



## Features

- Wide selection of sensing modes
- Wide selection of operating modes
- Both DC and AC/DC operation
- Models with teach function
- Standard ON/OFF and timing versions
- Fast response time
- Variety of connection types
- Laser models available (see page 1-112)

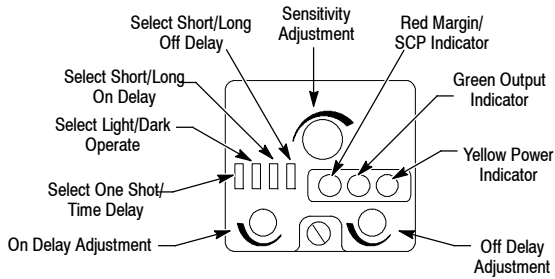
## Specifications

<b>Environmental</b>	
Certifications	UL Listed, CSA Approved, CE Marked for all applicable directives
Operating Environment	NEMA 3, 4X, 6P, 12, 13, IP67 (IEC529) 1200 psi (8270 kPa) washdown, IP69K, ECOLAB certification on cable models
Operating Temperature [C (F)]	-34...+70° (-29...+158°)
Vibration	10...55 Hz, 1 mm amplitude, meets or exceeds IEC 60947-5-2
Shock	30 g with 1 ms pulse duration, meets or exceeds IEC 60947-5-2
Relative Humidity	5...95%
Ambient Light Immunity	Incandescent light 5000 lux
<b>Optical</b>	
Sensing Modes	Retroreflective, polarized retroreflective, diffuse, long range diffuse, fiber optic, extended range fiber optic, transmitted beam
Sensing Range	See Product Selection table on page 1-69
Field of View	See Product Selection table on page 1-69
Light Source	Visible red (660 nm), Infrared (880 nm)
LED Indicators	See User Interface table below
Adjustments	Single-turn potentiometer for sensitivity
<b>Electrical</b>	
Voltage	10...30V DC , 40...264V AC/DC models (see Product Selection table on page 1-69)
Current Consumption	30 mA max (DC models), 15 mA max (AC/DC models)
Sensor Protection	Overload, short circuit, reverse polarity, false pulse
<b>Outputs</b>	
Response Time	2 ms (DC models), 15 ms (AC/DC models), 2 ms (MOSFET models)
Output Type	PNP and NPN (DC models), SPDT relay (AC/DC models), MOSFET (AC/DC models)
Output Mode	Light operate or dark operate selectable
Output Current	250 mA @ 30V DC (all models except 42GLP and 42GSP); 2 A @ 132 V AC (SPDT relay models), 1 A @ 264V AC (SPDT relay); 300 mA @ 264V AC (MOSFET models)
Output Leakage Current	10 µA max (DC) , 1 mA (AC)
<b>Mechanical</b>	
Housing Material	Valox®
Lens Material	Acrylic
Cover Material	Neoprene
Connection Types	2 m (6.5 ft) cable, 4-pin DC micro QD, 4-pin DC mini QD, 5-pin DC micro QD
Supplied Accessories	129-130 mounting kit
Optional Accessories	See mounting brackets, reflectors, and cordsets on page 1-71

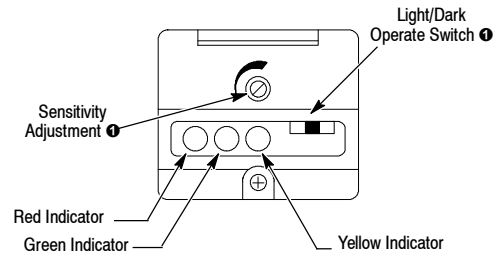
## User Interface—Standard Models (Refer to installation instructions for 42GLP and 42GSP versions)

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

42GTx Versions—Top View Detail



42GRx Versions—Top View Detail

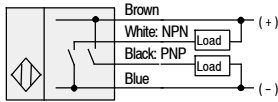


① Push button on 42GSP models.

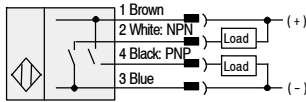
Wiring Diagrams ①②

All Models Except Transmitted Beam Source

Cable Model: 9\_\_0



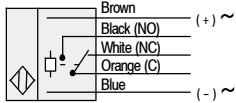
4-pin DC Micro QD Model: 9\_\_0-QD



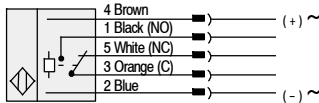
4-pin DC Mini QD Model: 9\_\_0-QD1



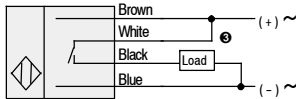
Cable Model: 9\_\_1, 9\_\_2



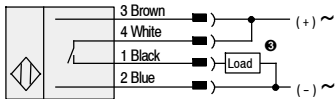
5-pin AC/DC Mini QD Model: 9\_\_1-QD, 9\_\_2-QD



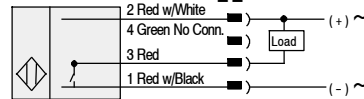
Cable Model: 9\_\_3



AC/DC Mini QD Model: 9\_\_3-QD

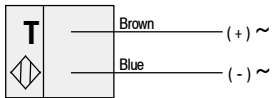


AC/DC Micro QD Model: 9\_\_3-QD1

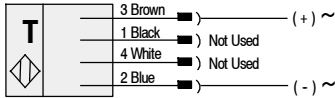


Transmitted Beam Source

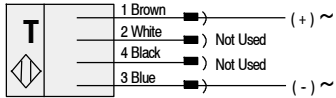
Cable Model: 42GRL-90\_\_



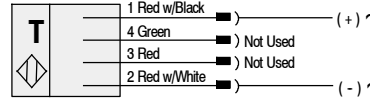
AC/DC Mini QD Model: 42GRL-90\_\_-QD



DC Micro QD Model: 42GRL-90\_\_-QD



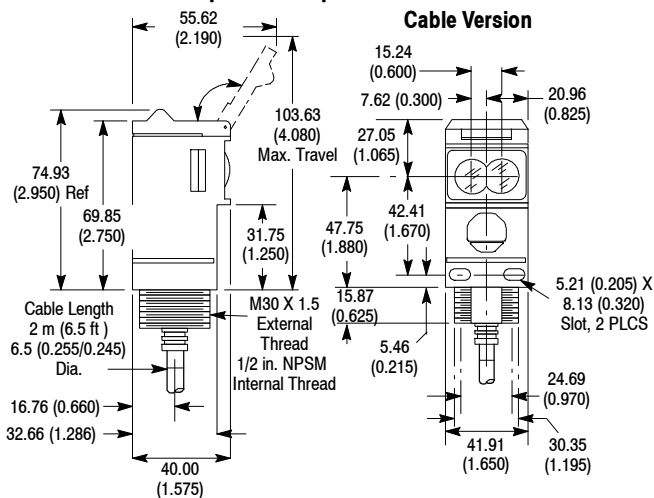
4-pin DC Micro QD Model: 42GRL-90\_\_-QD1



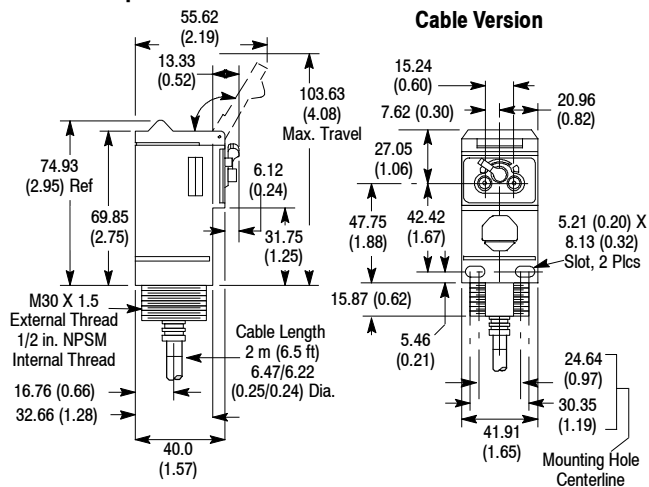
- ① For Allen-Bradley programmable controller compatible interface, refer to publication 42-2.0.
- ② Quick-disconnect wiring codes shown are valid for Allen-Bradley cables only.
- ③ Load can be placed on either black or white wire to create sourcing or sinking respectively.

Approximate Dimensions [mm (in.)]

All Versions Except Fiber Optic

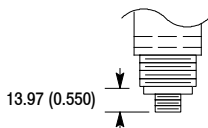


Fiber Optic

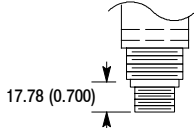


Connector Version

Micro Style



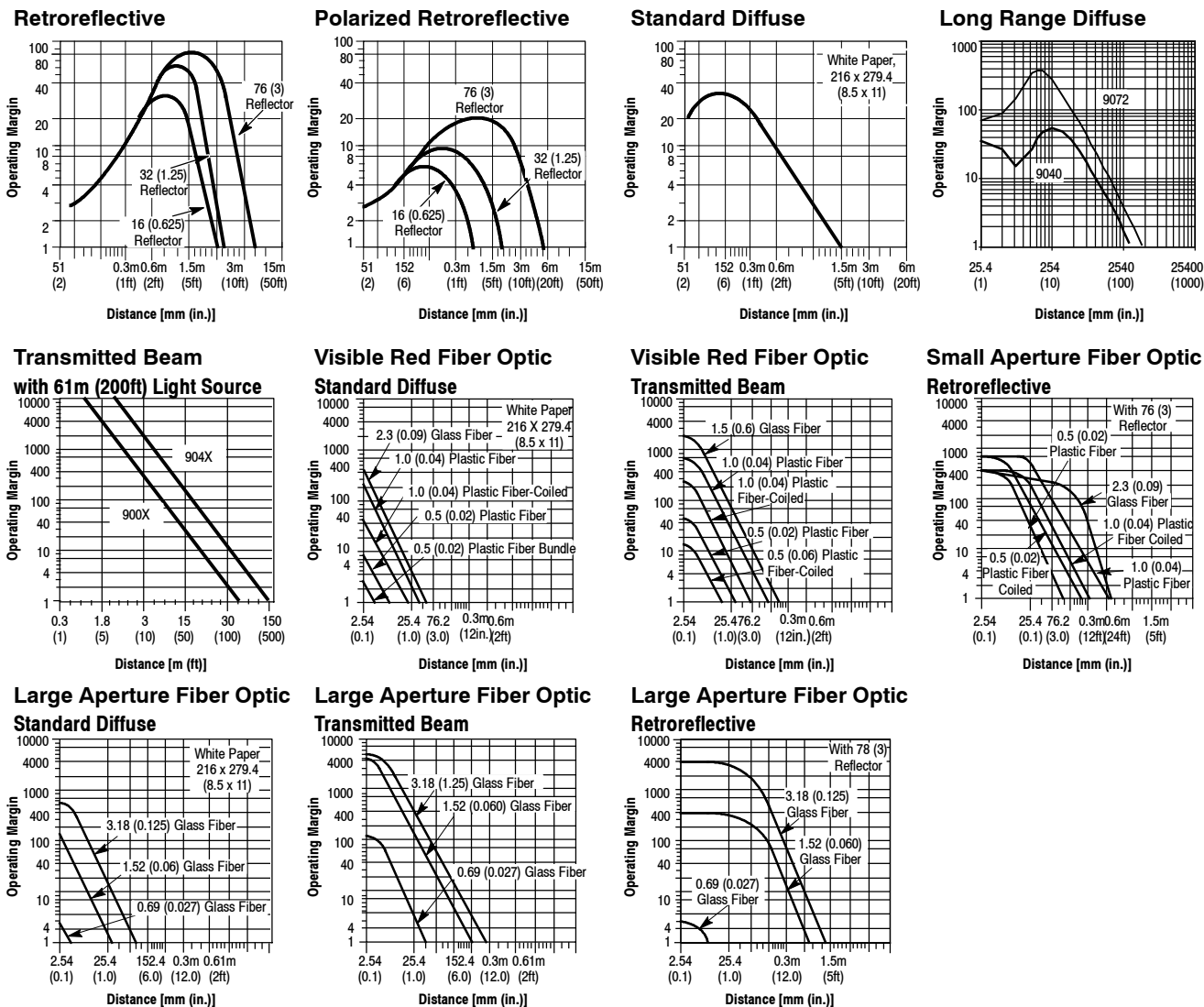
Mini Style



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	

Typical Response Curve

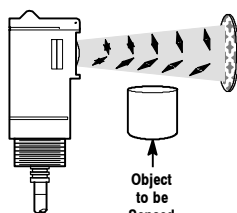
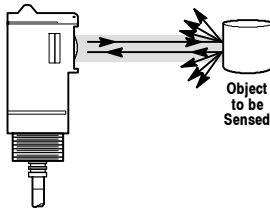
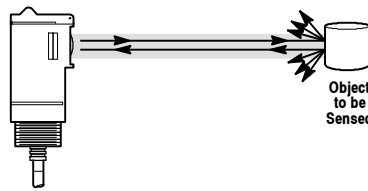


Product Selection for On/Off and Timing Sensors

Sensing Mode	Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Connection Type	Cat. No.	
<p>Retroreflective</p> <p>Field of View: 1.5° Emitter LED: Visible red 660 nm</p>	10...30V DC 30 mA	50.8 mm... 9.14 m (2 in...30 ft) with 76 mm (3 in.) Reflector	Light/Dark Selectable	NPN/PNP 250 mA 2 ms	2 m 300V cable	42GⓈU-9000	
					4-pin DC micro	42GⓈU-9000-QD	
					4-pin mini	42GⓈU-9000-QD1	
	70...264V AC/DC 50/60 Hz 15 mA			2 m 300V cable	SPDT EM Relay 2 A/132V AC 1 A/264V AC 1 A/150V DC 15 ms	42GⓈU-9002	
					5-pin mini	42GⓈU-9002-QD	
					2 m 300V cable	42GⓈU-9003	
	70...264V DC/ 40...264V AC 50/60 Hz 15 mA			2 m 600V cable	Solid State Isolated N.O. 300 mA 2 ms	4-pin mini	42GⓈU-9003-QD
						4-pin AC micro	42GⓈU-9003-QD1

⊗ R for standard (i.e. 42GRU-9000); T for timing (i.e. 42GTU-9000)

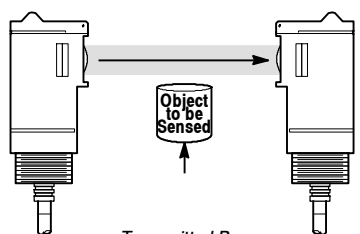
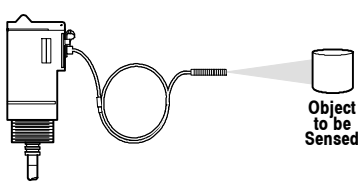
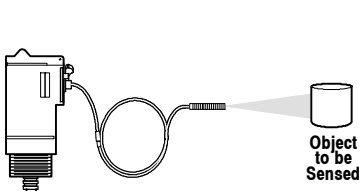
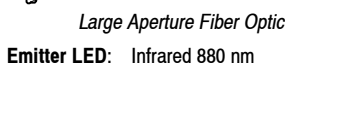
Product Selection for On/Off and Timing Sensors

Sensing Mode	Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Connection Type	Cat. No.	
 <p><i>Polared Retroreflective</i></p> <p>Field of View: 1.5° Emitter LED: Visible red 660 nm</p>	10...30V DC 30 mA	50.8 mm... 4.87 m (2 in... 16 ft) with 76 mm (3 in.) Reflector	Light/Dark Selectable	NPN/PNP 250 mA 2 ms	2 m 300V cable	42G⊗U-9200	
	70...264V DC/ 60...264V AC 50/60 Hz 15 mA				4-pin DC micro	42G⊗U-9200-QD	
					4-pin mini	42G⊗U-9200-QD1	
	70...264V DC/ 40...264V AC 50/60 Hz 15 mA			2 m 300V cable	SPDT EM Relay 2 A/132V AC 1 A/264V AC 1 A/150V DC 15 ms	42G⊗U-9202	
					5-pin mini	42G⊗U-9202-QD	
				2 m 300V cable	Solid State Isolated N.O. 300 mA 2 ms	2 m 600V cable	42G⊗U-9203
	4-pin mini					42G⊗U-9203H	
	4-pin AC micro					42G⊗U-9203-QD 42G⊗U-9203-QD1	
	 <p><i>Standard Diffuse</i></p> <p>Field of View: 3.5° Emitter LED: Infrared 880 nm</p>			10...30V DC 30 mA	50.8 mm... 1.52 m (2 in...5 ft) to White Paper	Light/Dark Selectable	NPN/PNP 100 mA 2 ms
70...264V DC/ 60...264V AC 50/60 Hz 15 mA		4-pin DC micro	42GLP-9000-QD				
		4-pin mini	42GSP-9000				
70...264V DC/ 40...264V AC 50/60 Hz 15 mA		2 m 300V cable	Teach function Light/Dark Selectable	42GSP-9000-QD			
			4-pin DC micro	42G⊗P-9000			
		2 m 300V cable	NPN/PNP 250 mA 2 ms	Light/Dark Selectable			2 m 600V cable
4-pin mini							42G⊗P-9000-QD
4-pin AC micro							42G⊗P-9000-QD1
2 m 300V cable		Solid State Isolated N.O. 300 mA 2 ms	Light/Dark Selectable	2 m 600V cable			42G⊗P-9003
	4-pin mini			42G⊗P-9003H			
	4-pin AC micro			42G⊗P-9003-QD 42G⊗P-9003-QD1			
 <p><i>Long Range Diffuse</i></p> <p>Field of View: 6.5° Emitter LED: Infrared 880 nm</p>	10...30V DC 30 mA	50.8 mm... 3.04 m (2 in...10 ft)	Light/Dark Selectable	NPN/PNP 250 mA 2 ms	2 m 300V cable	42GRP-9040	
	70...264V AC/DC 50/60 Hz 15 mA				4-pin DC micro	42GRP-9040-QD	
					4-pin mini	42GRP-9040-QD1	
	70...264V DC/ 40...264V AC 50/60 Hz 15 mA			2 m 300V cable	SPDT EM Relay 2 A/132V AC 1 A/264V AC 1 A/150V DC 15 ms	42GRP-9042	
					5-pin mini	42GRP-9042-QD	
				2 m 300V cable	Solid State Isolated N.O. 300 mA 2 ms	Light/Dark Selectable	2 m 600V cable
	4-pin mini						42GRP-9043H
	4-pin AC micro						42GRP-9043-QD 42GRP-9043-QD1
	2 m 300V cable			NPN/PNP 250 mA 2 ms	Light/Dark Selectable	2 m 600V cable	42GRP-9070
4-pin DC micro		42GRP-9070-QD					
2 m 300V cable		42GRP-9072					
3 m 300V cable	SPDT EM Relay 2 A/132V AC 1 A/264V AC 1 A/150V DC 15 ms	Light/Dark Selectable	42GRP-9072-3				
			5-pin mini	42GRP-9072-QD			

⊗ R for standard (i.e. 42GRU-9000); T for timing (i.e. 42GTU-9000)

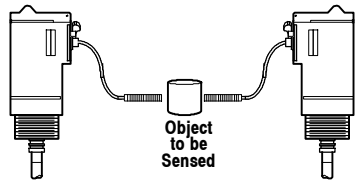
Refer to page 1-71 for cordsets and accessories.

Product Selection (continued)

Sensing Mode	Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Connection Type	Cat. No.			
 <p>Transmitted Beam</p> <p>Field of View: 1.5° Emitter LED: Infrared 880 nm</p>	10...264V AC/DC 50/60 Hz 15 mA	25.4 mm...61 m (1 in...200 ft)	NA Light Source		2 m 300V cable	<b>42GRL-9000</b>			
						2 m 600V cable	42GRL-9000H		
						4-pin DC micro	<b>42GRL-9000-QD</b>		
						4-pin mini	42GRL-9002-QD		
						2 m 300V cable	42GRL-9040		
						4-pin DC micro	42GRL-9040-QD		
			25.4 mm...152 m (1 in...500 ft)			4-pin mini	42GRL-9042-QD		
						4-pin AC micro	42GRL-9043-QD1		
	 <p>Receiver Light or Dark Output Selectable</p>	10...30V DC 25 mA	Depends on Light Source	Receiver Light or Dark Output Selectable	NPN and PNP 250 mA 5 ms	2 m -300V cable	42G⊗R-9000		
		70...264V AC/DC, 50/60 Hz 10 mA				4-pin DC micro	<b>42G⊗R-9000-QD</b>		
4-pin mini						42G⊗R-9000-QD1			
70...264V DC, 40...264V AC 50/60 Hz 10 mA		SPDT EM Relay 2 A/132V AC, 1 A/264V AC 1 A/150V DC 23 ms			2 m 300V cable	<b>42G⊗R-9002</b>			
					5-pin mini	42G⊗R-9002-QD			
Solid State Isolated N.O. 300 mA 15 ms		2 m 300V cable			42GRR-9003				
		2 m 600V cable			42GRR-9003H				
		4-pin mini			<b>42GRR-9003-QD</b>				
4-pin AC micro		42GRR-9003-QD1							
 <p>Small Aperture Red Fiber Optic</p> <p>Emitter LED: Visible red 660 nm</p>	10...30V DC 30 mA	Depends on Fiber Optic cable	Light/Dark Selectable	NPN/PNP 250 mA 2 ms	2 m 300V cable	42G⊗F-9100			
	70...264V AC/DC 50/60 Hz 15 mA				4-pin DC micro	<b>42G⊗F-9100-QD</b>			
					70...264V DC/ 40...264V AC 50/60 Hz 15 mA	SPDT EM Relay 2 A/132V AC, 1 A/264V AC 1 A/150V DC 15 ms	2 m 300V cable	42G⊗F-9102	
	5-pin mini			42G⊗F-9102-QD					
	Solid State Isolated N.O. 300 mA 2 ms			2 m 300V cable	42G⊗F-9103				
				4-pin mini	42G⊗F-9103-QD				
				4-pin AC micro	42G⊗F-9103-QD1				
	 <p>Large Aperture Fiber Optic</p> <p>Emitter LED: Infrared 880 nm</p>			10...30V DC 30 mA	Depends on Fiber Optic cable	Light/Dark Selectable	NPN/PNP 250 mA 2 ms	2 m 300V cable	42G⊗F-9000
				70...264V AC/DC, 50/60 Hz 15 mA				4-pin DC micro	<b>42G⊗F-9000-QD</b>
70...264V DC/ 40...264V AC 50/60 Hz 15 mA		SPDT EM Relay 2 A/132V AC, 1 A/264V AC 1 A/150V DC 15 ms	2 m 300V cable					42G⊗F-9002	
			5-pin mini	<b>42G⊗F-9002-QD</b>					
Solid State Isolated N.O. 300 mA 2 ms		2 m 300V cable	42G⊗F-9003						
		2 m 600V cable	42G⊗F-9003H						
		4-pin mini	42G⊗F-9003-QD						
4-pin AC micro		42G⊗F-9003-QD1							

⊗ R for standard (i.e. 42GRU-9000); T for timing (i.e. 42GTU-9000)

Product Selection (continued)

Sensing Mode	Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Connection Type	Cat. No.	
 <p>Extended Range Large Aperture Fiber Optic Emitter LED: Infrared 880 nm</p>	10...264V AC/DC, 56/60 Hz 15 mA	See table below.		NA Light Source	2 m 300V cable	42GRLF-9040	
					4-pin DC micro	42GRLF-9040-QD	
	10...40V DC 30 mA	See table below.	Light/Dark Selectable	NPN/PNP 250 mA 2 ms	2 m 300V cable	42GRRF-9000	
					4-pin DC micro	42GRRF-9000-QD	
	70...264V AC/DC, 50/60 Hz 15 mA				SPDT EM Relay 2 A/132V AC, 1 A/264V AC 1 A/150V DC 15 ms	2 m 300V cable	42GRRF-9002
						5-pin mini	42GRRF-9002-QD

Typical Sensing Distance—Extended Range Infrared Fiber Optic

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	914 mm (36 in.)
		43GT-TBB25SL Individual Fiber Optic Cable, with 5/16 inch threaded tip		
		43GT-FAS25SL Individual Fiber Optic Cable, smooth tip	60-1844	6 m (20 ft)
			60-2559	12 m (40 ft)
		43GT-TBB25SL Individual Fiber Optic Cable, with 5/16 inch threaded tip	60-2323	6 m (20 ft)
		60-2738	12 m (40 ft)	
	42GRLF-9040 with bifurcated fiber optic cable	43GR-FAS25SL Bifurcated Fiber Optic Cable, smooth tip	none	1.2 m (48 in.)
		43GR-TBB25SL Bifurcated Fiber Optic Cable, with 5/16 inch threaded tip		
		43GR-FAS25SL Bifurcated Fiber Optic Cable, with smooth tip	60-1844	7.6 m (25 ft)
			60-2559	15.2 m (50 ft)
43GR-TBB25SL Bifurcated Fiber Optic Cable, with 5/16 inch threaded tip		60-2323	7.6 m (25 ft)	
	60-2738	15.2 m (50 ft)		

- 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.

Cordsets and Accessories

Description	Cat. No.	Description	Cat. No.
1.8 m (6 ft) 4-pin, Mini QD Cordset	889N-F4AF-6F	32 mm (1.25 in.) Diameter Reflector	92-47
1.8 m (6 ft) 5-pin, Mini QD Cordset	889N-F5AF-6F	Range Extender	60-1844
2 m (6.5 ft) 4-pin, DC Micro QD Cordset	889D-F4AC-2	Range Extender	60-2559
2 m (6.5 ft) 4-pin, AC Micro QD Cordset	889R-F4AEA-2	Range Extender	60-2738
76 mm (3 in.) Diameter Reflector	92-39	Replacement Plug	60-2744