



Description

Series 9000 photoelectric sensors are designed to perform in many harsh environments. They are well-sealed, with critical components epoxied in a high-impact, chemically resistant Valox® housing. Series 9000 sensors will withstand 1200psi (8270kPa) high pressure, high temperature washdowns, making them ideal for use in tough sensing environments found in food and beverage packaging and many material handling industries.

All adjustments are located under a unique clear cover. The cover is captive, and only a single captive screw is used to hold the cover in place and assure sealing. Each sensor has at least three highly visible LED indicators positioned under a raised portion of the cover. These indicators are visible from 360° around the sensor.

To provide for the best reliability and ease of installation, all Series 9000 sensors are factory assembled. There are no plug-in modules or other loose components to be assembled by the customer. Troubleshooting is simplified, because there is no need to open the sensor in the field to find hidden modules inside. A single part number provides a complete sensor for installation or field replacement.

Series 9000 sensors provide extended sensing ranges for application flexibility and extra operating margin for lower

maintenance. Most sensors are available with a choice of 2m PVC cable, DC or AC micro-style quick disconnect, or mini-style quick disconnect. Rockwell Automation/Allen-Bradley offers a variety of matching quick disconnect cables, refer to page 7-1.

Series 9000 photoelectric sensors are available in five different types.

On/Off sensors offer a fast 2ms response time and dual NPN/PNP DC outputs or single solid state AC output (15ms SPDT EM Relay). Each sensor contains highly visible Power, Output, and Margin/Short Circuit indicators, a Light/Dark Operate switch and adjustable sensitivity.

Timing sensors add adjustable On and/or Off delay output timing up to 15 seconds in two ranges. One shot or delayed one-shot output operation is also selectable, with pulse delay and pulse duration adjustable up to 15 seconds.

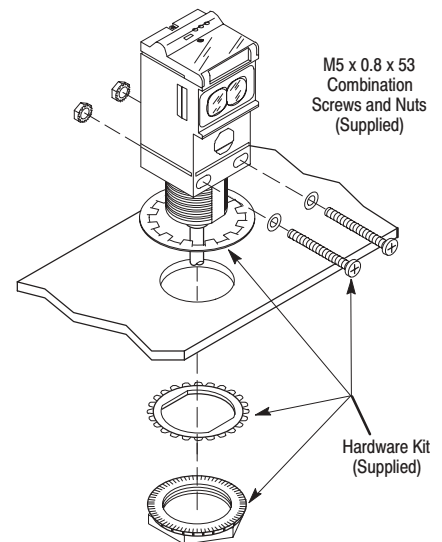
Diagnostic sensors provide separate indicators and a separate output that signals poor application quality. Static or Dynamic diagnostic modes can be selected for detection of a variety of application problems.

Darkroom sensors can be used in areas where the emission of visible light must be sharply reduced, such as in

areas where photographic films, papers, and other materials are manufactured. These On/Off sensors have been specifically designed and constructed to reduce visible light emission to less than 0.003millilux measured 25mm (1in) from the sensor.

Supplied Accessories

Each sensor is packaged with installation instructions and hardware kit #129-130 containing a Valox® 30mm mounting nut, washer, and two M5 x 0.8 x 53 mounting screws and nuts.



Allen-Bradley PLCs

Series 9000

Standard and Timing

Description

The Series 9000 photoelectric sensors are designed to perform in the harshest of industrial environments. They are sealed with all critical components epoxied in a high-impact, chemically resistant Valox® housing. The sensor will withstand 1200psi (8270kPa) high temperature, high pressure washdowns, commonly found in the food and beverage industry.

For ease of maintenance, all adjustments are made on a user interface panel located under the top, clear cover. A single captive screw provides easy access to this panel while ensuring positive sealing from the outside environment. This panel also contains three LED status indicators which are highly visible from 360° around the sensor.

Series 9000 photoelectric sensors are available in both DC and AC/DC models. The DC models provide both a sink (NPN) and sourcing (PNP) output, while the AC/DC models come in either SPDT relay or MOSFET output options. A wide variety of connection types are available for increased flexibility.

In addition to the standard ON/OFF type of sensor, a **Timer** version is also available. This type of sensor allows the user to configure ON/OFF, and ONE SHOT time delays in 10ms increments up to 15 seconds. For applications where an electrical indication of a “dirty lens” condition is required, a **Diagnostic** version is also available. Along with a visual LED indication, this sensor provides a discrete output which can be tied back to a PLC, OI terminal, or tower light for further processing.

Other versions of the Series 9000 photoelectric sensor include **Intrinsically Safe** for hazardous (classified) locations, **Darkroom** for film processing applications, and **DeviceNet** for this sensor level network.

General Specifications

Light Source	Infrared LED (880nm)
Unit Protection	Overload, short circuit, reverse polarity, false pulse
Supply voltage	24V DC, 120V AC, 220V AC—see Product Selection tables
Current Consumption	See Product Selection tables
Output Type	NPN and PNP (DC models) SPDT Relay (AC/DC models) MOSFET (AC/DC models)
Output Mode	Light/Dark operate selectable
Output Rating	250mA @ 40V DC (NPN and PNP models) 2A @ 132V AC (SPDT relay models) 1A @ 264V AC (SPDT relay models) 300mA @ 264V AC (MOSFET models)
Response Time	2ms (NPN and PNP models) 15ms (SPDT Relay models) 5ms (MOSFET models)
Housing Material	Valox®
Lens Material	Acrylic
LED Indicators	See User Interface on page 1-84
Connection Types	2m 300V cable, 4-pin DC micro QD, 4-pin DC mini QD, 4-pin AC micro QD, 5-pin DC micro QD
Supplied Accessories	#129-130 mounting kit
Optional Accessories	Mounting brackets, reflectors, cordsets
Operating Environment	NEMA 3, 4X, 6P, 12, 13 (IP67) 1200psi washdown
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	-34°C to +70°C (-29°F to +158°F)
Relative Humidity	5...95%
Approvals	UL listed, CSA approved, and CE marked for all applicable directives

Features

- Harsh duty 30mm package
- Wide selection of sensing modes
- Wide selection of operating modes
- Both DC and AC/DC operation
- Standard ON/OFF and timing versions
- Fast response time
- Variety of connection types

General Information

Dimensions page 1-84
Wiring Diagrams page 1-83

Sensing Modes

Retroreflective page 1-85
Polarized Retroreflective page 1-86
Standard Diffuse page 1-87
Long Range Diffuse page 1-88
Transmitted Beam page 1-89
Visible Red Plastic
Fiber Optic page 1-90
Infrared Glass Fiber Optic page 1-91

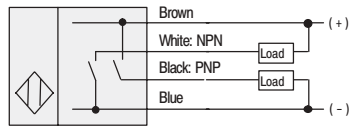
Accessories

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

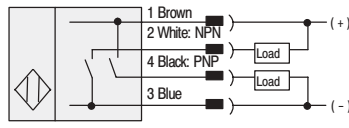
Wiring Diagrams①②

All Models Except Transmitted Beam Source

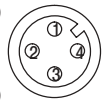
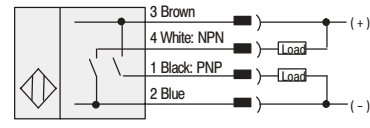
Cable Model: 9__0



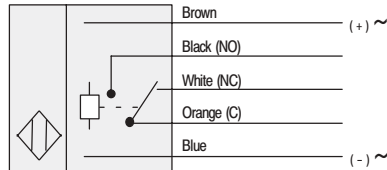
4-pin DC Micro QD Model: 9__0-QD



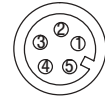
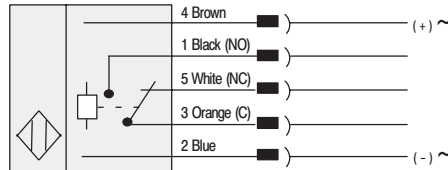
4-pin DC Mini QD Model: 9__0-QD1



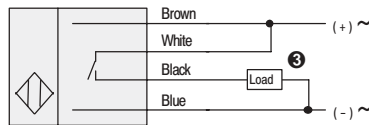
Cable Model: 9__1, 9__2



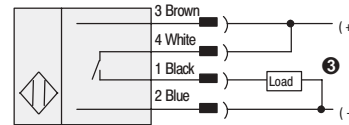
5-pin AC/DC Mini QD Model: 9__1-QD, 9__2-QD



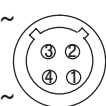
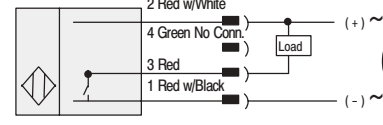
Cable Model: 9__3



AC/DC Mini QD Model: 9__3-QD



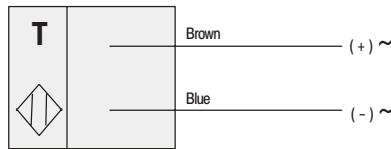
AC/DC Micro QD Model: 9__3-QD1



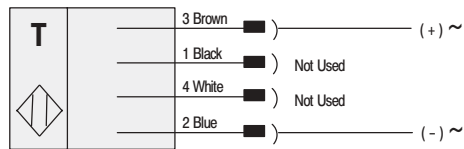
③ Load can be placed on either black or white wire to create sourcing or sinking respectively.

Transmitted Beam Source

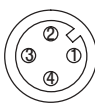
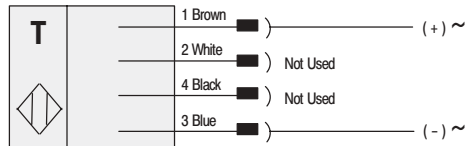
Cable Model: 42GRL-90__



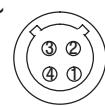
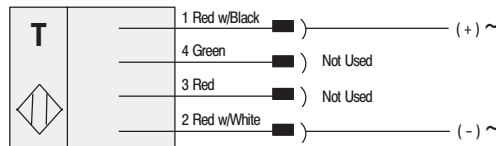
AC/DC Mini QD Model: 42GRL-90__-QD



DC Micro QD Model: 42GRL-90__-QD



4-pin DC Micro QD Model: 42GRL-90__-QD1



- ① For Allen-Bradley programmable controller compatible interface, refer to publication 42-2.0.
- ② Quick-disconnect wiring codes shown are valid for Allen-Bradley cables only.
- ③ Load can be placed on either black or white wire to create sourcing or sinking respectively.

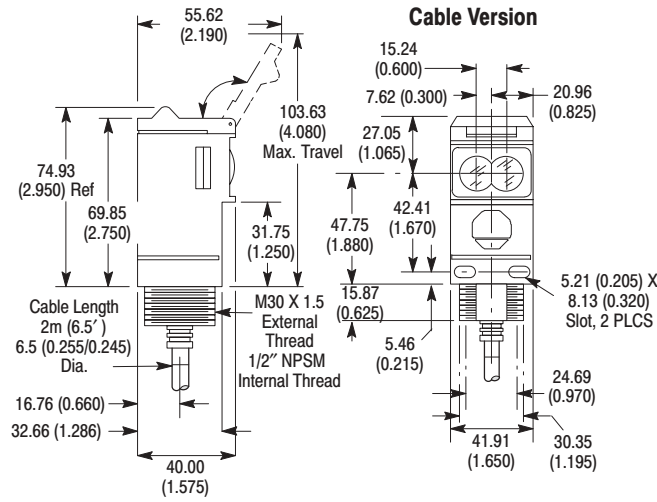
Allen-Bradley PLCs

Series 9000

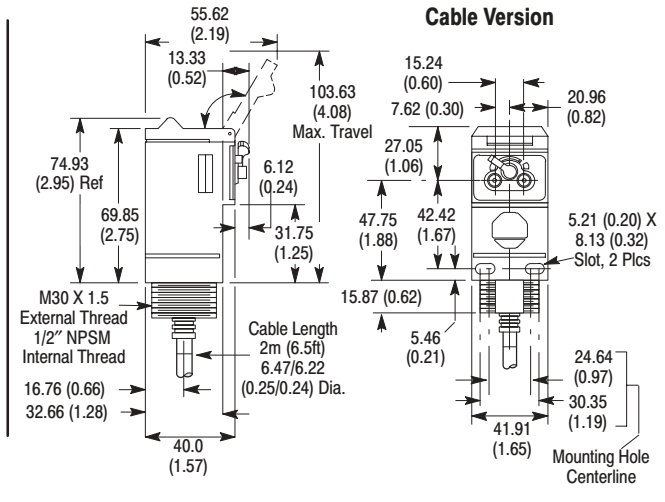
Standard and Timing

Dimensions—mm (inches)

All Versions Except Fiber Optic



Fiber Optic



Connector Version



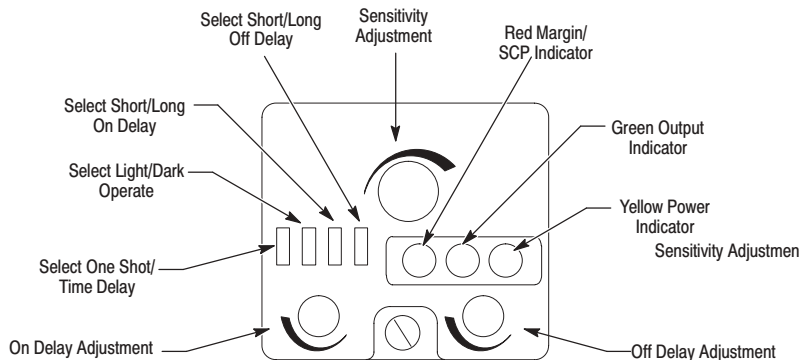
Thread Size

	AC	DC
Micro Style	1/2-20 UNF 2 Keyways	M12 x 1 1 Keyway
Mini Style	7/8-16 UN 1 Keyway	

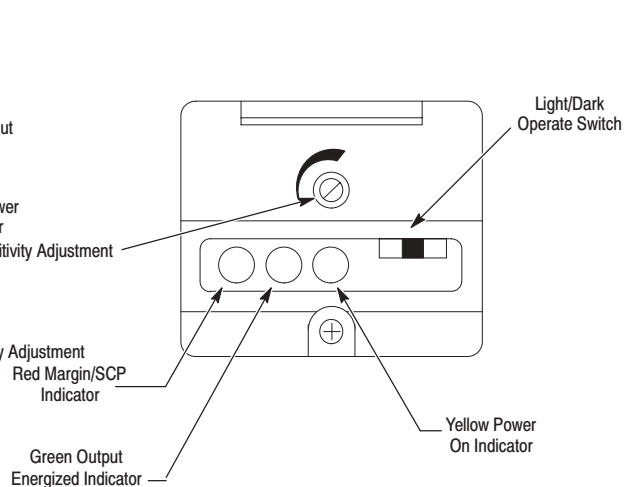
User Interface

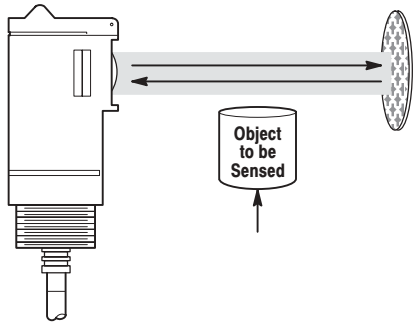
Label	Color	State	Status
Output	Green	OFF	Sensor output de-activated
		ON	Sensor output activated
Margin/SCP	Red	OFF	Margin < 2.5
		ON	Margin > 2.5
		Flashing	Output SCP active
Power	Yellow	OFF	Sensor not powered
		ON	Sensor powered

Timing Sensors—Top View Detail



On/Off Sensors—Top View Detail

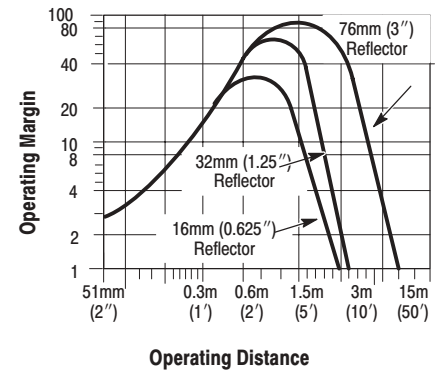




QD Cordsets and Accessories

Description	Catalog Number
1.8m (6ft) 4-pin, Mini QD Cordset	889N-F4AF-6F
1.8m (6ft) 5-pin, Mini QD Cordset	889N-F5AF-6F
2m (6.5ft) 4-pin, DC Micro QD Cordset	889D-F4AC-2
2m (6.5ft) 4-pin, AC Micro QD Cordset	889R-F4AEA-2
76mm (3in) Diameter with Center Mount Hole	92-39
32mm (1.25in) Diameter	92-47

Typical Response Curve



Specifications

Field of View	1.5°
Emitter LED	Visible red 660nm

Product Selection for On/Off Sensors

Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number	
10-40V DC 30mA	50.8mm (2in) to 9.14m (30ft) with 76mm (3") Reflector	Light/Dark Selectable	NPN/PNP 250mA 2ms	10µA	2m 300V cable	42GRU-9000	
					4-pin DC micro QD	42GRU-9000-QD	
					4-pin mini QD	42GRU-9000-QD1	
10-55V DC/20-40V AC 50-60 Hz 40mA			2m 300V cable	SPDT EM Relay 2A/132V AC 1A/264V AC 1A/150V DC 15ms	—	2m 300V cable	42GRU-9001
						5-pin mini QD	42GRU-9001-QD
70-264V AC/DC 50/60Hz 15mA			2m 300V cable	Solid State Isolated N.O. 300mA 2ms	1mA at 264V AC/DC	2m 300V cable	42GRU-9002
						5-pin mini QD	42GRU-9002-QD
45-264V DC/40-264V AC 50/60Hz 15mA			2m 300V cable	Solid State Isolated N.O. 300mA 2ms	1mA at 264V AC/DC	2m 300V cable	42GRU-9003
						2m 600V cable	42GRU-9003H
	4-pin mini QD	42GRU-9003-QD					
					4-pin AC micro QD	42GRU-9003-QD1	

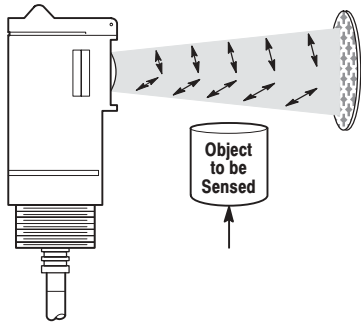
Product Selection for Sensors with Timing

Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number	
10-40V DC 30mA	50.8mm (2in) to 9.14m (30ft) with 76mm (3") Reflector	Light/Dark Selectable	NPN/PNP 250mA 5ms	10µA	2m 300V cable	42GTU-9000	
					4-pin DC micro QD	42GTU-9000-QD	
					4-pin mini QD	42GTU-9000-QD1	
10-55V DC/20-40V AC 50-60Hz 40mA			2m 300V cable	SPDT EM Relay 2A/132V AC/1A/264V AC 1A/150V DC 18ms	—	2m 300V cable	42GTU-9001
						5-pin mini QD	42GTU-9001-QD
70-264V AC/DC 50/60Hz 15mA			2m 300V cable	Solid State Isolated N.O. 300mA 5ms	1mA at 264V AC/DC	2m 300V cable	42GTU-9002
						5-pin mini QD	42GTU-9002-QD
45-264V DC/40-264V AC 50/60Hz 15mA			2m 300V cable	Solid State Isolated N.O. 300mA 5ms	1mA at 264V AC/DC	2m 300V cable	42GTU-9003
						2m 600V cable	42GTU-9003H
	4-pin mini QD	42GTU-9003-QD					
					4-pin AC micro QD	42GTU-9003-QD1	

Allen-Bradley PLCs

Series 9000 Polarized Retroreflective

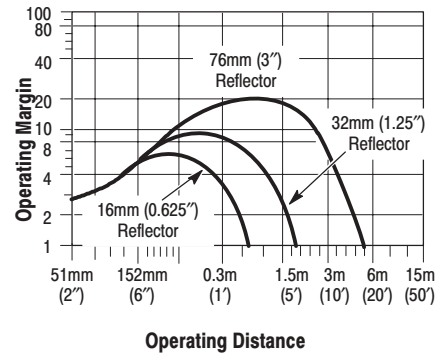
Standard and Timing



QD Cordsets and Accessories

Description	Catalog Number
1.8m (6ft) 4-pin, Mini QD Cordset	889N-F4AF-6F
1.8m (6ft) 5-pin, Mini QD Cordset	889N-F5AF-6F
2m (6.5ft) 4-pin, DC Micro QD Cordset	889D-F4AC-2
2m (6.5ft) 4-pin, AC Micro QD Cordset	889R-F4AEA-2
76mm (3in) Diameter with Center Mount Hole	92-39
32mm (1.25in) Diameter	92-47

Typical Response Curve



Specifications

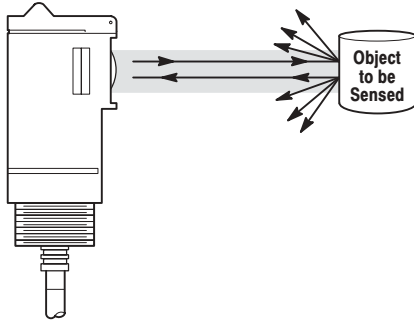
Field of View	1.5°
Emitter LED	Visible red 660nm

Product Selection for On/Off Sensors

Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number		
10-40V DC 30mA	50.8mm (2in) to 4.87m (16ft) with 76mm (3") Reflector	Light/Dark Selectable	NPN/PNP 250mA 2ms	10µA	2m 300V cable	42GRU-9200		
10-55V DC/20-40V AC 50/60Hz 40mA					4-pin DC micro QD	42GRU-9200-QD		
					4-pin mini QD	42GRU-9200-QD1		
70-264V DC/60-264V AC 50/60Hz 15mA			2m 300V cable	SPDT EM Relay 2A/132V AC 1A/264V AC 1A/150V DC 15ms	—	2m 300V cable	42GRU-9201	
				5-pin mini QD		42GRU-9201-QD		
			45-264V DC/40-264V AC 50/60Hz 15mA	5-pin mini QD	Solid State Isolated N.O. 300mA 2ms	1mA at 264V AC/DC	2m 300V cable	42GRU-9202
							5-pin mini QD	42GRU-9202-QD
4-pin mini QD			2m 300V cable	42GRU-9203				
			2m 600V cable	42GRU-9203H				
			4-pin AC micro QD	42GRU-9203-QD				
4-pin AC micro QD			42GRU-9203-QD1					

Product Selection for Sensors with Timing

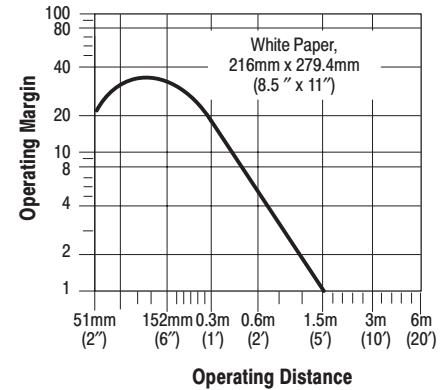
Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number		
10-40V DC 30mA	50.8mm (2in) to 4.87m (16ft) with 76mm (3") Reflector	Light/Dark Selectable	NPN/PNP 250mA 5ms	10µA	2m 300V cable	42GTU-9200		
10-55V DC/20-40V AC 50/60Hz 40mA					4-pin DC micro QD	42GTU-9200-QD		
					4-pin mini QD	42GTU-9200-QD1		
70-264V DC/60-264V AC 50/60Hz 15mA			2m 300V cable	SPDT EM Relay 2A/132V AC 1A/264V AC 1A/150V DC 18ms	—	2m 300V cable	42GTU-9201	
						5-pin mini QD	42GTU-9201-QD	
			45-264V DC/40-264V AC 50/60Hz 15mA	5-pin mini QD	Solid State Isolated N.O. 300mA 5ms	1mA at 264V AC/DC	2m 300V cable	42GTU-9202
							5-pin mini QD	42GTU-9202-QD
4-pin mini QD			2m 300V cable	42GTU-9203				
			2m 600V cable	42GTU-9203H				
			4-pin mini QD	42GTU-9203-QD				
4-pin AC micro QD			42GTU-9203-QD1					



QD Cordsets and Accessories

Description	Catalog Number
1.8m (6ft) 4-pin, Mini QD Cordset	889N-F4AF-6F
1.8m (6ft) 5-pin, Mini QD Cordset	889N-F5AF-6F
2m (6.5ft) 4-pin, DC Micro QD Cordset	889D-F4AC-2
2m (6.5ft) 4-pin, AC Micro QD Cordset	889R-F4AEA-2

Typical Response Curve



Specifications

Field of View	3.5°
Emitter LED	Infrared 880nm

Product Selection for On/Off Sensors

Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number	
10-40V DC 30mA	50.8mm (2in) to 1.52m (5ft) to White Paper	Light/Dark Selectable	NPN/PNP 250mA 2ms	10µA	2m 300V cable	42GRP-9000	
					4-pin DC micro QD	42GRP-9000-QD	
					4-pin mini QD	42GRP-9000-QD1	
10-55V DC/20-40V AC 50/60Hz 40mA			SPDT EM Relay 2A/132V AC 1A/264V AC 1A/150V DC 15ms	—	2m 300V cable	42GRP-9001	
						5-pin mini QD	42GRP-9001-QD
						2m 300V cable	42GRP-9002
70-264V DC/60-264V AC 50/60Hz 15mA			5-pin mini QD	42GRP-9002-QD	2m 300V cable	42GRP-9003	
						2m 600V cable	42GRP-9003H
						4-pin mini QD	42GRP-9003-QD
45-264V DC/40-264V AC 50/60Hz 15mA	4-pin AC micro QD	42GRP-9003-QD1	1mA at 264V AC/DC	4-pin AC micro QD	42GRP-9003-QD1		

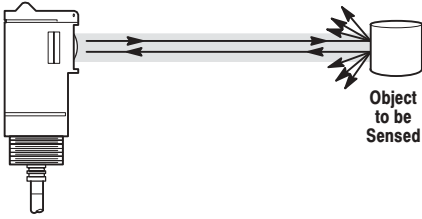
Product Selection for Sensors with Timing

Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number	
10-40V DC 30mA	50.8mm (2in) to 1.52m (5ft) to White Paper	Light/Dark Selectable	NPN/PNP 250mA 5ms	10µA	2m 300V cable	42GTP-9000	
					4-pin DC micro QD	42GTP-9000-QD	
					4-pin mini QD	42GTP-9000-QD1	
10-55V DC/20-40V AC 50/60Hz 40mA			SPDT EM Relay 2A/132V AC 1A/264V AC 1A/150V DC 18ms	—	2m 300V cable	42GTP-9001	
						5-pin mini QD	42GTP-9001-QD
						2m 300V cable	42GTP-9002
70-264V DC/60-264V AC 50/60Hz 15mA			5-pin mini QD	42GTP-9002-QD	2m 300V cable	42GTP-9003	
						2m 600V cable	42GTP-9003H
						4-pin mini QD	42GTP-9003-QD
45-264V DC/40-264V AC 50/60Hz 15mA	4-pin AC micro QD	42GTP-9003-QD1	1mA at 264V AC/DC	4-pin AC micro QD	42GTP-9003-QD1		

Allen-Bradley PLCs

Series 9000 Long Range Diffuse

Standard and Timing



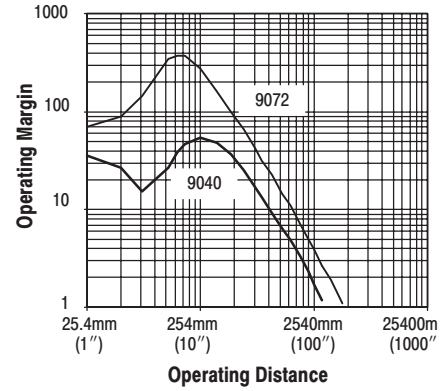
Specifications

Field of View	6.5°
Emitter LED	Infrared 880nm

QD Cordsets and Accessories

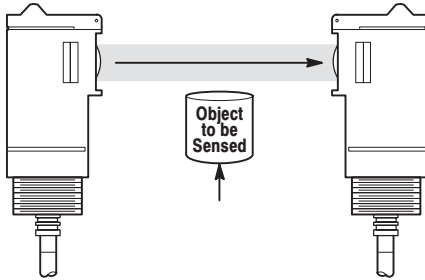
Description	Catalog Number
1.8m (6ft) 4-pin, Mini QD Cordset	889N-F4AF-6F
1.8m (6ft) 5-pin, Mini QD Cordset	889N-F5AF-6F
2m (6.5ft) 4-pin, DC Micro QD Cordset	889D-F4AC-2
2m (6.5ft) 4-pin, AC Micro QD Cordset	889R-F4AEA-2

Typical Response Curve



Product Selection for On/Off Sensors

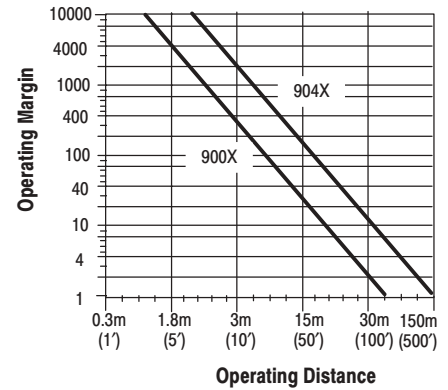
Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
10-40V DC 30mA	50.8mm (2in) to 3.04m (10ft)	Light/Dark Selectable	NPN/PNP 250mA 2ms	10µA	2m 300V cable	42GRP-9040
					4-pin DC micro QD	42GRP-9040-QD
					4-pin mini QD	42GRP-9040-QD1
10-55V DC/20-40V AC 50/60Hz 40mA	50.8mm (2in) to 3.04m (10ft)	Light/Dark Selectable	SPDT EM Relay 2A/132V AC 1A/264V AC 1A/150V DC 15ms	—	2m 300V cable	42GRP-9041
5-pin mini QD					42GRP-9041-QD	
2m 300V cable					42GRP-9042	
70-264V AC/DC 50/60Hz 15mA	50.8mm (2in) to 3.04m (10ft)	Light/Dark Selectable	SPDT EM Relay 2A/132V AC 1A/264V AC 1A/150V DC 15ms	—	5-pin mini QD	42GRP-9042-QD
2m 300V cable					42GRP-9043	
2m 600V cable					42GRP-9043H	
45-264V DC/40-264V AC 50/60Hz 15mA	50.8mm (2in) to 3.04m (10ft)	Light/Dark Selectable	Solid State Isolated N.O. 300mA 2ms	1mA at 264V AC/DC	4-pin mini QD	42GRP-9043-QD
					4-pin AC micro QD	42GRP-9043-QD1
					2m 300V cable	42GRP-9043
10-40V DC 30mA	50.8mm (2in) to 4.6m (15ft)	Light/Dark Selectable	NPN/PNP 250mA 2ms	10µA	2m 300V cable	42GRP-9070
					4-pin DC micro QD	42GRP-9070-QD
70-264V AC/DC 50/60Hz 15mA	50.8mm (2in) to 4.2m (14ft)	Light/Dark Selectable	SPDT EM Relay 2A/132V AC 1A/264V AC 1A/150V DC 15ms	—	2m 300V cable	42GRP-9072
					3m 300V cable	42GRP-9072-3
					5-pin mini QD	42GRP-9072-QD



QD Cordsets and Accessories

Description	Catalog Number
1.8m (6ft) 4-pin, Mini QD Cordset	889N-F4AF-6F
1.8m (6ft) 5-pin, Mini QD Cordset	889N-F5AF-6F
2m (6.5ft) 4-pin, DC Micro QD Cordset	889D-F4AC-2
2m (6.5ft) 4-pin, AC Micro QD Cordset	889R-F4AEA-2

Typical Response Curve with 61m (200ft) Light Source



Specifications

Field of View	1.5°
Emitter LED	Infrared 880nm

Product Selection for Light Sources

Operating Voltage Supply Current	Max Sensing Distance	Connection Type	Catalog Number
10-264V AC/DC 50/60Hz 15mA	25.4mm (1in) to 61m (200ft)	2m 300V cable	42GRL-9000
		2m 600V cable	42GRL-9000H
		4-pin DC micro QD	42GRL-9000-QD
		4-pin mini QD	42GRL-9002-QD
	25.4mm (1in) to 152m (500ft)	2m 300V cable	42GRL-9040
		4-pin DC micro QD	42GRL-9040-QD
		4-pin mini QD	42GRL-9042-QD
		4-pin AC micro QD	42GRL-9043-QD1

Product Selection for On/Off Receivers

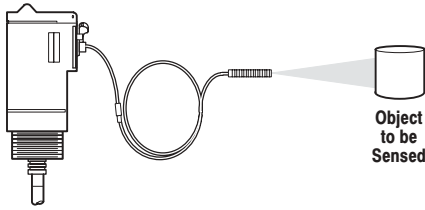
Operating Voltage Supply Current	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
10-40V DC 25mA	Receiver Light or Dark Output Selectable	NPN and PNP 250mA 5ms	10µA	2m -300V cable	42GRR-9000
				4-pin DC micro QD	42GRR-9000-QD
				4-pin mini QD	42GRR-9000-QD1
10-55V DC, 20-40V AC 50/60Hz 35mA		SPDT EM Relay 2A/132V AC, 1A/264V AC 1A/150V DC 23ms	—	2m 300V cable	42GRR-9001
				5-pin mini QD	42GRR-9001-QD
70-264V AC/DC, 50/60Hz 10mA		Solid State Isolated N.O. 300mA 15ms	1mA	2m 300V cable	42GRR-9002
				5-pin mini QD	42GRR-9002-QD
45-264V DC, 40-264V AC 50/60Hz 10mA		4-pin mini QD	4-pin AC micro QD	2m 300V cable	42GRR-9003
				2m 600V cable	42GRR-9003H
	4-pin AC micro QD			42GRR-9003-QD1	

Product Selection for Receivers with Timing

Operating Voltage Supply Current	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
10-40V DC 25mA	Receiver Light or Dark Output Selectable	NPN and PNP 250mA 5ms	10µA	2m 300V cable	42GTR-9000
				4-pin DC micro QD	42GTR-9000-QD
				4-pin mini QD	42GTR-9000-QD1
70-264V AC/DC 50/60Hz 10mA		SPDT EM Relay 2A/132V AC, 1A/264V AC 1A/150V DC 23ms	—	2m 300V cable	42GTR-9002
				5-pin mini QD	42GTR-9002-QD

Series 9000 Visible Red Fiber Optic

Standard and Timing



Specifications

Emitter LED	Visible red 660nm
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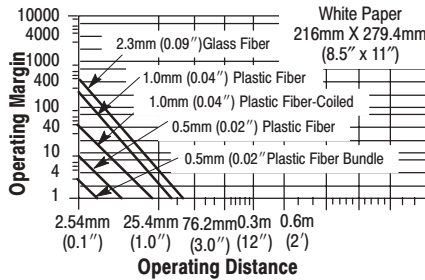
QD Cordsets and Accessories

Description	Catalog Number
1.8m (6ft) 4-pin, Mini QD Cordset	889N-F4AF-6F
1.8m (6ft) 5-pin, Mini QD Cordset	889N-F5AF-6F
2m (6.5ft) 4-pin, DC Micro QD Cordset	889D-F4AC-2

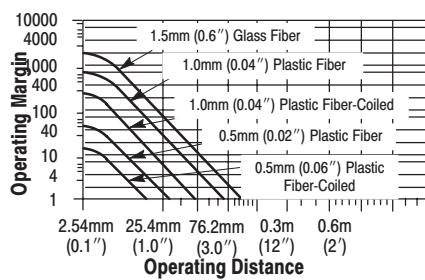
Description	Catalog Number
2m (6.5ft) 4-pin, AC Micro QD Cordset	889R-F4AEA-2

Typical Response Curves

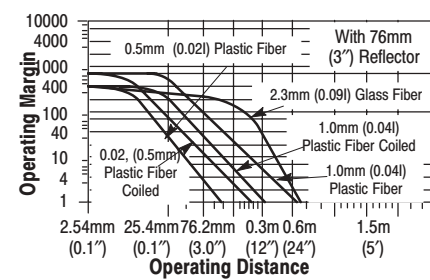
Standard Diffuse



Transmitted Beam



Retroreflective

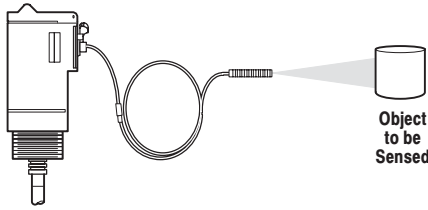


Product Selection for On/Off Sensors

Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type/Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
10-40V DC 30mA	Depends on Fiber Optic cable	Light/Dark Selectable	NPN/PNP 250mA 2ms	10µA	2m 300V cable	42GRF-9100
					4-pin DC micro QD	42GRF-9100-QD
10-55V DC/20-40V AC 50-60Hz 40mA			2m 300V cable	42GRF-9101		
				5-pin mini QD	42GRF-9101-QD	
70-264V AC/DC 50/60Hz 15mA			2m 300V cable	42GRF-9102		
				5-pin mini QD	42GRF-9102-QD	
45-264V DC/40-264V AC 50/60Hz 15mA			2m 300V cable	42GRF-9103		
				2m 600V cable	42GRF-9103H	
	4-pin mini QD	42GRF-9103-QD				
	4-pin AC micro QD	42GRF-9103-QD1				

Product Selection for Sensors with Timing

Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type/Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
10-40V DC 30mA	Depends on Fiber Optic cable	Light/Dark Selectable	NPN/PNP 250mA 2ms	10µA	2m 300V cable	42GTF-9100
					4-pin DC micro QD	42GTF-9100-QD
10-55V DC/20-40V AC 50-60-Hz 40mA			2m 300V cable	42GTF-9101		
				5-pin mini QD	42GTF-9101-QD	
70-264V AC/DC 50/60Hz 15mA			2m 300V cable	42GTF-9102		
				5-pin mini QD	42GTF-9102-QD	
45-264V DC/40-264V AC 50/60Hz 15mA			2m 300V cable	42GTF-9103		
				4-pin mini QD	42GTF-9103-QD	
	4-pin AC micro QD	42GTF-9103-QD1				



QD Cordsets and Accessories

Description	Catalog Number
1.8m (6ft) 4-pin, Mini QD Cordset	889N-F4AF-6F
1.8m (6ft) 5-pin, Mini QD Cordset	889N-F5AF-6F
2m (6.5ft) 4-pin, DC Micro QD Cordset	889D-F4AC-2

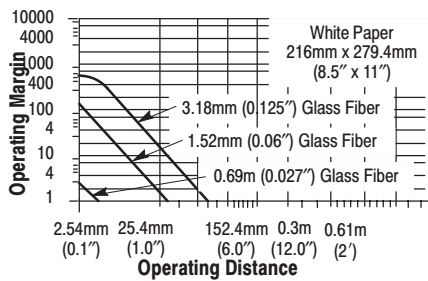
Description	Catalog Number
2m (6.5ft) 4-pin, AC Micro QD Cordset	889R-F4AEA-2

Specifications

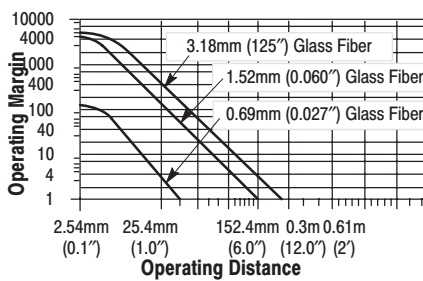
Emitter LED	Infrared 880nm
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Typical Response Curves

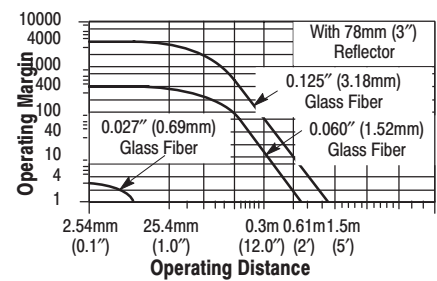
Standard Diffuse



Transmitted Beam



Retroreflective



Product Selection for On/Off Sensors

Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type/Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
10-40V DC 30mA	Depends on Fiber Optic cable	Light/Dark Selectable	NPN/PNP 250mA 2ms	10µA	2m 300V cable	42GRF-9000
					4-pin DC micro QD	42GRF-9000-QD
70-264V AC/DC, 50/60Hz 15mA	Depends on Fiber Optic cable	Light/Dark Selectable	SPDT EM Relay 2A/132V AC, 1A/264V AC 1A/150V DC 15ms	—	2m 300V cable	42GRF-9002
					5-pin mini QD	42GRF-9002-QD

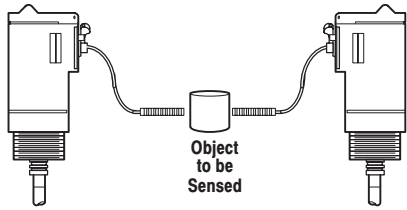
Product Selection for Sensors with Timing

Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type/Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
10-40V DC 30mA	Depends on Fiber Optic cable	Light/Dark Selectable	NPN/PNP 250mA 2ms	10µA	2m 300V cable	42GTF-9000
					4-pin DC micro QD	42GTF-9000-QD
10-55V DC/20-40V AC 50-60Hz 40mA	Depends on Fiber Optic cable	Light/Dark Selectable	SPDT EM Relay 2A/132V AC, 1A/264V AC 1A/150V DC 15ms	—	2m 300V cable	42GTF-9001
					5-pin mini QD	42GTF-9001-QD
70-264V AC/DC, 50/60Hz 15mA	Depends on Fiber Optic cable	Light/Dark Selectable	SPDT EM Relay 2A/132V AC, 1A/264V AC 1A/150V DC 15ms	—	2m 300V cable	42GTF-9002
					5-pin mini QD	42GTF-9002-QD
45-264V DC/40-264V AC 50/60Hz 15mA	Depends on Fiber Optic cable	Light/Dark Selectable	Solid State Isolated N.O. 300mA 2ms	1mA at 264V AC/DC	2m 300V cable	42GTF-9003
					2m 600V cable	42GTF-9003H
					4-pin mini QD	42GTF-9003-QD
					4-pin AC micro QD	42GTF-9003-QD1

Allen-Bradley PLCs

Series 9000 Extended Range Infrared Fiber Optic

Standard and Timing



QD Cordsets and Accessories

Description	Catalog Number
1.8m (6ft) 5-pin, Mini QD Cordset	889N-F5AF-6F
2m (6.5ft) 4-pin, DC Micro QD Cordset	889D-F4AC-2

Description	Catalog Number
Range Extender	60-1844
	60-2559
	60-2738
Replacement Plug	60-2774

Specifications

Emitter LED	Infrared 880nm
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Typical Sensing Distance

Sensing Mode	Sensor	Fiber Optic Cable	Range Extender	Sensing Distance (1X margin)	
Transmitted Beam	42GRLF-9040 with individual fiber optic cable	43GT-FAS25SL Individual Fiber Optic Cable, smooth tip	none	500mm (20in)	
		43GT-TBB25SL Individual Fiber Optic Cable, with 5/16 inch threaded tip			
		43GT-FAS25SL Individual Fiber Optic Cable, smooth tip	60-1844	3m (10ft)	
		43GT-TBB25SL Individual Fiber Optic Cable, with 5/16 inch threaded tip	60-2559	12m (40ft)	
	42GRLF-9040 with bifurcated fiber optic cable	43GT-FAS25SL Individual Fiber Optic Cable, smooth tip	60-2323	3m (10ft)	
		43GT-TBB25SL Individual Fiber Optic Cable, with 5/16 inch threaded tip	60-2738		
		42GRLF-9040 with bifurcated fiber optic cable	43GR-FAS25SL Bifurcated Fiber Optic Cable, smooth tip	none	635mm (25in)
			43GR-TBB25SL Bifurcated Fiber Optic Cable, with 5/16 inch threaded tip		
43GR-FAS25SL Bifurcated Fiber Optic Cable, with smooth tip	60-1844		3.8m (12.5ft)		
43GR-TBB25SL Bifurcated Fiber Optic Cable, with 5/16 inch threaded tip	60-2559		15.2m (50ft)		
			60-2323	3.8m (12.5ft)	
			60-2738		

- Sensing ranges are for fiber optic cables shown. Range will vary with other fiber optic cable types.
- When using individual fiber optic cable, second port must be blocked with the provided plug (60-2744).
- Receiver Sensor (42GRRF) requires only individual fiber optic cable.

Product Selection for Light Source

Operating Voltage Supply Current	Sensing Distance	Connection Type	Catalog Number
10-264V AC/DC, 56/60Hz 15mA	See table above.	2m 300V cable	42GRLF-9040
		4-pin DC micro QD	42GRLF-9040-QD

Product Selection for the Receivers

Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type/Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number	
10-40V DC 30mA	See table above.	Light/Dark Selectable	NPN/PNP 250mA 2ms	10µA	2m 300V cable	42GRRF-9000	
					4-pin DC micro QD	42GRRF-9000-QD	
70-264V AC/DC, 50/60Hz 15mA			2m 300V cable	—	SPDT EM Relay 2A/132V AC, 1A/264V AC 1A/150V DC 15ms		42GRRF-9002
						5-pin mini QD	42GRRF-9002-QD