-30V DC 30mA	0 to 100mm (3.9in) (Adjustable)	Light	NPN 100mA 2ms	<10µA	2m 300V cable	42CA-D1JNAE-A2
		Dark			4-pin DC micro QD	42CA-D1JNAE-D4
		Light	PNP 100mA 2ms		2m 300V cable	42CA-D1KNAE-A2
		Dark			4-pin DC micro QD	42CA-D1KNAE-D4
		Light	NPN 100mA 2ms		2m 300V cable	42CA-D1JPAE-A2
		Dark			4-pin DC micro QD	42CA-D1JPAE-D4
		Light			2m 300V cable	42CA-D1KPAE-A2
		Dark			4-pin DC micro QD	42CA-D1KPAE-D4
	0 to 400mm (13.6in) (Adjustable)	Light	NPN 100mA 2ms	2m 300V cable	42CA-D1JNAJ-A2	
		Dark		4-pin DC micro QD	42CA-D1JNAJ-D4	
		Light	PNP 100mA 2ms	2m 300V cable	42CA-D1KNAJ-A2	
		Dark		4-pin DC micro QD	42CA-D1KNAJ-D4	
		Light	NPN 100mA 2ms	2m 300V cable	42CA-D1JPAJ-A2	
		Dark		4-pin DC micro QD	42CA-D1JPAJ-D4	
		Light		2m 300V cable	42CA-D1KPAJ-A2	
		Dark		4-pin DC micro QD	42CA-D1KPAJ-D4	

42CA Background Suppression

General Purpose 18mm Cylindrical Style



QD Cordsets and Accessories

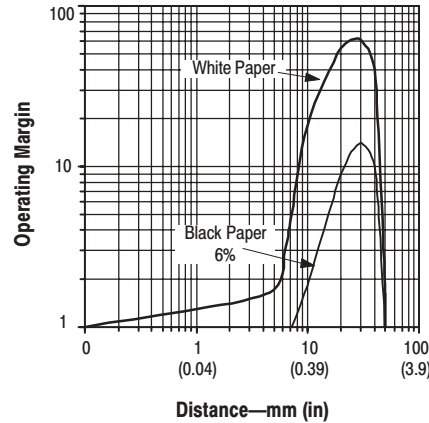
Description	Catalog/Page Number
DC Micro QD Cordset, 4-pin, 2m	889D-F4AC-2
Other Cordsets Available	7-1
Mounting Assemblies	1-375

Specifications

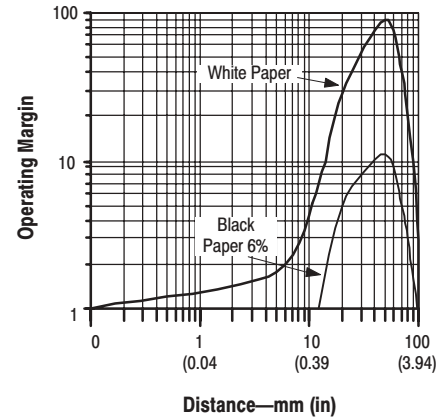
Field of View	50mm = 5.7° 100mm = 3.4°
Emitter LED	Visible red 660nm

Typical Response Curve

50mm



100mm

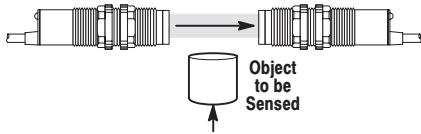


Product Selection

Operating Voltage Supply Current	Sensing Distance @ 1X Margin	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
10-30V DC 30mA	50mm (1.97in)	Light/Dark Selectable	NPN 100mA 0.5ms	<10µA	2m 300V cable	42CA-B2LNBC-A2
					4-pin DC micro QD	42CA-B2LNBC-D4
			PNP 100mA 0.5ms		2m 300V cable	42CA-B2LPBC-A2
					4-pin DC micro QD	42CA-B2LPBC-D4
	100mm (3.9in)		NPN 100mA 0.5ms		2m 300V cable	42CA-B2LNBE-A2
					4-pin DC micro QD	42CA-B2LNBE-D4
			PNP 100mA 0.5ms		2m 300V cable	42CA-B2LPBE-A2
					4-pin DC micro QD	42CA-B2LPBE-D4

42CA Transmitted Beam

General Purpose 18mm Cylindrical Style

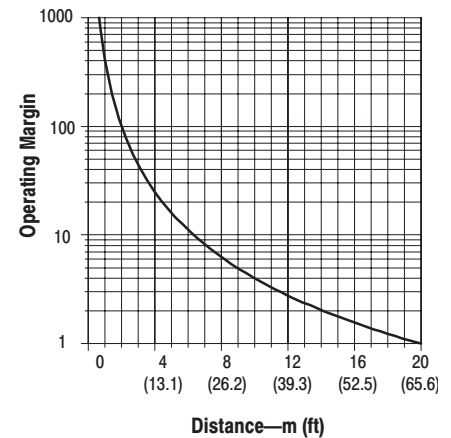


Light Sources and Receivers must be ordered separately. Any light source is compatible with any receiver.

QD Cordsets and Accessories

Description	Catalog/Page Number
DC Micro QD Cordset, 4-pin, 2m	889D-F4AC-2
Other Cordsets Available	7-1
Mounting Assemblies	1-375

Typical Response Curve



Specifications

Field of View	1.6°
Emitter LED	Infrared 880nm

Product Selection for Light Sources

Operating Voltage Supply Current	Sensing Distance	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
10-30V DC 25mA	3mm (0.12in) to 8m (26.2ft) (Adjustable)	—	—	2m 300V cable	42CA-E1EZB-A2
				4-pin DC micro QD	42CA-E1EZB-D4

Product Selection for Receivers

Operating Voltage Supply Current	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
10-30V DC 25mA	Light/Dark Selectable	NPN 100mA 2ms	0.1µA	2m 300V cable	42CA-R1LNA-A2
				4-pin DC micro QD	42CA-R1LNA-D4
		PNP 100mA 2ms		2m 300V cable	42CA-R1LPA-A2
				4-pin DC micro QD	42CA-R1LPA-D4