

42FT Visible Red, Blue or Green Plastic Fiber Optic

Self-Teach



Description

The 42FT is a compact, DIN rail mount fiber optic photoelectric sensor with sophisticated part detection, diagnostic, and self-teach capabilities.

Five LED indicators provide diagnostic and alignment information. A dynamic diagnostic output signals when margin levels are below a predetermined threshold for seven successive detections.

The self-teach capability allows the Bulletin 42FT to determine an optimum sensitivity and hysteresis setting for a specific application. The remote lockout feature can be used to help prevent unauthorized changes to these adjustments. A switch selectable 50ms off-delay (“pulse stretcher”) is useful in high speed applications where the output pulse must be lengthened to allow time for the machine logic to respond.

42FT sensors are designed for DIN rail mounting. For installation convenience, a stainless steel mounting bracket is supplied for separate mounting.

42FT sensors are designed for use with 2.2mm diameter plastic fiber optic cables. An adaptor is supplied with the sensor to use 1.25mm diameter plastic fiber optic cables. Fiber optic cables are held in place by a rotating collar. No tools are required to attach or remove fiber optic cables. Special glass fiber optic cables are also available. Over 40 compatible standard plastic and glass fiber optic cables are available, please refer to page 1–292.

General Specifications

Light Source	Red, green, blue, by model
Unit Protection	Overload, short circuit, reverse polarity, false pulse
Supply voltage	12–24V DC
Current Consumption	60mA maximum
Output Type	NPN or PNP by model
Output Mode	Light/dark operate selectable
Output Rating	100mA @ 24V DC
Response Time	500µs
Housing Material	ABS resin
Lens Material	Not applicable
LED Indicators	See User Interface on page 1–115
Connection Types	2m 500V 5 conductor cable 3-pin pico QD (remote self-teach and diagnostic removed)
Supplied Accessories	Fiber optic cable adaptor, 60–2638 mounting bracket
Optional Accessories	Cordsets, mounting brackets—see page 7–1
Operating Environment	NEMA 1, 4X, 12, 13; IP66 (IEC 529)
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	–25°C to +55°C (–13°F to +131°F)
Relative Humidity	5...85%
Approvals	UL listed, CSA certified, CE marked for all applicable directives

Features

- Choose from red, green, or blue light source
- Local and remote self-teach operation
- Supports 1.5mm and 1.25mm plastic fiber optic cables
- Fast 500µs response time
- Selectable pulse-stretcher
- Selectable hysteresis
- Selectable light/dark operate
- Dual “RUN” modes to prevent crosstalk with other sensors
- Both NPN and PNP outputs
- Pico QD or 2m cable connections

General Information

- Wiring Diagrams page 1–115
- Dimensions page 1–115
- Sensing Mode page 1–116

Accessories

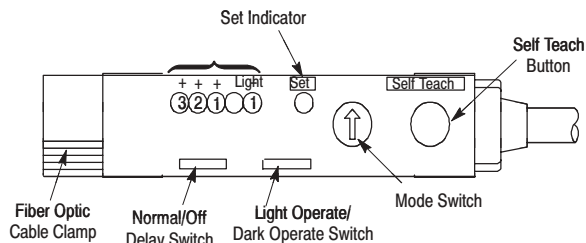
- Quick-Disconnect Cables . . . page 7–1
- Fiber Optic Cables page 1–292
- Mounting Assemblies page 1–375
- Fiber Optic Cable Adaptors page 1–380
- Replacement Snap-on Cover page 1–380
- Reflectors, Reflective Tape page 1–386

AB Spares

PHOTOSWITCH® Photoelectric Sensors
42FT Visible Red, Blue or Green Plastic Fiber Optic
Self-Teach

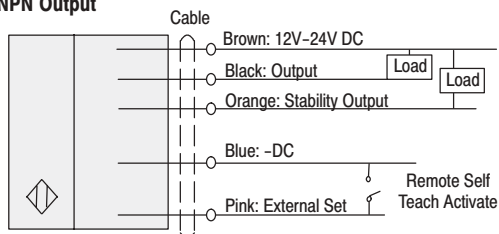
User Interface Panel

Label	Color	State	Status
Set	Green	OFF	Sensor not powered
		ON	Sensor powered, configuration verified
		Flashing	Self-teach mode active
-1... +3		ON	0.8X...1.6X margin
Light	Red	OFF	1X margin, output not activated
		ON	1X margin, output activated

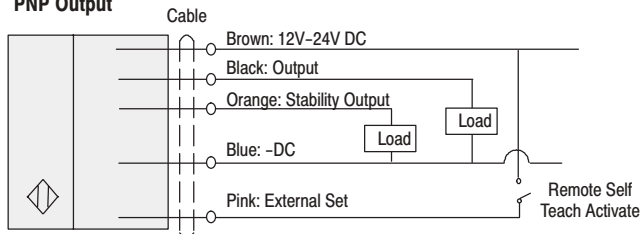


Wiring Diagrams

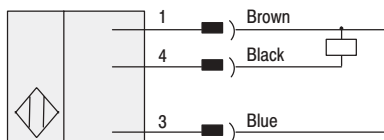
Cable NPN Output



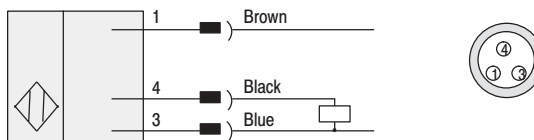
PNP Output



Quick-Disconnect



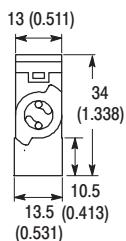
Pico



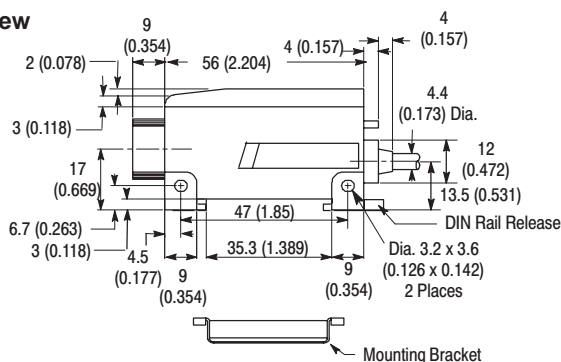
Note: Details regarding connection of Allen-Bradley Bulletin 42FT photoelectric sensors to Allen-Bradley Programmable Controllers can be found in publication 42-2.0.

Dimensions—mm (inches)

End View



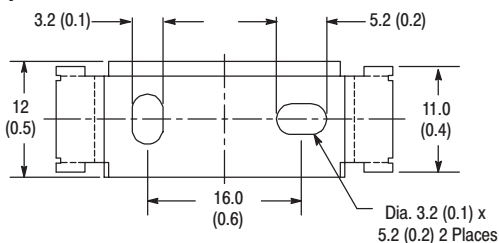
Side View



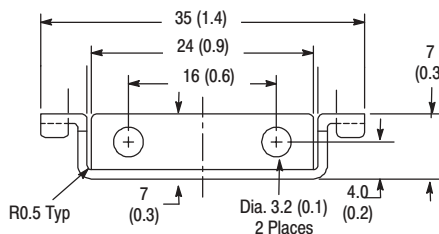
Mounting Assembly—60-2638

Stainless steel mounting bracket for installing the 42FT without a DIN rail.

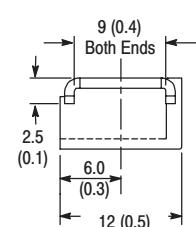
Top View



Side View

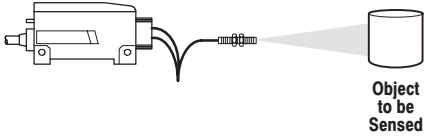


End View



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Specifications

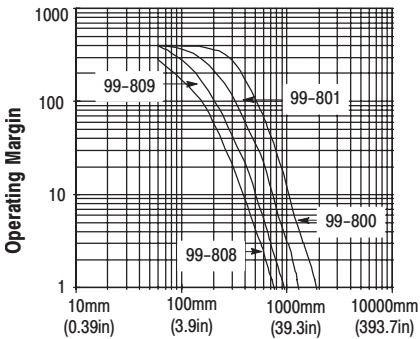
Field of View	Refer to Plastic Fiber Optic section page 1-347
Emitter LED	Visible red 660nm, Visible green 565nm or Visible blue 450nm
Indicator LEDs	Red: Output (4) Green: Margin 0.8X, 1.2X, 1.4X, 1.6X

QD Cordsets and Accessories

Description	Catalog/Page Number
Pico QD Cordset, Straight, 3-pin, 2m	889P-F3AB-2
Fiber Optic Cables	1-292
Mounting Assemblies	1-375
Fiber Optic Cable Adaptors	61-6731
76mm (3in) Diameter with Center Mount Hole	92-39
32mm (1.25in) Diameter with Center Mount Hole	92-47

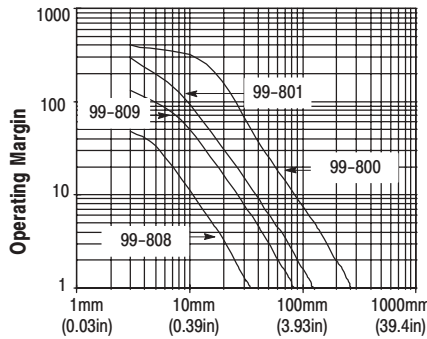
Typical Response Curves for Visible Red LED

Retroreflective



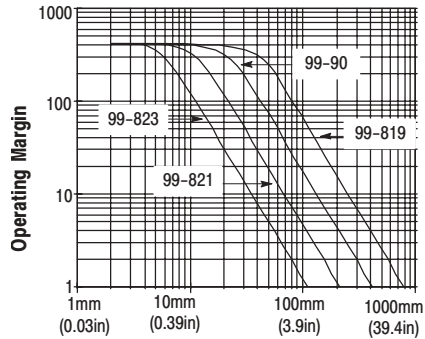
Distance to 76mm Reflector Model 92-39

Diffuse



Distance to White Target

Transmitted Beam



Operating Distance

Typical Glass Fiber Optic Cable Selection—mm (in)

LED	Sensing Mode	Plastic Fiber Diameter	Typical Fiber Model	Maximum Range
Red	Diffuse (Bifurcated Fiber)	1 (0.040)	99-94	110 (4.3)
		0.5 (0.020)	99-808	30 (1.2)
	Transmitted Beam (Individual Fiber)	1 (0.040)	99-90	350 (13.2)
		0.5 (0.020)	99-822	95 (3.7)
Green	Diffuse (Bifurcated Fiber)	1 (0.040)	99-94	13 (0.5)
	Transmitted Beam (Individual Fiber)		99-90	35 (1.4)
Blue	Diffuse (Bifurcated Fiber)		99-94	18 (0.7)
	Transmitted Beam (Individual Fiber)		99-90	60 (24)

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Product Selection

Operating Voltage Supply Current	Max Sensing Distance @ 1X Margin	Output Energized	Emitter LED	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
12-24V DC ±10% 60mA	Depends on Fiber Optic Cable Selected	Light/Dark Selectable	Red 660nm	PNP Output: 100mA Stability: 50mA 500µs	0.5mA	2m 500V cable	42FT-F2LPA-A2
						3-pin pico QD	42FT-F2LPA-Y3
			Green 565nm			2m 500V cable	42FT-F3LPA-A2
						3-pin pico QD	42FT-F3LPA-Y3
			Blue 450nm			2m 500V cable	42FT-F6LPA-A2
						3-pin pico QD	42FT-F6LPA-Y3
12-24V DC ±10% 50mA	Depends on Fiber Optic Cable Selected	Light/Dark Selectable	Red 660nm	NPN Output: 100mA Stability: 50mA 500µs	0.5mA	2m 500V cable	42FT-F2LNA-A2
						3-pin pico QD	42FT-F2LNA-Y3
			Green 565nm			2m 500V cable	42FT-F3LNA-A2
						3-pin pico QD	42FT-F3LNA-Y3
			Blue 450nm			2m 500V cable	42FT-F6LNA-A2
						3-pin pico QD	42FT-F6LNA-Y3