



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 both sensor and diagnostic output (DC models) SPST relay with SPDT relay for diagnostic output (AC/DC models)
Output Mode	Light/dark operate selectable N.O. and N.C. for diagnostic output
Output Rating	100mA @ 30V DC (DC models) 2A @ 132V AC (AC/DC sensor and diagnostic) 1A @ 264V AC (AC/DC sensor and diagnostic)
Max Leakage Current	10µA
Response Time	2ms (DC models) 15ms (AC/DC models)
Housing Material	Valox®
Lens Material	Acrylic
LED Indicators	See User Interface below
Connection Types	2m 300V cable, 4-pin DC micro QD, 4-pin DC mini QD, 5-pin DC micro QD
Supplied Accessories	#129–130 mounting kit
Optional Accessories	Mounting brackets, reflectors, cordsets—see page R1-141
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	0°C to +70°C (32°F to +158°F)
Relative Humidity	5...95%
Approvals	UL listed, CSA approved, CE marked for all applicable directives

Features

- Both visual and electrical indication of “dirty lens” condition
- Supports both static and diagnostic modes of operation
- Harsh duty 30mm package
- Wide selection of sensing modes
- Both DC and AC/DC operation
- Fast response time
- Variety of connection types

User Interface

Label	Color	State	Diagnostic Operating Mode	
			Static	Dynamic
POWER FLASHING TGT SIGNAL LOW	Yellow	On Steady	Sensor Power On	
		Flashing	Unstable operation (0.7 < Margin < 1.5)	1.0 < Margin > 1.5 for seven successive operations Diffuse: Target margin too low Retro/Polarized Retro: Reflector margin too low Transmitted Beam unbroken beam margin too low
FLASHING NON-TGT SIGNAL HIGH	Green	Flashing	Unstable operation (0.7 < Margin < 1.5)	0.7 < Margin > 1.0 for seven successive operations Diffuse: Background margin too high Retro / Polarized Retro: Target margin too high Transmitted Beam broken beam margin to high
STABILITY ❶ FLASHING SCP	Red	On Steady	Stable operation (Margin < 0.7 or Margin > 1.5)	
		Off	Unstable operation (0.7 < Margin < 1.5)	
		Flashing ❷	Overload or short circuit at sensor output	
OUTPUT	Green	On	Output energized	

❶ To prevent potentially confusing indications during rapid signal transitions, the red STABILITY indicator has a typical delay of 100ms before it turns **off**. As a result, the indicator will not turn **off** for quick, brief events. (The Diagnostic Output has no delay.)

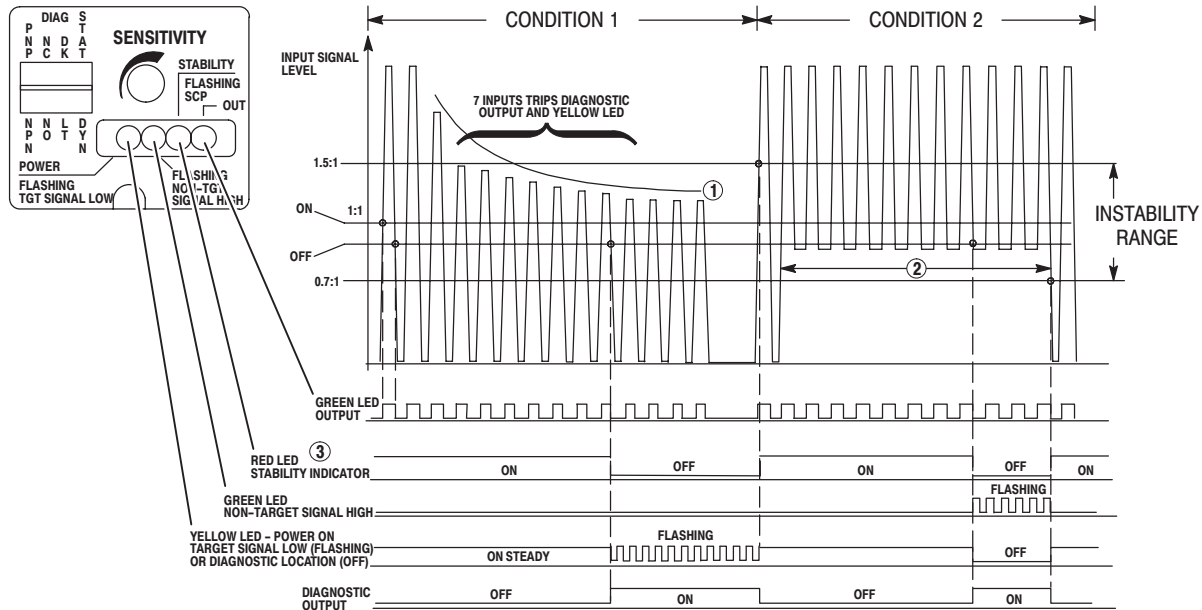
❷ 10–30V DC sensors only.

Series 9000

Diagnostic

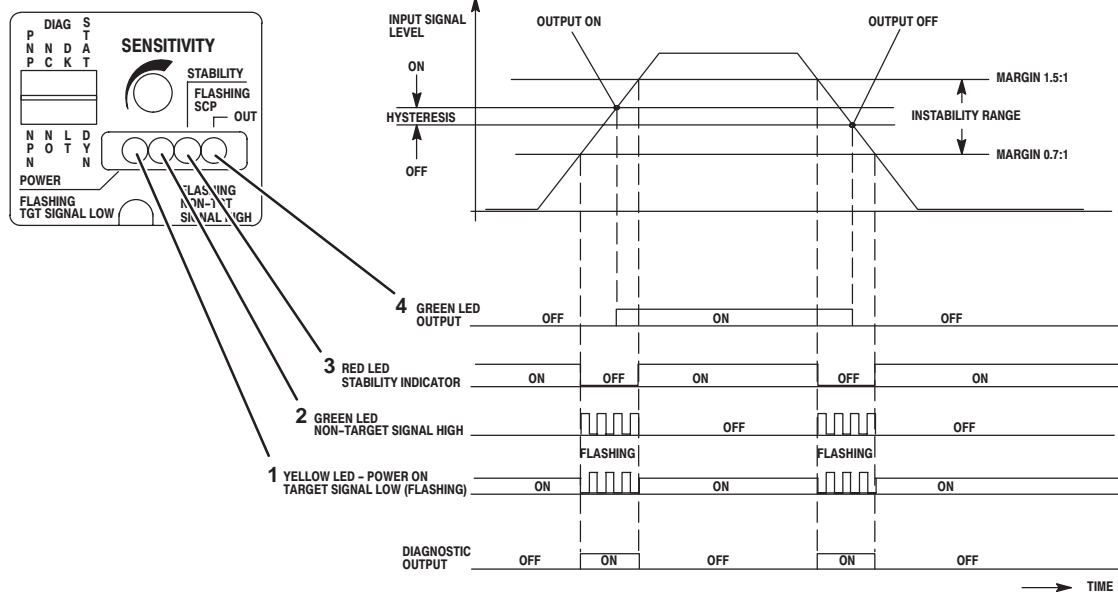
User Interface Panel—DC model shown

DYNAMIC Operating Mode



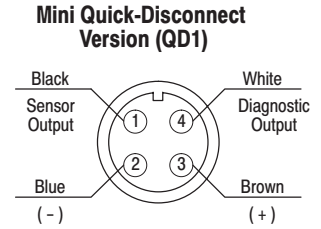
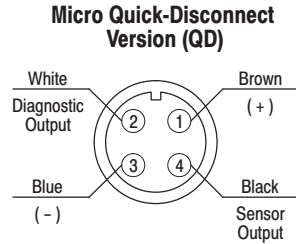
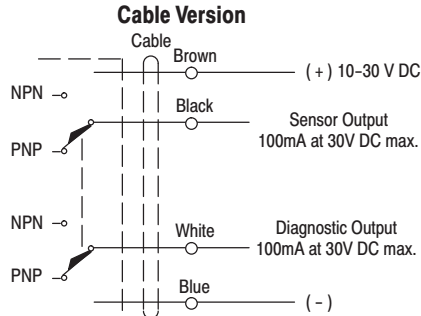
User Interface Panel—DC model shown (continued)

STATIC Operating Mode



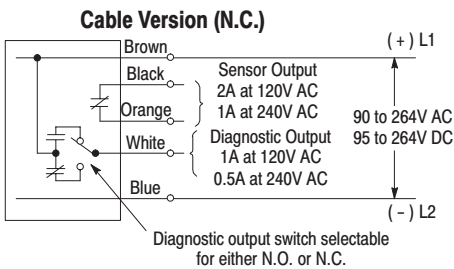
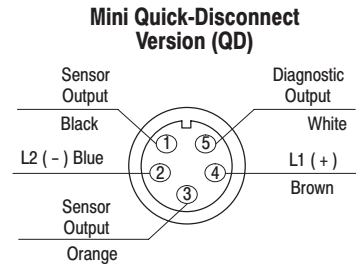
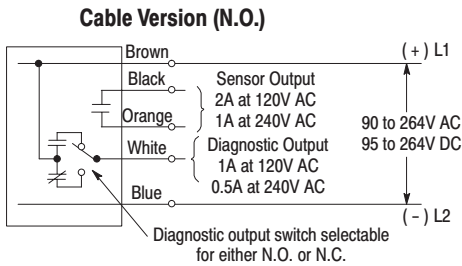
Wiring Diagrams

DC Sensors



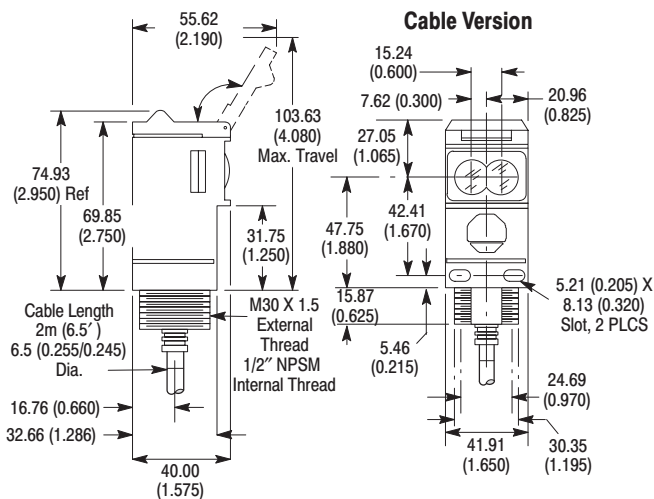
Note: DO NOT connect both an NPN and PNP load at the same time!

AC Sensors

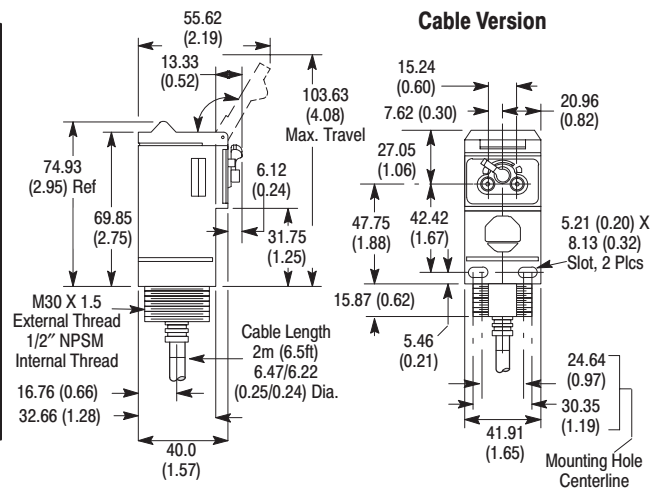


Dimensions—mm (inches)

All Versions Except Fiber Optic



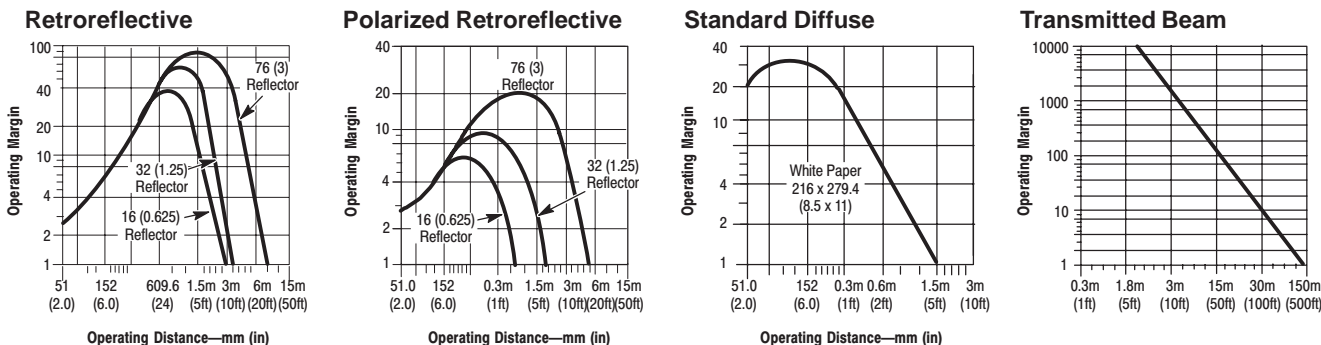
Fiber Optic



Series 9000

Diagnostic

Typical Response Curve

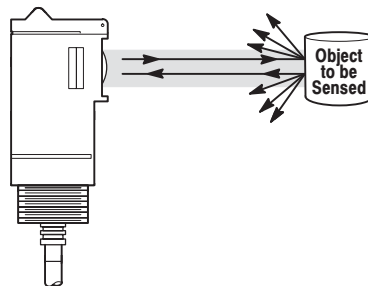


Product Selection

Sensing Mode	Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Response Time	Connection Type	Catalog Number
<p>Retroreflective Field of View: 1.5° Emitter LED: Visible Red 660nm</p>	10-30V DC 30mA	50.8mm (2in) to 9.14m (30ft) with 76mm (3in) Reflector	Light/Dark Selectable	NPN and PNP (Sensor and Diagnostic) 100mA @ 30V DC 2ms	2m 300V cable	42GDU-9000
					4-pin DC micro	42GDU-9000-QD
					4-pin mini	42GDU-9000-QD1
	90 to 264V AC 95 to 264V DC 15mA			2m 300V cable	42GDU-9004	
				5-pin mini	42GDU-9004-QD	
				2m 300V cable	42GDU-9005	
5-pin mini	42GDU-9005-QD					
<p>Polarized Retroreflective Field of View: 1.5° Emitter LED: Visible Red 660nm</p>	10-30V DC 30mA	50.8mm (2in) to 4.87m (16ft) with 76mm (3in) Reflector	Light/Dark Selectable	NPN and PNP (Sensor and Diagnostic) 100mA @ 30V DC 2ms	2m 300V cable	42GDU-9200
					4-pin DC micro	42GDU-9200-QD
					4-pin mini	42GDU-9200-QD1
	90 to 264V AC 95 to 264V DC 15mA			2m 300V cable	42GDU-9204	
				5-pin mini	42GDU-9204-QD	
				2m 300V cable	42GDU-9205	
5-pin mini	42GDU-9205-QD					

Refer to page R1-141 for cordsets and accessories.

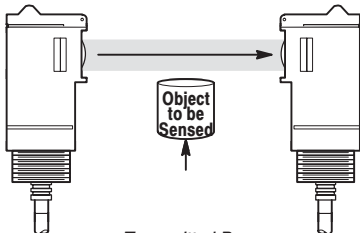
Product Selection

Sensing Mode	Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Response Time	Connection Type	Catalog Number
 <p>Standard Diffuse</p> <p>Field of View: 3.5° Emitter LED: Infrared 880nm</p>	10-30V DC 30mA	50.8mm (2in) to 1.52m (5ft) to White Paper	Light/Dark Selectable	NPN and PNP (Sensor and Diagnostic) 100mA @ 30V DC 2ms	2m 300V cable	42GDP-9000
					4-pin DC micro	42GDP-9000-QD
					4-pin mini	42GDP-9000-QD1
	90 to 264V AC 95 to 264V DC 15mA			SPST Relay N.O. (Sensor) 15ms	2m 300V cable	42GDP-9004
				SPDT Relay, N.O. and N.C. (Diagnostic) 15ms	5-pin mini	42GDP-9004-QD
				SPST Relay N.C. (Sensor) 15ms	2m 300V cable	42GDP-9005
SPDT Relay, N.O. and N.C. (Diagnostic) 15ms	5-pin mini	42GDP-9005-QD				

For Light Sources

 <p>Transmitted Beam</p> <p>Field of View: 1.5° Emitter LED: Infrared 880nm</p>	10-264V AC/DC 15mA	—	25.4mm (1in) to 61m (200ft)	—	2m 300V cable	42GRL-9000
	10-264V AC/DC 15mA	—	25.4mm (1in) to 61m (200ft)	—	4-pin DC micro	42GRL-9000-QD
					4-pin mini	42GRL-9002-QD
	10-264V AC/DC 15mA	—	25.4mm (1in) to 152m (500ft)	—	2m 300V cable	42GRL-9040
					4-pin DC micro	42GRL-9040-QD
					4-pin mini	42GRL-9042-QD

For Receivers

 <p>Transmitted Beam</p> <p>Field of View: 1.5° Emitter LED: Infrared 880nm</p>	10-30V DC 30mA	—	Receiver Light/Dark Selectable	NPN and PNP (Sensor and Diagnostic) 100mA @ 30V DC 2ms	2m 300V cable	42GDR-9000			
					4-pin DC micro	42GDR-9000-QD			
					4-pin mini	42GDR-9000-QD1			
	90 to 264V AC 95 to 264V DC 15mA			—	Light/Dark Selectable	SPST Relay N.O. (Sensor) 15ms	SPDT Relay, N.O. and N.C. (Diagnostic) 15ms	2m 300V cable	42GDR-9004
								5-pin mini	42GDR-9004-QD
							SPST Relay N.C. (Sensor) 15ms	2m 300V cable	42GDR-9005
SPDT Relay, N.O. and N.C. (Diagnostic) 15ms	5-pin mini	42GDR-9005-QD							

Cordsets and Accessories

Description	Catalog Number	Description	Catalog Number	Description	Catalog Number
1.8m (6ft) 4-pin, Mini QD Cordset	889N-F4AF-6F	2m (6.5ft) 4-pin, DC Micro QD Cordset	889D-F4AC-2	76mm (3in) Diameter with Center Mount Hole	92-39
1.8m (6ft) 5-pin, Mini QD Cordset	889N-F5AF-6F	Mounting Bracket	60-2439	32mm (1.25in) Diameter	92-47