

## 45FVL Visible Red, Blue, Green or White Plastic Fiber Optic

Self-Teach with Digital Display



### Description

The 45FVL is a DIN rail mountable fiber optic photoelectric sensor with sophisticated detection, diagnostic and self-teach capabilities. Possible modes of sensing include transmitted beam, diffuse and retroreflective, allowing the 45FVL to be used in a variety of complex applications using either a red, blue, green, or white LED.

The user interface contains a back lit LCD display which clearly displays various operating modes, functions and diagnostic information. Utilizing either the Relative or Absolute Sensing Mode, an integrated 4 digit display shows the user the amount of light being received. Absolute Sensing Mode measures the absolute value of a target's reflected light at that moment. Relative Sensing Mode monitors and displays the variation of light received relative to the standard value at which it was learned.

The self-teach capability allows the Bulletin 45FVL to determine an optimum sensitivity and hysteresis setting for a specific application. Manual and automatic sensitivity adjustment is provided to obtain measurements that require specific precision. A selectable 40ms off delay ("pulse-stretcher") is essential in high speed applications where the output pulse must be lengthened to allow time for the machine logic to respond.

The 45FVL sensors are designed for DIN rail mounting which allows the user to utilize the new "Power Bus" feature. The "Power Bus" interface allows the user to jumper power on up to 16 DIN rail mounted units to reduce unnecessary wiring. For installation convenience, a stainless steel mounting bracket is provided for separate mounting.

The 45FVL photoelectric sensors are designed for use with plastic fiber optic

### General Specifications

<b>Light Source</b>	Red, green, blue, or white by model
<b>Unit Protection</b>	Overload, short circuit, reverse polarity, false pulse
<b>Supply voltage</b>	12-24V DC
<b>Current Consumption</b>	NPN Type <39mA/PNP Type <50mA
<b>Output Type</b>	NPN or PNP by model
<b>Output Mode</b>	Light/dark operate selectable
<b>Output Rating</b>	100mA @ 30V DC
<b>Response Time</b>	Channel 1 = 600µs, Channel 2 = 700µs
<b>Housing Material</b>	ABS resin
<b>Lens Material</b>	Not applicable
<b>LED Indicators</b>	See User Interface on page NO TAG
<b>Connection Types</b>	2m 3 conductor 24AWG cable; 4-pin pico QD, Power Bus cables
<b>Optional Accessories</b>	Cordsets see the C114 <i>Sensors</i> catalog
<b>Operating Environment</b>	NEMA 1, IP 40
<b>Vibration</b>	10-55Hz, 1mm amplitude, Meets or exceeds IEC 60947-5-2
<b>Shock</b>	50g, 3 directions, 3 times
<b>Operating Temperature</b>	-25°C to +55°C (-13°F to +131°F)
<b>Relative Humidity</b>	35...85%
<b>Approvals</b>	CE marked for all applicable directives

cables up to 2.2mm diameter. An adaptor is supplied with the sensor for use with 1.25mm diameter plastic fiber optic cables. No tools are required to attach or remove fiber optic cables. Special glass fiber optic cables are also available.

### Features

- Choose from, red, green, blue, white light source
- Self-teach capability
- Manual or automatic sensitivity adjustment
- Back-lit LCD display
- Selectable 40ms off delay output timer
- DIN rail mountable
- "Power-Bus" option
- Dual channel interference protection
- Reverse polarity, false pulse and transient noise protection (500V)

### General Information

Wiring Diagrams ..... page 61

Dimensions ..... page 61

Sensing Mode ..... page 62

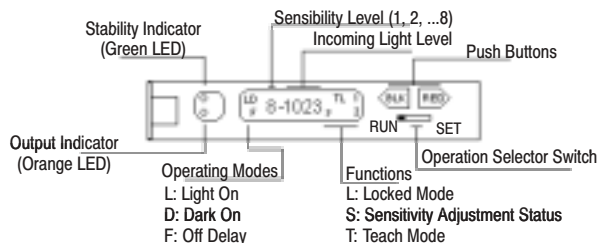
### Accessories

See the C114 *Sensors* catalog for Accessory information.

PHOTOSWITCH® Photoelectric Sensors  
**45FVL Visible Red, Blue, Green or White Plastic Fiber Optic**  
 Self-Teach with Digital Display

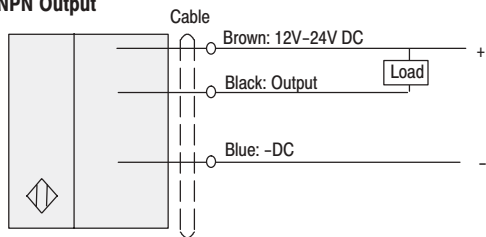
**User Interface Panel**

LED	State	Condition
Green	OFF	Unstable light signal Stable light signal
	ON	
Orange	OFF	Output OFF Output ON
	ON	

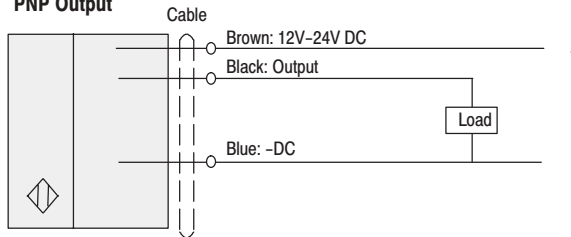


**Wiring Diagrams**

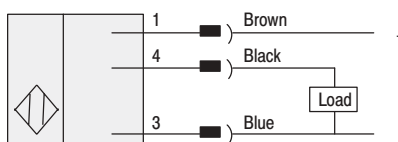
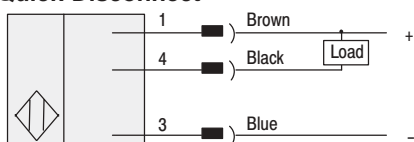
**Cable NPN Output**



**PNP Output**



**Quick-Disconnect**

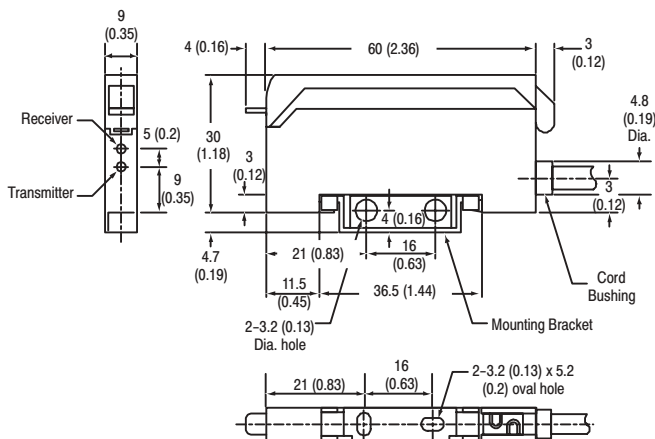


**Pico**



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

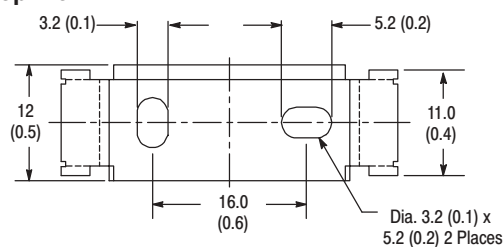
**Dimensions—mm (inches)**



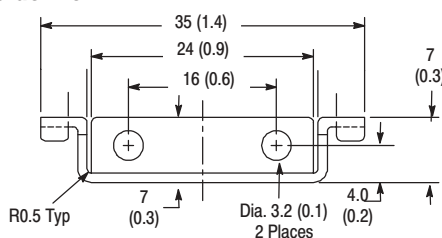
**Mounting Assembly—60-2638**

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

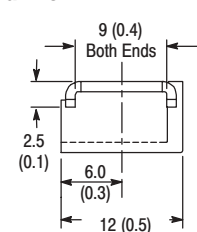
**Top View**



**Side View**

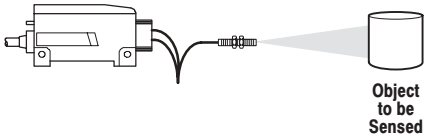


**End View**



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## QD Cordsets and Accessories

Description	Catalog/Page Number
Pico QD Cordset, Straight, 4-pin, 2m	<b>889P-F4AB-2</b>
Fiber Optic Cables	†
<b>Fiber Optic Adaptor Replacements</b> 1.25mm–2.2mm O.D. 1.00mm–2.2mm O.D.	<b>61-6731</b> <b>61-6742</b>
76mm (3in) Reflector Diameter with Center Mount Hole	<b>92-39</b>
32mm (1.25in) Diameter with Center Mount Hole	<b>92-47</b>

## Typical Response Curves

Not available at time of printing. Refer to [www.ab.com/sensors](http://www.ab.com/sensors) after November 2001 for updated pages. Or contact product support at (1) 800-666-0001.

## Specifications

<b>Field of View</b>	Refer to Plastic Fiber Optic section of the <i>Sensors</i> catalog
<b>Emitter LED</b>	Visible red 660nm, Visible green 565nm or Visible blue 470nm Visible white
<b>Indicator LEDs</b>	Orange: Output Green: Stability

† See *Fiber Optic Cables Sensors Catalog Addendum* (C114-CA004A-EN-P).

## Typical Plastic Fiber Optic Cable Selection—mm (in)

LED	Sensing Mode	Plastic Fiber Diameter	Typical Fiber Model	Maximum Range
Red	Diffuse (Bifurcated Fiber)	1 (0.040)	<b>43PR-NES57ZS</b>	Not available at time of printing. Refer to <a href="http://www.ab.com/sensors">www.ab.com/sensors</a> after November 2001 for updated pages. Or contact product support at (1) 800-666-0001.
		0.5 (0.020)	<b>43PR-NJS53ZM</b>	
	Transmitted Beam (Individual Fiber)	1 (0.040)	<b>43PT-NJS56FS</b>	
		0.5 (0.020)	<b>43PT-NBS52FM</b>	
Green	Diffuse (Bifurcated Fiber)	1 (0.040)	<b>43PR-NES57ZS</b>	
	Transmitted Beam (Individual Fiber)		<b>43PT-NJS56FS</b>	
Blue	Diffuse (Bifurcated Fiber)		<b>43PR-NES57ZS</b>	
	Transmitted Beam (Individual Fiber)		<b>43PT-NJS56FS</b>	
White	Diffuse (Bifurcated Fiber)		<b>43PR-NES57ZS</b>	
	Transmitted Beam (Individual Fiber)		<b>43PT-NJS56FS</b>	

## Selection Guide

Operating Voltage	Current Consumption	Output Characteristics			Response Time	LED	Catalog Number		
		Type	Max Load Current	Max Leakage Current			Cable	Pico	Power Bus (QD required)
12–24V DC +/- 10%	50ma or Less	PNP	Output: 100ma Stability: 50ma	0.5ma	600µs	Red	<b>45FVL-2LHE-A2</b>	<b>45FVL-2LHE-P4</b>	<b>45FVL-2LHE-C4</b> ①
						Green	<b>45FVL-3LHE-A2</b>	<b>45FVL-3LHE-P4</b>	<b>45FVL-3LHE-C4</b> ①
						Blue	<b>45FVL-6LHE-A2</b>	<b>45FVL-6LHE-P4</b>	<b>45FVL-6LHE-C4</b> ①
						White	<b>45FVL-5LHE-A2</b>	<b>45FVL-5LHE-P4</b>	<b>45FVL-5LHE-C4</b> ①
	39ma or Less	NPN				Red	<b>45FVL-2LGE-A2</b>	<b>45FVL-2LGE-P4</b>	<b>45FVL-2LGE-C4</b> ①
						Green	<b>45FVL-3LGE-A2</b>	<b>45FVL-3LGE-P4</b>	<b>45FVL-3LGE-C4</b> ①
						Blue	<b>45FVL-6LGE-A2</b>	<b>45FVL-6LGE-P4</b>	<b>45FVL-6LGE-C4</b> ①
						White	<b>45FVL-5LGE-A2</b>	<b>45FVL-5LGE-P4</b>	<b>45FVL-5LGE-C4</b> ①

① PowerBus master/3 conductor QD = 45F-A3C-A2  
PowerBus slave/1 conductor QD = 45F-A1C-A2