

Series 9000 Photoelectric Sensors

Bulletin Numbers 42GDF, 42GDR, 42GLP, 42GRC, 42GRF, 42GRL, 42GRP, 42GRR, 42GRU, 42GSP, 42GTC, 42GTF, 42GTP, 42GTR, 42GTU

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The following laser models are available:

- Polarized retroreflective
- Standard diffuse

Features

The Series 9000™ Photoelectric Sensors include the following features:

- Extended sensing range for maximum application flexibility
- Class 1 laser models ideal for the detection of small parts
- DC (PNP and NPN) and AC/DC (relay output, solid-state) models
- Time delay models
- Dual (NPN and PNP) output models
- IP69K, IP67 with 1200 psi, NEMA, and ECOLAB rated enclosures

Available Models

The following standard models are available:

- Retroreflective
- Polarized retroreflective
- Clear object detection
- Diffuse
- Transmitted beam
- Large aperture fiber-optic
- Small aperture fiber-optic

Table 1 - Specifications for All Models

Certifications	c-UL-us Listed, CSA Certified, and CE Marked for all applicable directives
Shock	30 g with 1 ms pulse duration, meets or exceeds IEC 60947-5-2
Vibration	10...55 Hz, 1 mm amplitude, meets or exceeds IEC 60947-5-2
Environmental	
Enclosure type rating	IP69K, IP67 with 1200 psi; NEMA 3, 4X, 6P, 12, 13; ECOLAB rated
Relative humidity	5...95%
Ambient light immunity	Incandescent light 5000 lux
Electrical	
Operating voltage	See Table 7 on page 3
Mechanical	
Housing material	Valox®
Lens material	Acrylic
Connection type	See Table 7 .



Table 2 - Specifications for Standard Models

Environmental	
Operating temperature	-34...+70 °C (-29...+158 °F)
User Interface	
Indicator LED	See Table 9.
Electrical	
Current consumption	30 mA max
Protection type	Short circuit, reverse polarity, false pulse, overload
Outputs	
Output type	See Table 7.
Output function	Selectable light or dark operate
Load current	250 mA @ 30V DC (all models except 42GLP and 42GSP); 2 A @ 132V AC and 1 A @ 264V AC (SPDT relay models); 300 mA @ 264V AC (MOSFET models)

Table 3 - Specifications for Laser Models

Environmental	
Operating temperature	-10...+50 °C (-14...+122 °F)
Electrical	
Current consumption	45 mA max. (DC models), 10 mA max. (AC/DC models), 70 mA max. (AC models)
Protection type	Overload and short circuit (DC models), reverse polarity, false pulse
Outputs	
Output type	See Table 7.
Output function	Selectable light or dark operate
Leakage current	10 µA max (DC models)

Table 4 - Specifications for Diagnostic Models

Environmental	
Operating temperature	0...70 °C (32...158 °F)
User Interface	
Indicator LED	See Table 9.
Electrical	
Protection type	Short circuit, reverse polarity, false pulse, overload
Outputs	
Output type	See Table 7.
Output function	Selectable light or dark operate
Load current	100 mA max. at 30V DC, 2 A at 132V (AC/DC sensor and diagnostic), 11 A at 264V (AC/DC sensor and diagnostic)

Optical and Response Time Characteristics

Table 5 - Optical and Response Time Characteristics—Standard, Diagnostic, and Intrinsically Safe Transmitted Beam Models

Attribute	Sensing Mode					
	Retroreflective	Polarized Retroreflective	Diffuse	Transmitted Beam	Small Aperture Fiber-optic	Large Aperture Fiber-optic
Field of view	1.5°		3.5° for 1.5 m (4.92 ft) 6.5° for 3 m (9.8 ft) and 4 m (13 ft) range	1.5°	Depends on fiber-optic cable	
Light source	Visible red 660 nm					Infrared 880 nm
Response time	2 ms (DC), SPDT EM Relay (15 ms), 2 ms (MOSFET AC/DC)					

Table 6 - Optical and Response Time Characteristics—Laser Models

Attribute	Sensing Mode	
	Polarized Retroreflective	Diffuse
Spot size	20 x 25 mm (0.98 in.) at 40 m (131.23 ft)	2 x 3.5 mm (0.14 in.) at 800 nm
Response time	0.5 ms	