

# D10 — Discrete Output

Low-cost, 10 to 30V dc Sensor for use with Plastic Fiber Optics



## Features

- Models available with visible red (660 nm) or visible green (525 nm) LED light source
- Sleek, ultra-slim 10 mm housing, mounts to standard 35 mm DIN rail
- Solid-state, bipolar discrete outputs: one current sourcing (PNP) and one current sinking (NPN)
- **High-speed models:** 200-microsecond output response
- **Standard models:** 500-microsecond output response plus crosstalk-avoidance circuitry (for applications with multiple sensors)
- Selectable Light/Dark Operate and 40 millisecond pulse stretcher (OFF-delay), via two easy-to-operate slide switches
- 12-turn Sensitivity adjustment with relative position indicator
- LED status indicators for Power ON and Light Sensed (“AID™”) indication
- Models available with integral cable or Pico-style quick-disconnect

## Models

Models		Response Time	Cable*	Output Type
Red Beam (660 nm)	Green Beam (525 nm)			
D10AFP	D10AFPG	500 microseconds	4-conductor 2 m (6.5') Cable	Bipolar NPN/PNP Solid-state
D10AFPQ	D10AFPGQ		4-pin Pico-style QD	
D10AFPY	D10AFPGY	200 microseconds	4-conductor 2 m (6.5') Cable	
D10AFPYQ	D10AFPGYQ		4-pin Pico-style QD	

\* 9 m (30') cables are available by adding suffix “W/30” to the model number of any cabled sensor (e.g., D10AFP W/30). A model with a QD connector requires a mating cordset (see page 4).

**⚠ WARNING . . . Not To Be Used for Personnel Protection**



Never use these products as sensing devices for personnel protection. Doing so could lead to serious injury or death.

These sensors do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition. Consult your current Banner Safety Products catalog for safety products which meet OSHA, ANSI and IEC standards for personnel protection.



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## Specifications

<b>Sensing Beam</b>	660 nm visible red or 525 nm visible green, depending on model
<b>Supply Voltage</b>	10 to 30V dc (10% max. ripple) @ less than 25 mA, exclusive of load
<b>Supply Protection Circuitry</b>	Protected against reverse polarity and transient voltages
<b>Output Configuration</b>	<b>Bipolar:</b> 1 current sourcing (PNP) and 1 current sinking (NPN)
<b>Output Rating</b>	100 mA per output with short circuit protection <b>OFF-state leakage current:</b> < 10 $\mu$ A sourcing; 200 $\mu$ A sinking <b>ON-state saturation voltage:</b> <b>NPN:</b> 1.6V @ 100 mA <b>PNP:</b> 2.0V @ 100 mA
<b>Output Protection</b>	Protected against output short-circuit and false pulse on power up (max. 100 ms delay on power up; outputs do not conduct during this time)
<b>Output Response Time</b>	<b>Standard models (with crosstalk avoidance circuitry):</b> 500 microseconds <b>High-speed models:</b> 200 microseconds
<b>Repeatability</b>	<b>Standard models:</b> 95 microseconds <b>High-speed models:</b> 50 microseconds
<b>Adjustments</b>	12-turn Sensitivity potentiometer with relative position indicator; LO/DO Selection switch; 0 or 40 ms off-delay switch NOTE: Use proper ESD techniques while making adjustments under cover.
<b>Indicators</b>	<b>Two LEDs:</b> Green and Yellow <b>Green ON steady:</b> Power ON <b>Yellow flashing:</b> Light Sensed Signal strength indicator (Banner's AID™ Alignment Indicating Device – the faster the flash, the more light is received)
<b>Construction</b>	Black ABS/polycarbonate alloy (UL94 V-0 rated) housing, clear polycarbonate cover
<b>Environmental Rating</b>	IEC IP50; NEMA 1
<b>Connections</b>	2 m or 9 m (6.5' or 30') attached cable, or 4-pin Pico-style quick-disconnect fitting; cables for QD models are purchased separately
<b>Operating Conditions</b>	<b>Temperature:</b> -10° to +55° C (+14° to 131° F) <b>Storage:</b> -20° to +85° C (-4° to +185° F) <b>Relative Humidity:</b> 90% @ 55° C (non-condensing)
<b>Certifications</b>	 

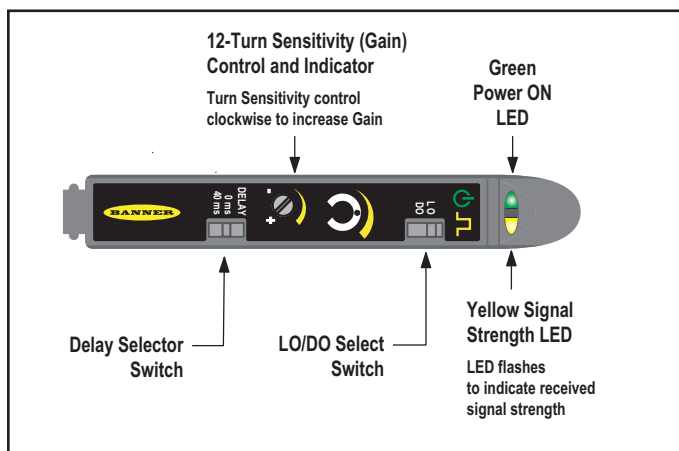


Figure 1. D10 Bipolar Discrete sensor features

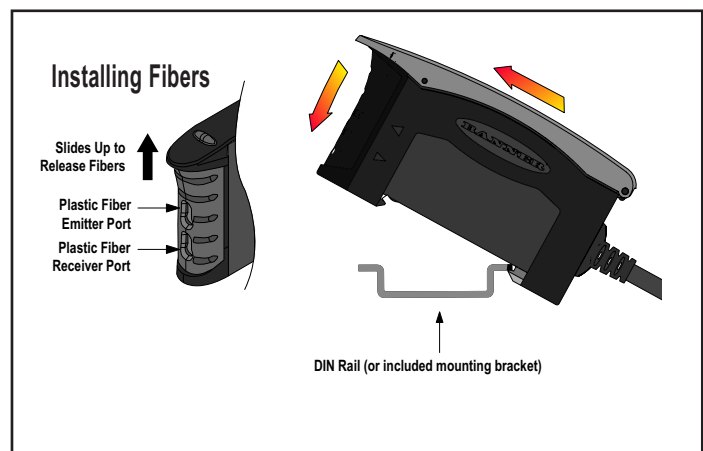
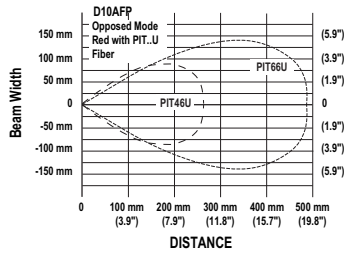
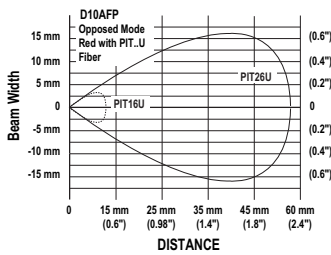
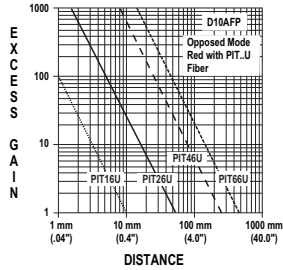


Figure 2. Installing D10 fibers and housing

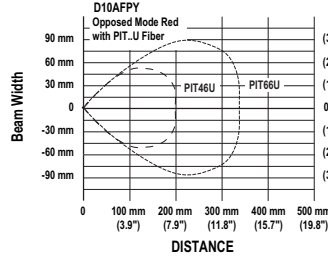
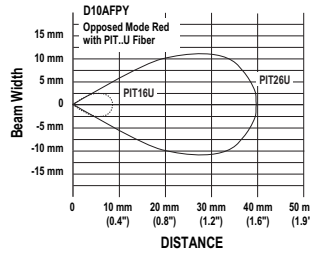
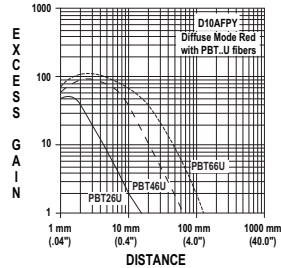
## Performance Curves

### Opposed Mode

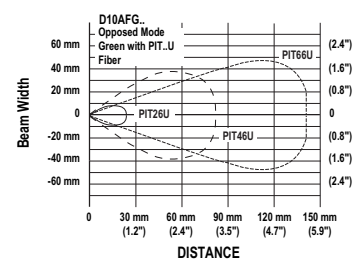
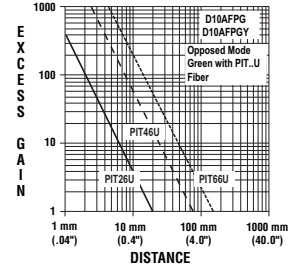
#### Red Beam Models



#### High-Speed Red Beam Models

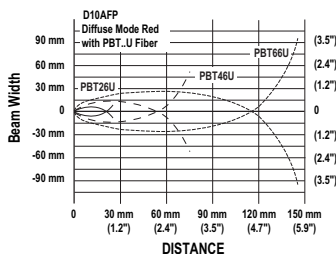
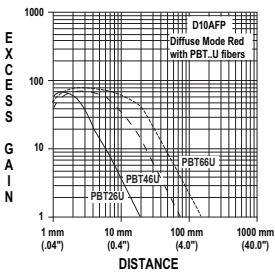


#### Green Beam Models

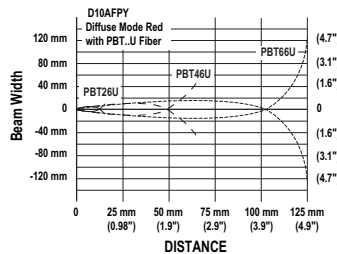
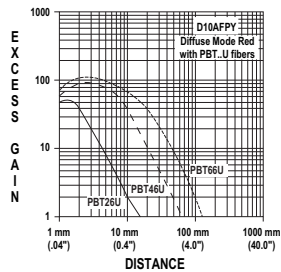


### Diffuse Mode

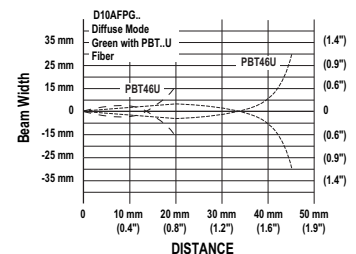
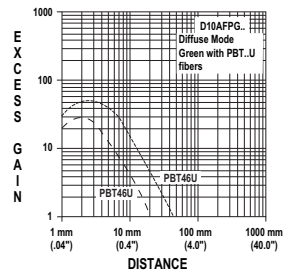
#### Red Beam Models



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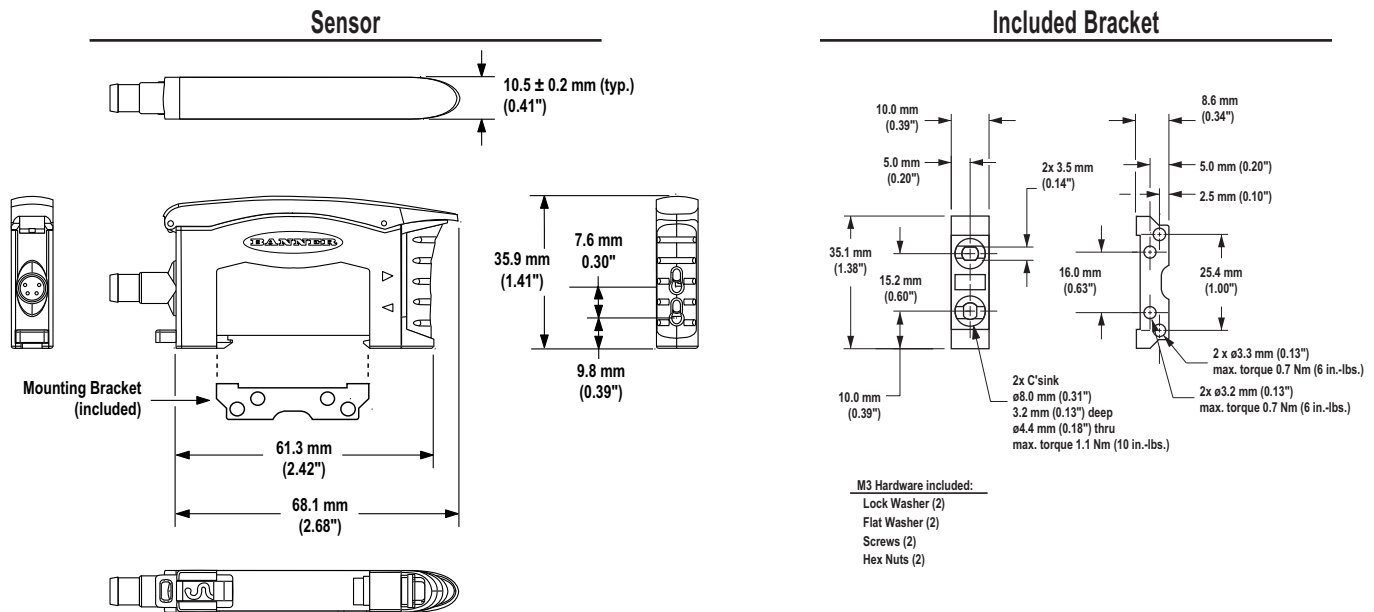


#### Green Beam Models



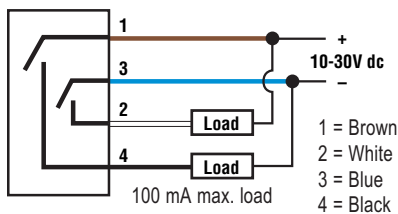
# D10 — Discrete Output

## Dimensions



## Hookups

### Cabled Models



NOTE: QD hookups are functionally identical.

## Accessories

### Quick-Disconnect Cordsets

Style	Model	Length	Dimensions	Pinout
4-pin Straight, Snap-on	PKG4-2	2 m (6.5')		
4-pin Right-angle, Snap-on	PKW4Z-2	2 m (6.5')		



**WARRANTY:** Banner Engineering Corp. warrants its products to be free from defects for one year. Banner Engineering Corp. 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.