

Series 7000

Miniature Rectangular Style



Description

The Series 7000 is a family of general purpose photoelectric sensors intended for light to medium duty industrial applications. They offer a compact package, wide variety of sensing modes, and high speed response time.

The Series 7000 is available in eight sensing modes thereby, ensuring an optimal solution for most applications. Even clear object detection applications can be solved with the use of the ClearSight version.

The Series 7000 are DC operated and provide dual (N.O. and N.C.) NPN or PNP outputs. The 500µs response time makes them ideally suited for high speed applications.

For ease of maintenance, all adjustments are made on a user interface panel located on the top of the sensor. A clutch-protected 5-turn potentiometer is used as the sensor sensitivity adjustment. A single red LED provides a visual indication of the output status.

When economics is the driving factor in the selection of a photoelectric sensor, Rockwell Automation/Allen-Bradley offers the Series 7000 LTD. This family of sensors retains many of the same features as the Series 7000 with the following exceptions: lower response time, reduced environmental protection, limited sensing and operating modes, and limited or no sensitivity adjustment. Refer to page 1–190 for further information on the Series 7000 LTD.

General Specifications

Light Source	See Product Selection
Unit Protection	Reverse polarity
Supply Voltage	11–28V DC
Current Consumption	46mA maximum
Output Type	Dual (N.O. and N.C.) NPN or PNP
Output Mode	Both light/dark operate
Output Rating	100mA @ 28V DC
Response Time	500µs
Housing Material	Valox®
Lens Material	Acrylic (glass on polarized retroreflective models)
LED Indicators	See User Interface on page 1-181
Connection Types	3m 300V cable, 4-pin DC micro QD on 12in pigtail
Supplied Accessories	None
Optional Accessories	Mounting brackets, reflectors, cordsets
Operating Environment	NEMA 3, 4X, 6P, 12, 13 (IP67)
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	–40°C to +65°C (–40°F to +150°F)
Relative Humidity	5...95%
Approvals	UL listed, CSA approved, and CE marked for all applicable directives

Features

- Compact rectangular package
- Wide selection of sensing modes
- 24VDC operation
- N.O. and N.C. outputs
- Fast response time
- Variety of connection types

General Information

Wiring Diagrams page 1–181
 Dimensions page 1–182

Sensing Modes

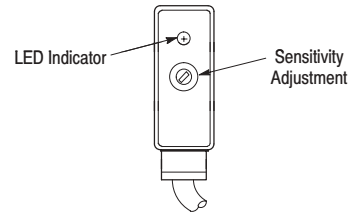
Retroreflective page 1–183
 Polarized Retroreflective page 1–184
 Standard Diffuse page 1–185
 Wide Angle Diffuse page 1–186
 Fixed Focus page 1–187
 Transmitted Beam page 1–188
 Visible Red Fiber Optic page 1–189
 ClearSight™ page 1–152

Accessories

Fiber Optic Cables page 1–292
 Quick-Disconnect Cables page 7–1
 Mounting Assemblies page 1–375
 Reflectors, Reflective Tape page 1–386

User Interface Panel

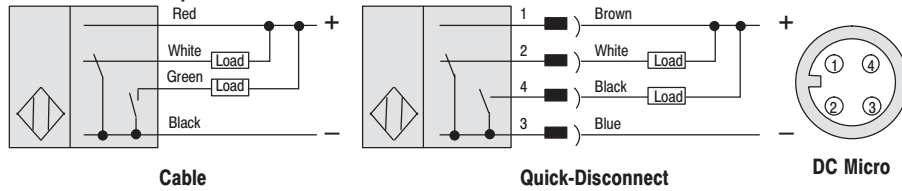
Label	Color	State	Status
Output	Red	OFF	Sensor output de-activated
		ON	Sensor output activated



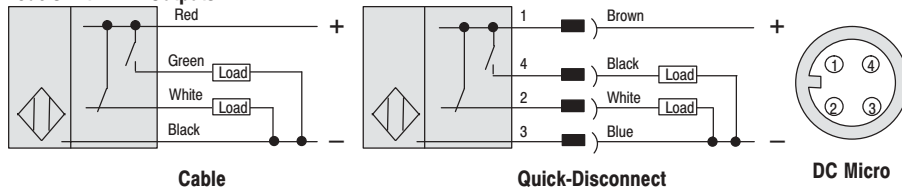
Wiring Diagrams

10.8–30V DC Sensors

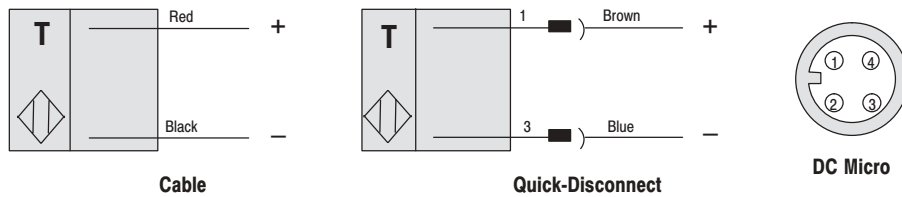
Models with NPN Outputs



Models with PNP Outputs



Transmitted Beam Source—All Models



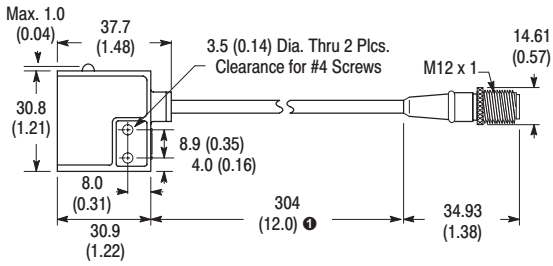
Note: Details regarding connection of Allen-Bradley Bulletin Series 7000 photoelectric sensors to Allen-Bradley Programmable Controllers can be found in publication 42-2.0.

Series 7000

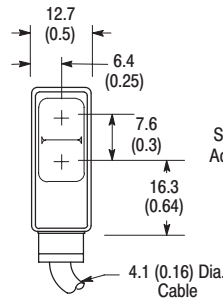
Miniature Rectangular Style

Dimensions

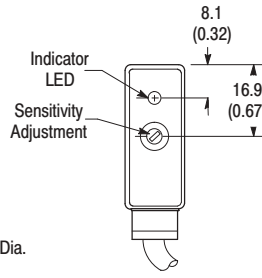
All Models Except Visible Red Plastic Fiber Optic—mm (inches)



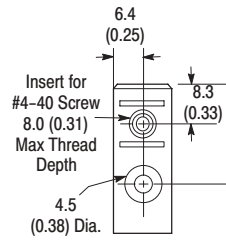
① Quick-disconnect cable length shown. Cable versions length is 10ft (3m).



Front View (Lens)

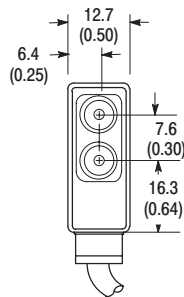
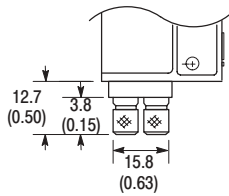


Rear View



Bottom View

Visible Red Plastic Fiber Optic Models—mm (inches)



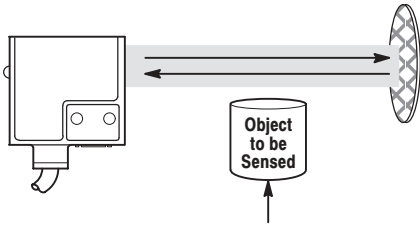
Front View



Bottom View

Series 7000 Retroreflective

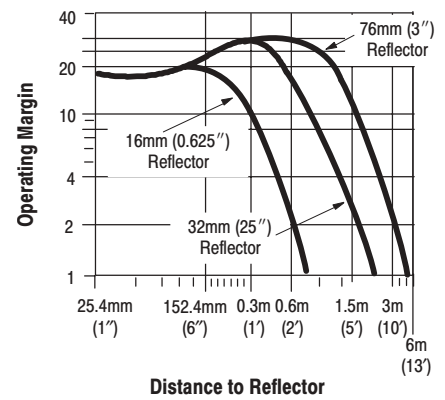
Miniature Rectangular Style



QD Cordsets and Accessories

Description	Catalog/Page Number
DC Micro QD Cordset, 4-pin, 2m	889D-F4AC-2
Other Cordsets Available	7-1
Tilt/Swivel Bracket	60-2619
76mm (3in) Diameter Reflector	92-39
32mm (1.25in) Diameter Reflector	92-47

Typical Response Curve



Specifications

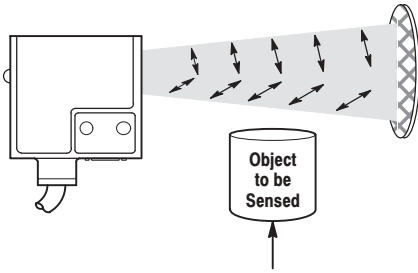
Field of View	3°
Emitter LED	Visible red 660nm

Product Selection

Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
11-28V DC 46mA	25.4mm (1in) to 3.7m (12.0ft)	Complementary N.O./N.C.	NPN 100mA 500µs	10µA	3m cable	42SMU-7000
					4-pin DC micro QD	42SMU-7000-QD
			PNP 100mA 500µs		3m cable	42SMU-7001
					4-pin DC micro QD	42SMU-7001-QD

Series 7000 Polarized Retroreflective

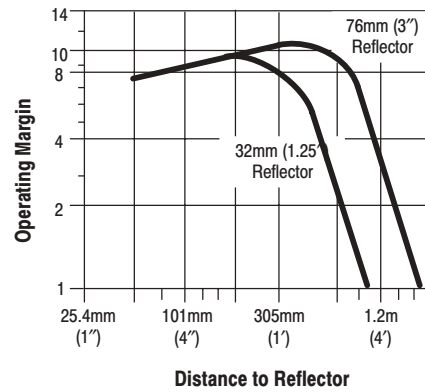
Miniature Rectangular Style



QD Cordsets and Accessories

Description	Catalog/Page Number
DC Micro QD Cordset, 4-pin, 2m	889D-F4AC-2
Other Cordsets Available	7-1
Tilt/Swivel Bracket	60-2619
76mm (3in) Diameter Reflector	92-39
32mm (1.25in) Diameter Reflector	92-47

Typical Response Curve



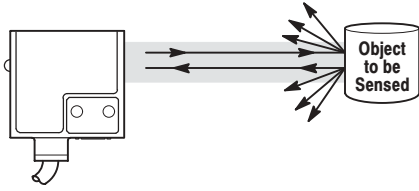
Specifications

Field of View	3°
Emitter LED	Visible red 660nm

Product Selection

Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
11-28V DC 46mA	50.8mm (2in) to 2m (6.6ft)	Complementary N.O./N.C.	NPN 100mA 500µs PNP 100mA 500µs	10µA	3m cable	42SMU-7200
					4-pin DC micro QD	42SMU-7200-QD
					3m cable	42SMU-7201
					4-pin DC micro QD	42SMU-7201-QD

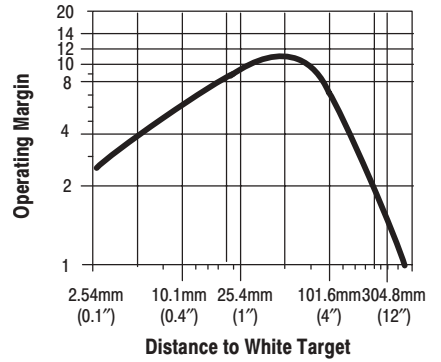
Allen-Bradley Parts



QD Cordsets and Accessories

Description	Catalog/Page Number
DC Micro QD Cordset, 4-pin, 2m	889D-F4AC-2
Other Cordsets Available	7-1
Tilt/Swivel Bracket	60-2619

Typical Response Curve



Specifications

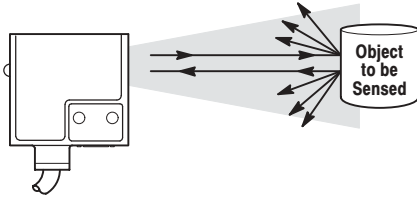
Field of View	7°
Emitter LED	Infrared 880nm

Product Selection

Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
11-28V DC 46mA	25.4mm (1in) to 229mm (9.0in)	Complementary N.O./N.C.	NPN 100mA 500µs	10µA	3m cable	42SMP-7000
					4-pin DC micro QD	42SMP-7000-QD
			PNP 100mA 500µs		3m cable	42SMP-7001
					4-pin DC micro QD	42SMP-7001-QD

Series 7000 Wide Angle Diffuse

Miniature Rectangular Style



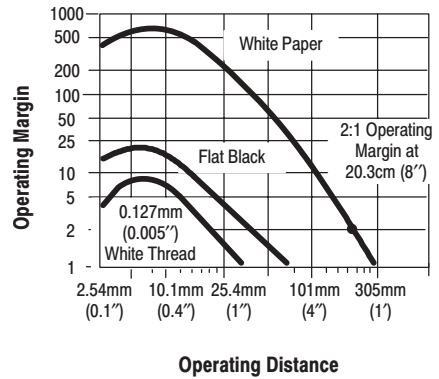
Specifications

Field of View	43°
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	7-1
Tilt/Swivel Bracket	60-2619

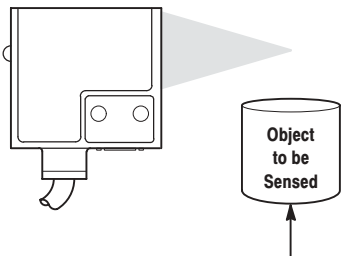
Typical Response Curve



Product Selection

Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
11-28V DC 46mA	5mm (0.2in) to 280mm (11in)	Complementary N.O./N.C.	NPN 100mA 500µs	10µA	3m cable	42SMP-7010
					4-pin DC micro QD	42SMP-7010-QD
			PNP 100mA 500µs		3m cable	42SMP-7011
					4-pin DC micro QD	42SMP-7011-QD

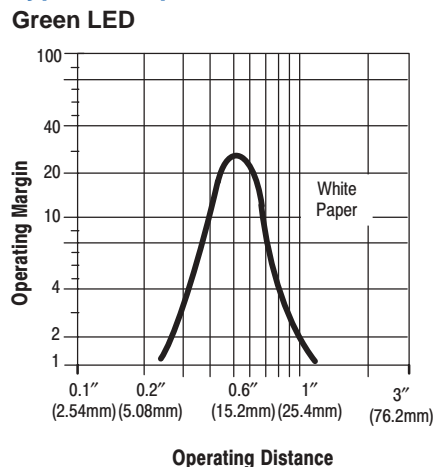
Allen-Bradley Parts



QD Cordsets and Accessories

Description	Catalog/Page Number
DC Micro QD Cordset, 4-pin, 2m	889D-F4AC-2
Other Cordsets Available	7-1
Tilt/Swivel Bracket	60-2619

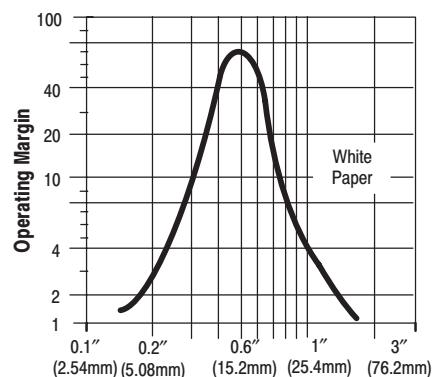
Typical Response Curve



Specifications

Field of View	0.60in (15.2mm)
Emitter LED	Visible red 660nm or Green 570nm (See Product Selection)

Red LED

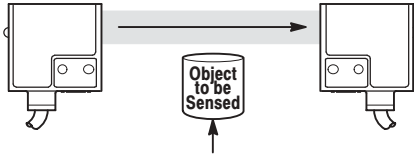


Product Selection

Operating Voltage Supply Current	Emitter LED	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
11-28V DC 46mA	Red 660nm	Complementary N.O./N.C.	NPN 100mA 500µs	10µA	3m cable	42SMP-7020
			PNP 100mA 500µs		4-pin DC micro QD	42SMP-7020-QD
					3m cable	42SMP-7021
			Green 570nm		4-pin DC micro QD	42SMP-7021-QD
	NPN 100mA 1ms				3m cable	42SMP-7320
					4-pin DC micro QD	42SMP-7320-QD
	PNP 100mA 1ms				3m cable	42SMP-7321
			4-pin DC micro QD		42SMP-7321-QD	

Series 7000 Transmitted Beam

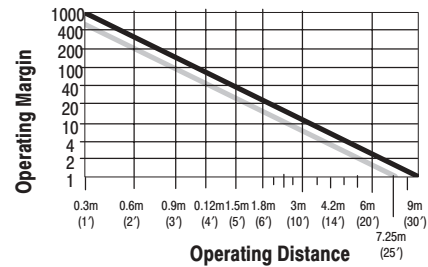
Miniature Rectangular Style



QD Cordsets and Accessories

Description	Catalog/Page Number
DC Micro QD Cordset, 4-pin, 2m	889D-F4AC-2
Other Cordsets Available	7-1
Tilt/Swivel Bracket	60-2619

Typical Response Curve



■ (IR) 42SML-7100 & 42SMR-7100/7101
 ■ (RED) 42SML-7110 & 42SMR-7110/7111

Specifications

Field of View	See Product Selection
Emitter LED	See Product Selection

Product Selection for Light Source

Operating Voltage Supply Current	Sensing Distance	Field of View	Output Type/Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
11-28V DC 45mA	10mm (0.39in) to 9.2m (30ft)	3°	Infrared	—	3m cable	42SML-7100
					4-pin DC micro QD	42SML-7100-QD
11-28V DC 35mA	10mm (0.39in) to 7.6m (25ft)		Red		3m cable	42SML-7110
					4-pin DC micro QD	42SML-7110-QD

Product Selection for Receivers to Use With Infrared Light Sources

Operating Voltage Supply Current	Output Energized	Field of View	Output Type/Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
11-28V DC 25mA	Complementary N.O./N.C.	8°	NPN 100mA 1ms ON/1.5ms OFF	10µA	3m cable	42SMR-7100
					4-pin DC micro QD	42SMR-7100-QD
			PNP 100mA 1ms ON/1.5ms OFF		3m cable	42SMR-7101
					4-pin DC micro QD	42SMR-7101-QD
		2°	NPN 100mA 1ms ON/1.5ms OFF		3m cable	42SMR-7120
					4-pin DC micro QD	42SMR-7120-QD
			PNP 100mA 1ms ON/1.5ms OFF		3m cable	42SMR-7121
					4-pin DC micro QD	42SMR-7121-QD

Product Selection for Receivers to Use With Visible Red Light Sources

Operating Voltage Supply Current	Output Energized	Field of View	Output Type/Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
11-28V DC 25mA	Complementary N.O./N.C.	8°	NPN 100mA 1ms ON/1.5ms OFF	10µA	3m cable	42SMR-7110
					4-pin DC micro QD	42SMR-7110-QD
			PNP 100mA 1ms ON/1.5ms OFF		3m cable	42SMR-7111
					4-pin DC micro QD	42SMR-7111-QD
		2°	NPN 100mA 1ms ON/1.5ms OFF		3m cable	42SMR-7130
					4-pin DC micro QD	42SMR-7130-QD
			PNP 100mA 1ms ON/1.5ms OFF		3m cable	42SMR-7131
					4-pin DC micro QD	42SMR-7131-QD

Allen-Bradley Parts



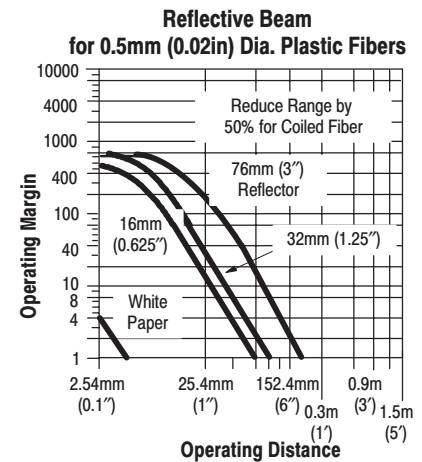
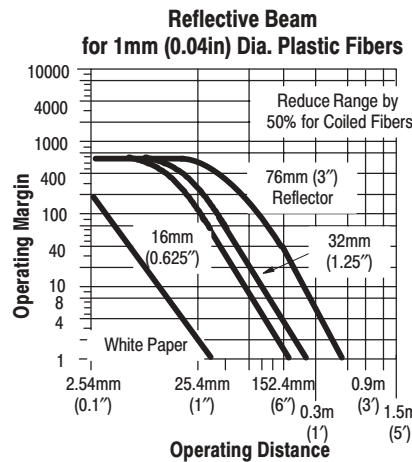
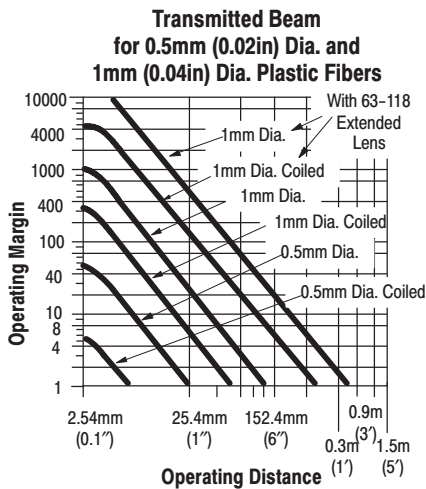
QD Cordsets and Accessories

Description	Catalog/Page Number
DC Micro QD Cordset, 4-pin, 2m	889D-F4AC-2
Other Cordsets Available	7-1
Tilt/Swivel Bracket	60-2619
Bifurcated Fiber Optic Cables, 1mm Diameter	99-801
Individual Fiber Optic Cables, 1mm Diameter	99-820

Specifications

Field of View	Depends on the fiber optic cable selected
Emitter LED	Visible red 660nm

Typical Response Curve



Product Selection

Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
11-28V DC 46mA	Depends on Fiber Optic cable selected	Complementary N.O./N.C.	NPN 100mA 1ms	10µA	3m cable	42SMF-7100
					4-pin DC micro QD	42SMF-7100-QD
			PNP 100mA 1ms		3m cable	42SMF-7101
					4-pin DC micro QD	42SMF-7101-QD