

42CA



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.

The 42CA is available in three sensing modes to cover typical applications. The infrared light source provides excellent range for the sensor size.

DC operation ensures compatibility with measurement and control circuits found in today's factory automation systems. Signaling of target detection is made via either an NPN or PNP output. This output is short-circuit protected to protect the sensor from possible damage. Light or dark operate condition is selected by model number.

For ease of maintenance, there are no user adjustments required. A single red LED provides a visual indication of the output status.

As an alternative to the 18mm cylindrical package, Rockwell Automation/Allen-Bradley also offers the RightSight photoelectric sensor. That product is of 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
Unit Protection	Reverse polarity, output short-circuit protection (SCP)
Supply voltage	10-30V DC
Current Consumption	30mA maximum
Output Type	NPN or PNP
Output Mode	Light or dark operate
Output Rating	100mA @ 28V DC
Response Time	5ms (20ms for transmitted beam)
Housing Material	Polyamide
Lens Material	Acrylic
LED Indicators	See User Interface on page 1-133
Connection Types	2m 300V cable, 4-pin DC micro QD
Supplied Accessories	None
Optional Accessories	Mounting brackets, reflectors, cordsets
Operating Environment	NEMA 3, 4X, 12, 13 (IP65)
Vibration	10-55Hz, 1mm amplitude, Meets or exceeds IEC 60947-5-2
Shock	30g with 1ms pulse duration, Meets or exceeds IEC 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Relative Humidity	35...85%
Approvals	UL listed, CSA approved, and CE marked for all applicable directives

Features

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

General Information

Typical Wiring Diagrams . . page 1-133
Dimensions page 1-133

Sensing Modes

Retroreflective page 1-134
Standard Diffuse page 1-135
Transmitted Beam page 1-136

Accessories

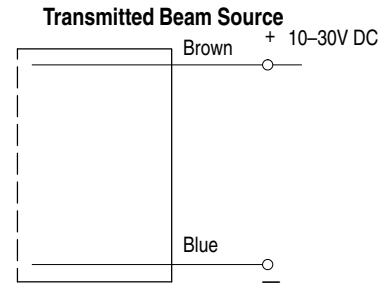
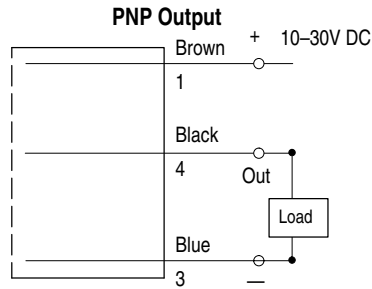
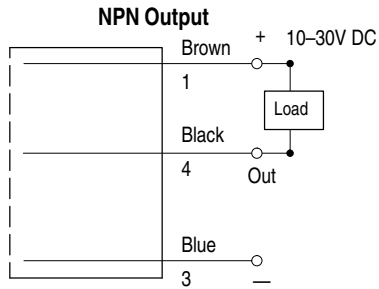
Quick-Disconnect Cables . . . page 5-1
Mounting Assemblies page 1-301
Reflectors, Reflective Tape page 1-311

User Interface Panel

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

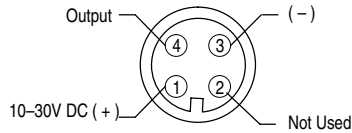
Wiring Diagrams

Cable Version

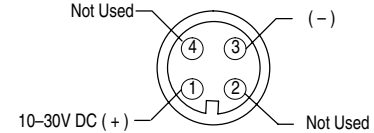


Micro Quick-Disconnect Versions

Diffuse, Retroreflective, Transmitted Beam Receiver Face View Male Receptacle (Sensor)



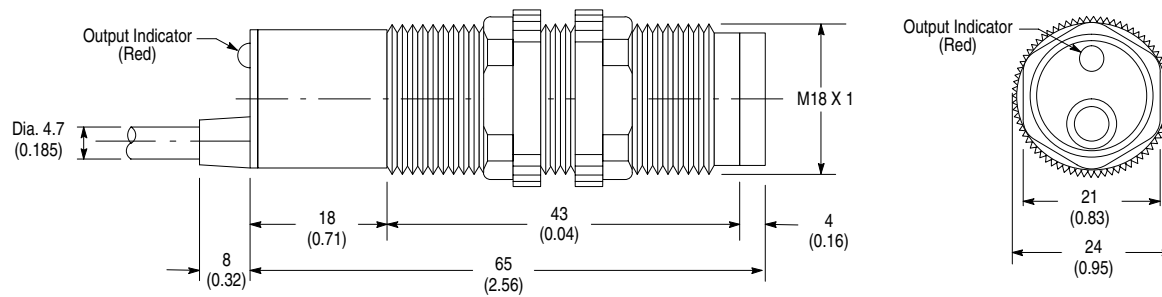
Transmitted Beam Source Face View Male Receptacle (Sensor)



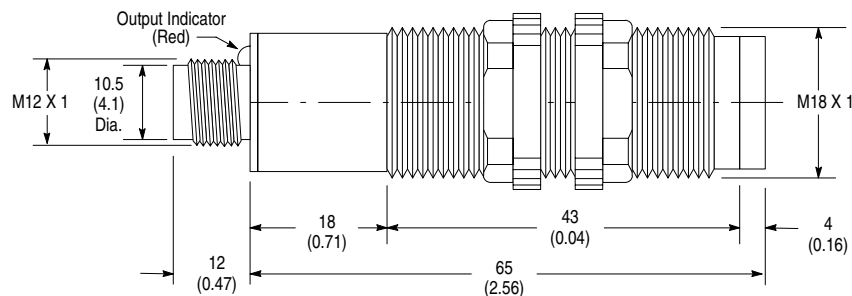
Note: Details regarding connection of Allen-Bradley 42CA photoelectric sensors to Allen-Bradley Programmable Controllers can be found in publication 42-2.0.

Dimensions—mm (inches)

Cable Version

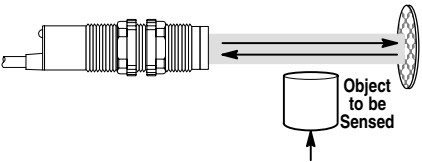


Quick-Disconnect Version



42CA Retroreflective

General Purpose 18mm Cylindrical Style



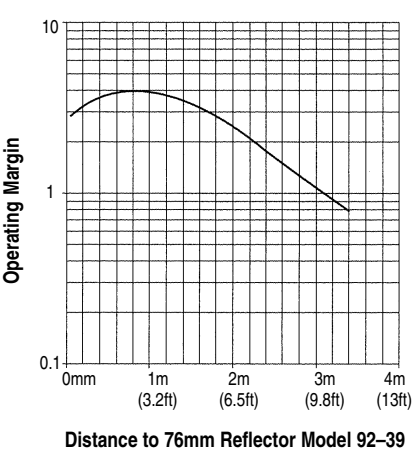
Specifications

Field of View	2.5°
Emitter LED	Infrared 880nm

QD Cordsets and Accessories

Description	Catalog/Page Number
DC Micro QD Cordset, 4-pin, 2m	889D-F4AC-2
Other Cordsets Available	5-1
Mounting Assemblies	1-301
Reflectors, Reflective Tape	1-311

Typical Response Curve

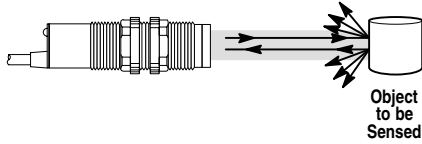


Selection Guide

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	3mm (0.12in) to 2.5m (8.2ft)	Light	NPN 100mA 5ms	0.1μA	2m 300V cable	42CA–U1JNB–A2
					4-pin DC micro QD	42CA–U1JNB–D4
		Dark			2m 300V cable	42CA–U1KNB–A2
			4-pin DC micro QD		42CA–U1KNB–D4	
		Light	PNP 100mA 5ms		2m 300V cable	42CA–U1JPB–A2
					4-pin DC micro QD	42CA–U1JPB–D4
		Dark			2m 300V cable	42CA–U1KPB–A2
					4-pin DC micro QD	42CA–U1KPB–D4

42CA Standard Diffuse

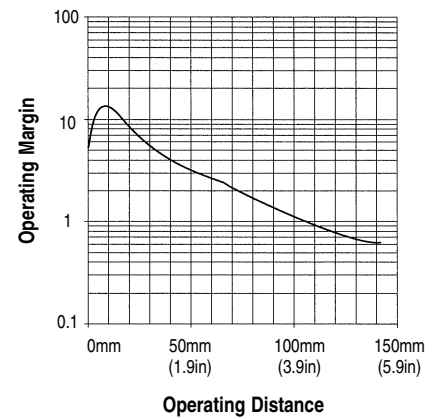
General Purpose 18mm Cylindrical Style

**Specifications**

Field of View	15°
Emitter LED	Infrared 880nm

QD Cordsets and Accessories

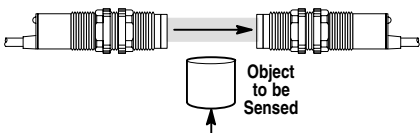
Description	Catalog/Page Number
DC Micro QD Cordset, 4-pin, 2m	889D-F4AC-2
Other Cordsets Available	5-1
Mounting Assemblies	1-301

Typical Response Curve**Selection Guide**

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	3mm (0.12in) to 100mm (3.9in)	Light	NPN 100mA 5ms	0.1μA	2m 300V cable	42CA–D1JNB–A2
					4-pin DC micro QD	42CA–D1JNB–D4
		Dark			2m 300V cable	42CA–D1KNB–A2
			4-pin DC micro QD		42CA–D1KNB–D4	
		Light	PNP 100mA 5ms		2m 300V cable	42CA–D1JPB–A2
					4-pin DC micro QD	42CA–D1JPB–D4
		Dark			2m 300V cable	42CA–D1KPB–A2
					4-pin DC micro QD	42CA–D1KPB–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.

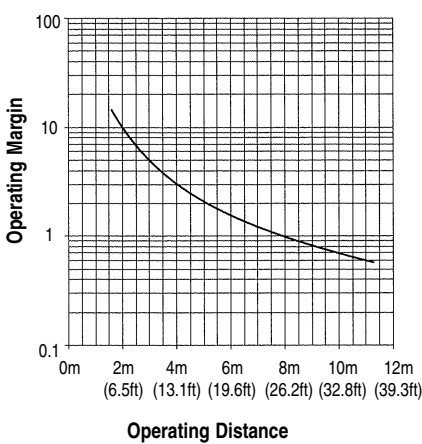
Specifications

Field of View	6.8°
Emitter LED	Infrared 880nm

QD Cordsets and Accessories

Description	Catalog/Page Number
DC Micro QD Cordset, 4-pin, 2m	889D-F4AC-2
Other Cordsets Available	5-1
Mounting Assemblies	1-301

Typical Response Curve



Selection Guide for Light Sources

Operating Voltage Supply Current	Sensing Distance @ 1X Margin	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
10-30V DC 12mA	3mm (0.12in) to 8m (26.2ft)	—	—	2m 300V cable	42CA-E1EZB-A2
				4-pin DC micro QD	42CA-E1EZB-D4

Selection Guide for Receivers

Operating Voltage Supply Current	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
10–30V DC 20mA	Light	NPN 100mA 20ms	0.1μA	2m 300V cable	42CA–R1JNB–A2
	Dark			4-pin DC micro QD	42CA–R1JNB–D4
		Light		2m 300V cable	42CA–R1KNB–A2
	Dark			4-pin DC micro QD	42CA–R1KNB–D4
		Light		2m 300V cable	42CA–R1JPB–A2
	Dark			4-pin DC micro QD	42CA–R1JPB–D4
		Light		PNP 100mA 20ms	2m 300V cable
	4-pin DC micro QD				42CA–R1KPB–D4