



D11 Series

Low cost self-contained sensors for use with plastic fiber optics



Features

- Low cost, 10 to 30V dc self-contained sensors for use with all Banner plastic fiber optics
- Compact 11 mm-wide housing designed for DIN rail mounting; can also be mounted to any surface using the supplied mounting bracket
- Choice of NPN (sinking) or PNP (sourcing) complementary outputs - one normally open and one normally closed; 150 mA output load rating
- Normally-closed output may be wired as a diagnostic alarm to alert personnel to marginal sensing conditions[†]
- Fast, 500 microsecond (0.5 millisecond) output response
- LED status indications for Power On, Output Overload, Fiber Alignment, and Marginal Gain Conditions
- Choose models with integral 2 m (6.5 ft) cable or pico-style quick disconnect (QD) connector; 9 m (30 ft) cables are also available

[†] U.S. Patent #5087838


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Models	Range	Cable	Supply Voltage	Output Type	Range Specifications
					Diffuse mode performance based on 90% reflectance white test card
D11SN6FP D11SN6FPQ	Range varies by sensing mode and fiber optics used	2 m (6.5 ft) 4-pin Pico QD	10-30V dc	Complementary NPN (sinking)	
D11SP6FP D11SP6FPQ		2 m (6.5 ft) 4-pin Pico QD		Complementary PNP (sourcing)	

Notes:

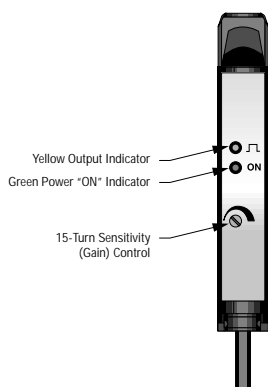
- 1) 9 m (30 ft) cables are available by adding suffix "W/30" to the model number of any cabled sensor (e.g. D11SN6FP W/30).
- 2) A model with a QD connector requires an optional mating cable.

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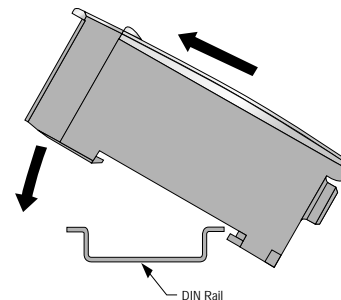
DC Product Specifications	
Required Fiber Optic Cable	PI or PB Series plastic fibers
Sensing Beam	Visible red, 680 nm
Supply Voltage and Current	10 to 30V dc at 25 mA (exclusive of load current)
Supply Protection Circuitry	Protected against reverse polarity and transient voltages
Output Configuration	Complementary: one normally open (N.O.) and the other normally closed (N.C.); N.C. output may be wired as diagnostic alarm output by reversing power supply connections [†] (see Hookups); Outputs are NPN (Sinking) or PNP (Sourcing), depending on model [†] U.S. Patent #5087838 Diagnostic alarm output energizes whenever excess gain falls to between 1x and 1.5x in the light condition; This output corresponds to flashing yellow indicator LED
Output Rating	150 mA maximum (each output); The total load may not exceed 150 mA; Off-state leakage current: <5 microamps at 30V dc; On-state saturation voltage: <1V at 10 mA dc; <1.5V at 150 mA dc
Output Protection Circuitry	Protected against false pulse on power-up (false pulse protection circuit causes a 0.1 second delay on power-up); short-circuit protected
Output Response Time	500 microseconds "on" and "off"
Repeatability	160 microseconds; Response time and repeatability are independent of signal strength
Adjustments	SENSITIVITY control on top of module (15-turn slotted brass screw, clutched at both ends of travel)
Indicators	Two LEDs: Green and Yellow GREEN glowing steadily = power to sensor is "on" GREEN flashing = output is overloaded YELLOW glowing steadily = normally open output is conducting YELLOW flashing = marginal excess gain (1-1.5x) in light condition = alarm output "on"
Construction	Black ABS (Cyclocac® KJB) flame retardant housing with acrylic cover; Stainless steel M3 x 0.5 hardware for use with ABS (Cyclocac® KJB) mounting bracket (supplied)
Environmental Rating	IEC IP54; NEMA 2
Connections	2 m (6-1/2 ft) or 9 m (30 ft) attached cable, or 4-pin pico-style quick disconnect fitting; Cables for QD models are purchased separately
Operating Temperature	-20° to +55°C (-4° to +131°F); Maximum relative humidity 90% at 50°C (non-condensing)
Certifications	

Cyclocac® is a registered trademark of General Electric Company

D11 Features



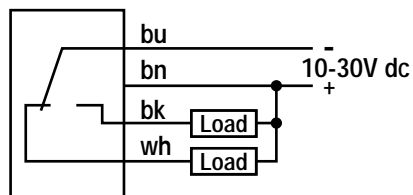
Installation onto a 35 mm DIN rail



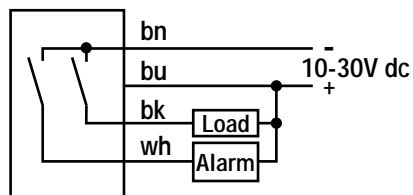
Hookup Diagrams

Sensors with NPN (Sinking) Outputs

Standard Hookup

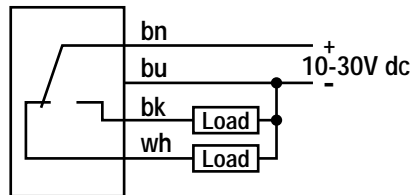


Alarm Hookup

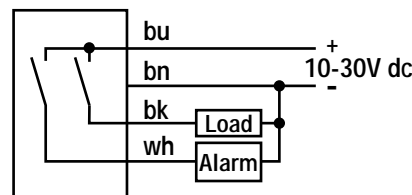


Sensors with PNP (Sourcing) Outputs

Standard Hookup



Alarm Hookup



Note: Connections are the same for either an integral cable or QD cable.

Quick Disconnect (QD) Cables

The following is the selection of cables available for D11 QD models

Style	Model	Length	For use with	Dimensions	Pinout
4-pin Pico Style straight	PKG4-2	2 m (6.5 ft)	All D11 sensors with quick disconnect fitting		
4-pin Pico Style right-angle	PKW4-2	2 m (6.5 ft)			



WARNING These photoelectric presence sensors do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can result in either an energized or a de-energized sensor output condition.

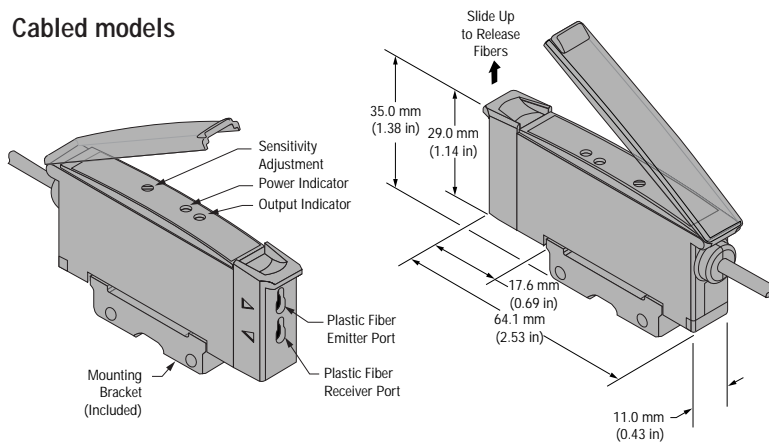
Never use these products as sensing devices for personnel protection. Their use as a safety device may create an unsafe condition which could lead to serious injury or death.

Only MINI-SCREEN™, MULTI-SCREEN™, MACHINE-GUARD and PERIMETER-GUARD Systems, and other systems so designated, are designed to meet OSHA and ANSI machine safety standards for point-of-operation guarding devices. No other Banner sensors or controls are designed to meet these standards, and they must NOT be used as sensing devices for personnel protection.

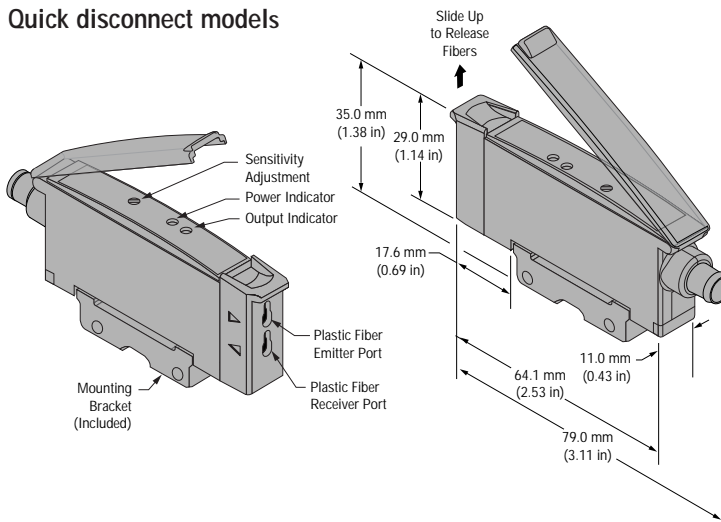
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Dimensions

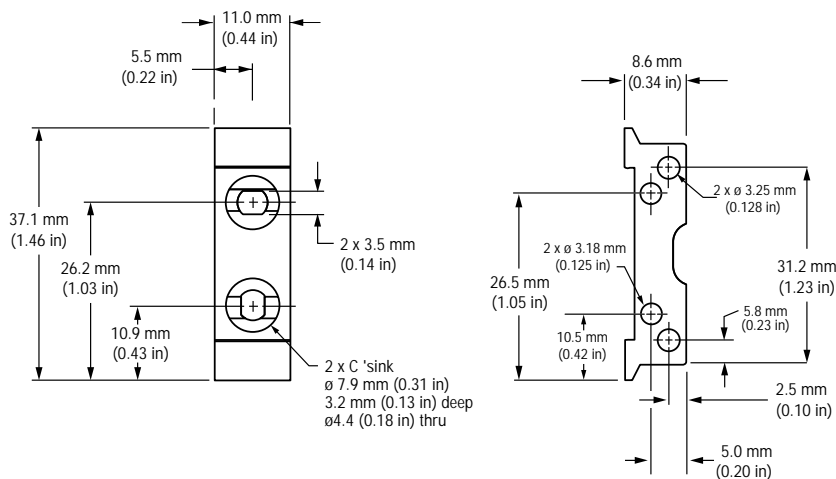
Cabled models



Quick disconnect models



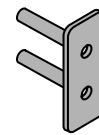
Mounting Bracket



Plastic Fiber Installation:

1. Cut fiber ends per instructions included with the fibers. Slide the fiber gripper up (open). For 0.25 mm or 0.5 mm diameter fibers, insert the adapter (shown below) into the ports as far as it will go.
2. All fibers: Insert the prepared plastic fiber sensor ends gently into the ports as far as they will go.
3. Slide the fiber gripper back down to lock.

Fiber Adaptor



Adaptor (included) is for use with 0.25 mm (0.01") or 0.5 mm (0.02") diameter fibers



WARRANTY: Banner Engineering Corporation warrants its products to be free from defects for one year. Banner Engineering Corporation will repair or replace, free of charge, any product of its manufacture found to be defective at the time it is returned to the factory during the warranty period. This warranty does not cover damage or liability for the improper application of Banner products. This warranty is in lieu of any other warranty either expressed or implied.