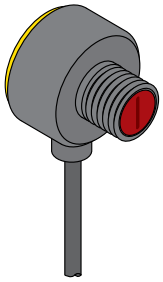
T8 Series Diffuse-Mode Sensors

Datasheet

Miniature self-contained sensors



- Extremely small package self-contained miniature sensors
- 10 V DC to 30 V DC operation
- Visible red sensing beam
- Choose dark or light operate models
- Choose models with NPN or PNP output
- 3-wire hookup; output load capacity to 50 mA
- Choice of integral cable or quick-disconnect connector

WARNING:
- **Do not use this device for personnel protection**
- Using this device for personnel protection could result in serious injury or death.
- This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A device failure or malfunction can cause either an energized (on) or de-energized (off) output condition.

Models

Models[1]	Range	Cable	Supply Voltage	Output Type
T8AN6D50	50 mm (2 in)	2 m (6.5 ft)	10 V DC to 30 V DC	NPN Light Operate
T8AN6D50Q		150 mm (6 in) PVC cable with a 3-pin M8/Pico-style male quick disconnect		
T8RN6D50		2 m (6.5 ft)		NPN Dark Operate
T8RN6D50Q		150 mm (6 in) PVC cable with a 3-pin M8/Pico-style male quick disconnect		
T8AP6D50		2 m (6.5 ft)		PNP Light Operate
T8AP6D50Q		150 mm (6 in) PVC cable with a 3-pin M8/Pico-style male quick disconnect		
T8RP6D50		2 m (6.5 ft)		PNP Dark Operate
T8RP6D50Q		150 mm (6 in) PVC cable with a 3-pin M8/Pico-style male quick disconnect		
T8AN6D100	100 mm (4 in)	2 m (6.5 ft)		NPN Light Operate
T8AN6D100Q		150 mm (6 in) PVC cable with a 3-pin M8/Pico-style male quick disconnect		
T8RN6D100		2 m (6.5 ft)		NPN Dark Operate
T8RN6D100Q		150 mm (6 in) PVC cable with a 3-pin M8/Pico-style male quick disconnect		
T8AP6D100		2 m (6.5 ft)		PNP Light Operate
T8AP6D100Q		150 mm (6 in) PVC cable with a 3-pin M8/Pico-style male quick disconnect		
T8RP6D100		2 m (6.5 ft)		PNP Dark Operate
T8RP6D100Q		150 mm (6 in) PVC cable with a 3-pin M8/Pico-style male quick disconnect		

Overview

T8 Series self-contained miniature sensors are designed for precision sensing in small areas previously accessible only to remote sensors and fiber optic cable. Typical applications include mounting on compact conveyors, packaging machines, circuit board and semi-conductor wafer handling equipment, document handling equipment, robot end-effectors, feeder bowls, between the rollers of narrow conveyors, or as replacements for damaged small-diameter inductive proximity sensors. The sensing range of the T8 is many times greater than that of the typical 8 mm diameter inductive sensor. And it provides a low-cost alternative to diffuse (bifurcated) fiber optic sensors.

[1] To order the 9 m (30 ft) PVC cable model, add the suffix "W/30" to the cabled model number. (for example, T8AN6D50 W/30). Models with a quick disconnect require a mating cordset.

Wiring

Quick disconnect wiring diagrams are functionally identical.

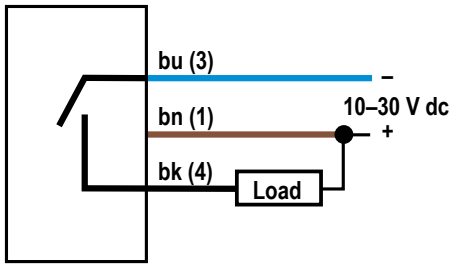


Figure 1. NPN Outputs

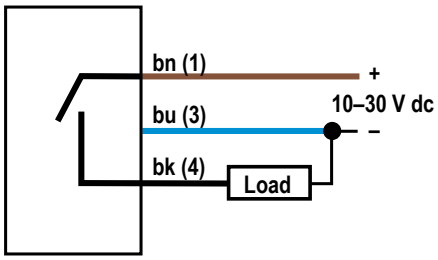
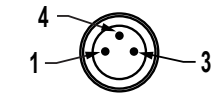


Figure 2. PNP Outputs



Key
1. Brown
3. Black
4. Blue

Specifications

Supply Voltage and Current
10 V DC to 30 V DC (10% maximum ripple) at less than 25 mA (exclusive of load)

Supply Protection Circuitry
Protected against reverse polarity and transient voltages

Output Configuration
SPST solid-state switch
Choose NPN or PNP models
Choose light operate (N.O.) or dark operate (N.C.) models

Output Rating
50 mA maximum
Off-state leakage current: < 1 microamp at 24 V DC
On-state saturation voltage: < 0.25 V at 10 mA DC; < 0.5 V at 50 mA DC

Output Protection Circuitry
Protected against output short-circuit, continuous overload, and false pulse on power-up
Overload trip point ≥ 100 mA

Output Response Time
1 millisecond ON and OFF

Note: 150 millisecond delay maximum on power-up: output does not conduct during this time

Repeatability
160 microseconds

Sensing Beam
Visible red, 680 nm

Indicator
Red LED: On when light is sensed

Construction
Reinforced polycarbonate/ABS alloy housing, acrylic window

Environmental Rating
IEC IP67; NEMA 6

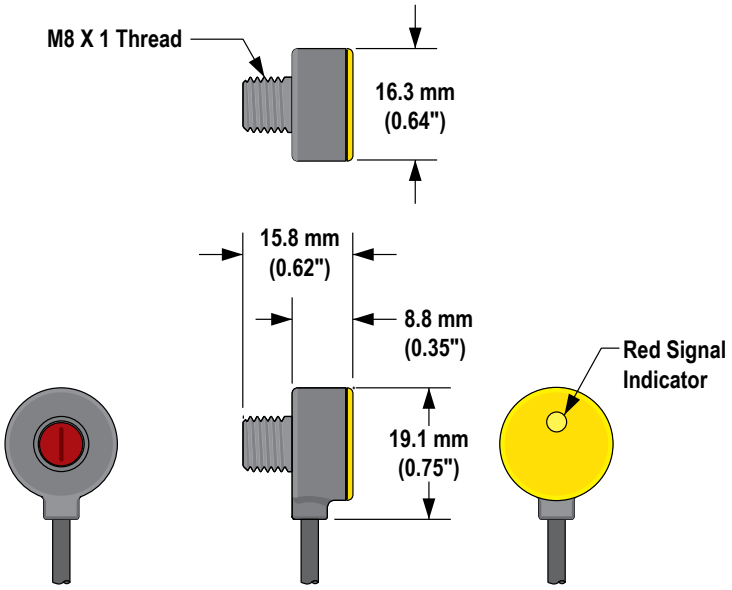
Connections
2 m (6.5 ft) unterminated 3-wire PVC-jacketed cable: three #28 ga stranded conductors with PE insulation; or 150 mm (6 in) PVC cable with a 3-pin M8/Pico-style male quick disconnect. Models with a quick disconnect require a mating cordset.

Operating Conditions
Temperature: –20 °C to +55 °C (–4 °F to +131°F)
80% at +50 °C maximum relative humidity (non-condensing)

Application Notes
Optional mounting bracket is available. Reinforced polycarbonate/ABS alloy 8 mm threaded nut (included).

Dimensions

All measurements are listed in millimeters [inches], unless noted otherwise.



Performance Curves

Beam Patterns

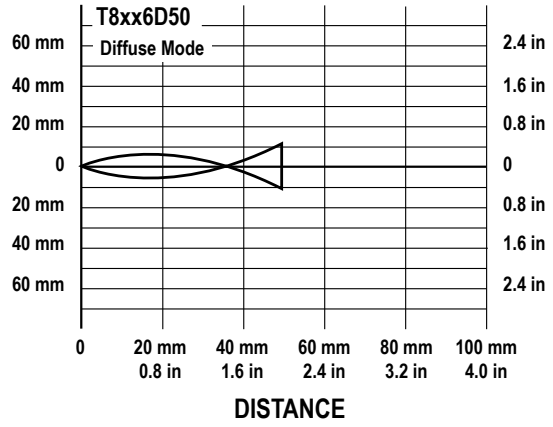


Figure 3. 50 mm Models

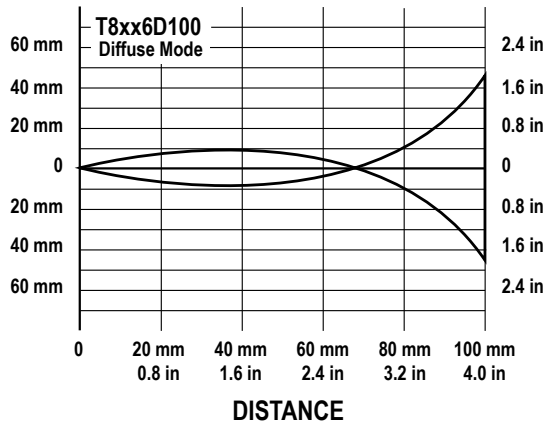


Figure 4. 100 mm Models

Excess Gain Curves

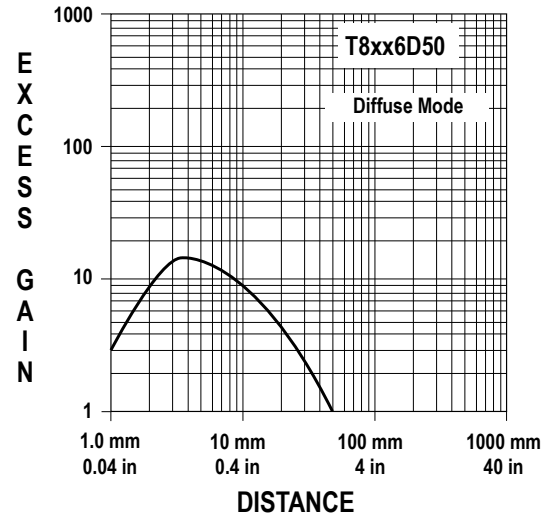


Figure 5. 50 mm Models

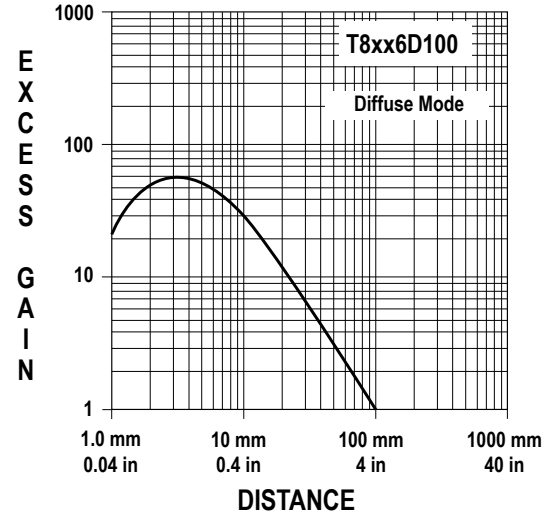
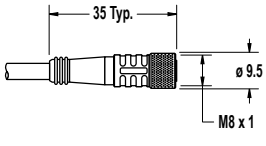
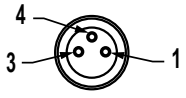


Figure 6. 100 mm Models

Accessories

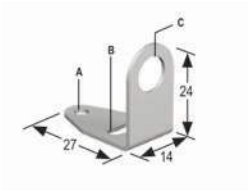
Cordsets

3-Pin Threaded M8/Pico-Style Cordsets				
Model	**Length**	**Style**	**Dimensions**	**Pinout (Female)**
PKG3M-2	2.035 m (6.68 ft)	Straight		 1 = Brown 3 = Blue 4 = Black
PKG3M-5	5.035 m (16.51 ft)			
PKG3M-7	7.035 m (23.08 ft)			
PKG3M-9	9.035 m (29.64 ft)			
PKG3M-10	10.035 m (32.92 ft)			

Bracket

SMB8MM

- Right-angle bracket
- 300 series stainless steel



Banner Engineering Corp. Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. **IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.**

Banner Engineering Corp. reserves the right to change, modify or improve the design of the product without assuming any obligations or liabilities relating to any product previously manufactured by Banner Engineering Corp. Any misuse, abuse, or improper application or installation of this product or use of the product for personal protection applications when the product is identified as not intended for such purposes will void the product warranty. Any modifications to this product without prior express approval by Banner Engineering Corp will void the product warranties. All specifications published in this document are subject to change; Banner reserves the right to modify product specifications or update documentation at any time. Specifications and product information in English supersede that which is provided in any other language. For the most recent version of any documentation, refer to: www.bannerengineering.com.

For patent information, see www.bannerengineering.com/patents.