

42FB Visible Red Plastic Fiber Optic

General Purpose DIN Fiber Optic



Description

42FB General Purpose DIN Rail Mount Fiber Optic Photoelectric sensors offer extended range or very high speed fiber optic sensing. The 42FB is available in a fast 250µs response time or in new shorter range versions with a very fast 30µs response time. A new 1–8V analog output version is also available. A red LED output indicator provides a proportional indication level as to how much light is received. It gets brighter as more light is detected by the fiber optic receiver.

The General Purpose 42FB sensors are available with a single NPN or PNP output that is switch selectable for Light or Dark output operation. A switch selectable 50ms output off-delay (“pulse stretcher”) is available for use in high speed applications where the output pulse must be lengthened to allow time for machine logic to respond.

These 42FB sensors have a four-turn sensitivity adjustment. Turning this adjustment clockwise will increase the sensitivity, which increases the sensing range. In addition, a red indicator showing the number of turns can be seen on the inner adjustment ring.

These sensors have a red output indicator and a green stability indicator. The stability indicator is on when the detected margin level is below 0.8X or above 1.2X, indicating stable sensing operation. The indicator will turn off when the application margin is between these two levels.

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

General Specifications

Light Source	Visible red (660nm)
Unit Protection	Output short circuit, reverse polarity, false pulse
Supply Voltage	12–24V DC
Current Consumption	35mA maximum
Output Type	NPN or PNP by model; Analog 1...8V DC
Output Mode	Light/dark operate selectable
Output Rating	100mA @ 24V DC
Response Time	30µs
Housing Material	ABS resin
Lens Material	Not applicable
LED Indicators	See User Interface on page 1–129
Connection Types	2m 500V 4 conductor cable; 4-pin pico QD
Supplied Accessories	Fiber optic cable adaptor
Optional Accessories	Cordsets see page 7–1
Operating Environment	NEMA 1; IP40 (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, and CE marked ¹ for all applicable directives

¹ Except Analog Output models.

The 1.25mm or 2.2mm diameter plastic fiber optic cables can be used with the 42FB by selecting the appropriate supplied adaptor. 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.

Features

- High speed 30µs response time
- Models with discrete or analog output
- Supports 1.5mm and 2.2mm plastic fiber optic cables
- Selectable pulse-stretcher
- Selectable light/dark operate
- Pico QD or 2m cable connections

General Information

Wiring Diagrams page 1–129
Dimensions page 1–129

Sensing Modes

Visible Red Plastic Fiber Optic page 1–130

Accessories

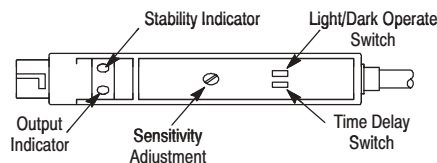
Glass Fiber Optic Cables page 1–295
Plastic Fiber Optic Cables page 1–347
Mounting Assemblies page 1–375
Fiber Optic Cable Adaptors page 1–380
Reflectors, Reflective Tape page 1–386



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42FB Visible Red Plastic Fiber Optic
 General Purpose DIN Fiber Optic

User Interface Panel

Label	Color	State	Status
STB	Green	OFF	0.8X < Margin < 1X
		ON	0.8X > Margin > 1X
OUT	Red	OFF	Output not activated
		ON	Output activated

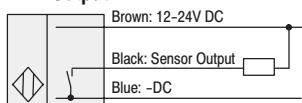


Wiring Diagrams

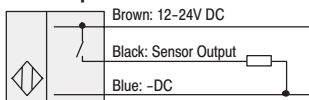
42FB-F2L __-A2

42FB-F2J __-A2

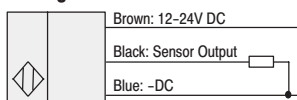
Cable NPN Output



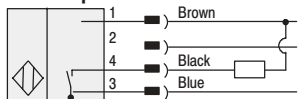
PNP Output



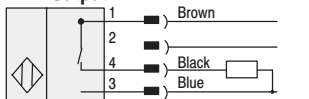
Analog PNP Sensor



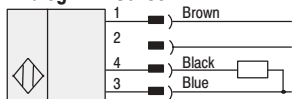
Quick-Disconnect NPN Output



PNP Output



Analog PNP Sensor



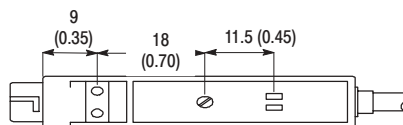
Pico



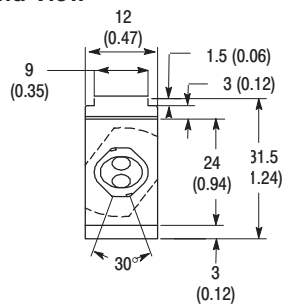
Note: Details regarding connection of Allen-Bradley Bulletin 42FB photoelectric sensors to Allen-Bradley programmable controllers can be found in publication 42-2.0.

Dimensions—mm (inches)

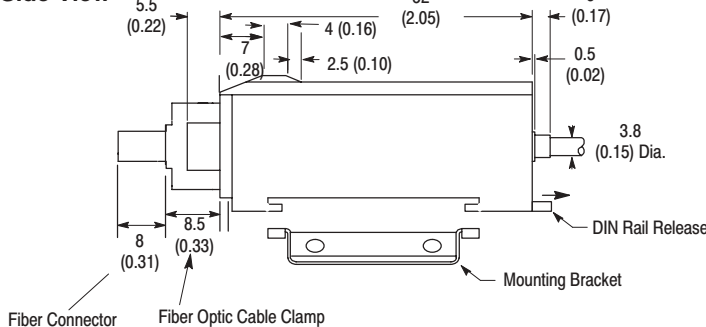
Top View



End View



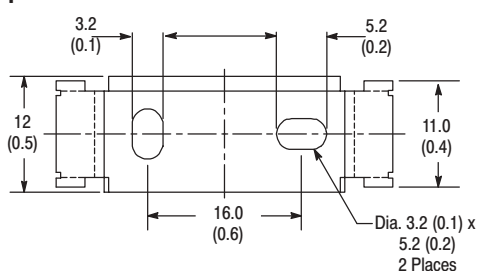
Side View



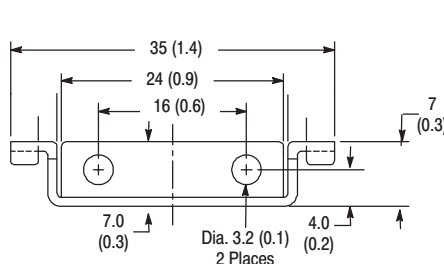
Mounting Assembly

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

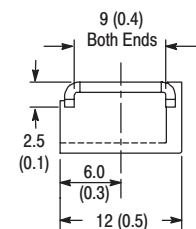
Top View



Side View

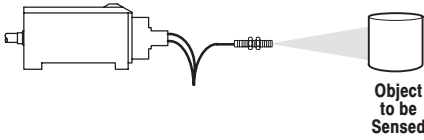


End View



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General Purpose DIN Fiber Optic



QD Cordsets and Accessories

Description	Page Number
2m (6.5ft) 4-pin Pico QD Cordset	889P-F4AB-2
Other Cordsets Available	7-88
Glass Fiber Optic Cables	1-295
Plastic Fiber Optic Cables	1-347
Adaptor for 1.25mm cable	61-6735
Adaptor for 2.2mm cable	61-6735
DIN rail mount bracket	60-2636

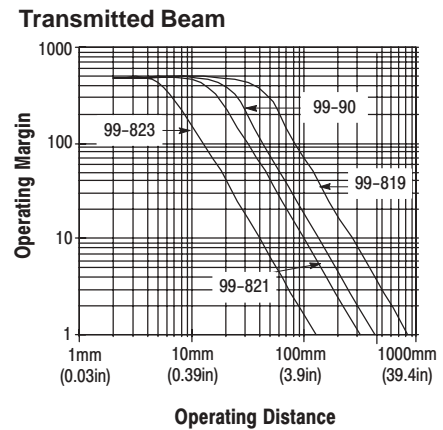
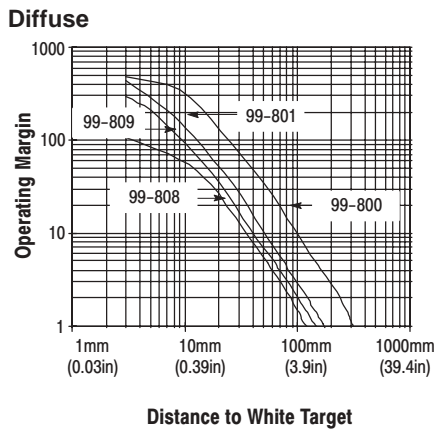
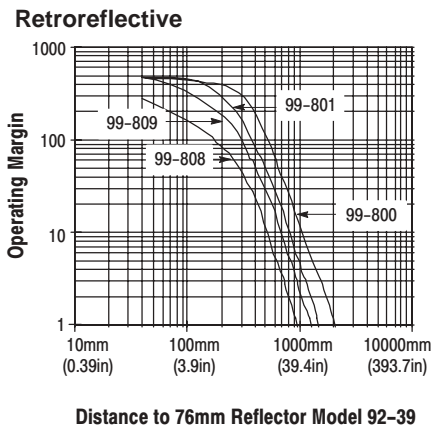
Typical Response Curves

The high-speed 30μs version offers a sensing distance that is approximately 30% of the sensing distance of the standard 250μs version, using the same fiber optic cable.

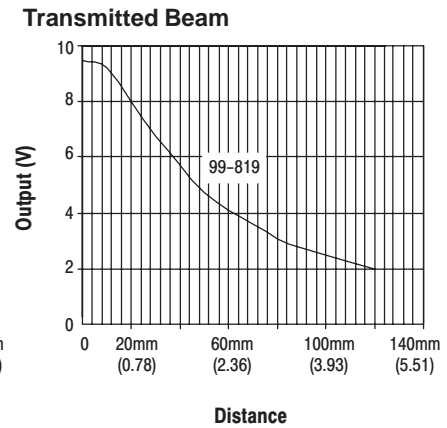
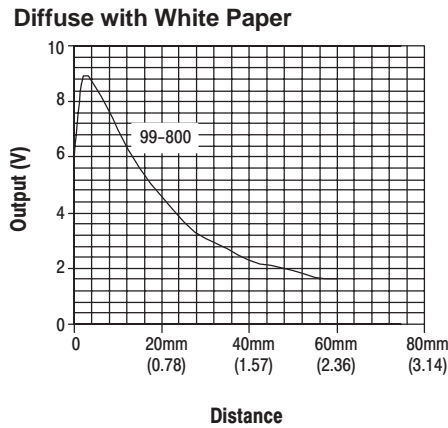
Specifications

Field of View	Refer to Plastic Fiber Optic section page 1-347
Emitter LED	Visible red 660nm

Typical Response Curves—General Purpose



Typical Response Curves—Analog



AB Parts

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42FB Visible Red Plastic Fiber Optic
 General Purpose DIN Fiber Optic

Product Selection

Operating Voltage Supply Current	Sensing Distance @ 1X Margin	Output Energized	Output Type Capacity Response Time	Max Leakage Current	Connection Type	Catalog Number
12-24V DC ±10% 25mA	Depends on Plastic Fiber Optic Cable Selected	Light/Dark Selectable	NPN 100mA 250µs	0.5mA	2m 500V cable	42FB-F2LNA-A2
					4-pin pico QD	42FB-F2LNA-P4 ①
PNP 100mA 250µs			2m 500V cable		42FB-F2LPA-A2	
			4-pin pico QD		42FB-F2LPA-P4 ①	
NPN 100mA 30µs			2m 500V cable		42FB-F2LNAQ-A2	
			4-pin pico QD		42FB-F2LNAQ-P4 ①	
12-24V DC ±10% 30mA		PNP 100mA 30µs	2m 500V cable	42FB-F2LPAQ-A2		
			4-pin pico QD	42FB-F2LPAQ-P4 ①		
12-24V DC ±10% 35mA	Proportional to the amount of light detected	1V to 8V Analog 3mA at least 1V/ms	—	2m 500V cable	42FB-F2JKA-A2	
4-pin pico QD				42FB-F2JKA-P4 ①		