# T30 DC-Voltage Sensor Quick Start Guide

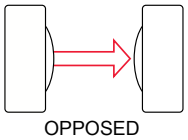
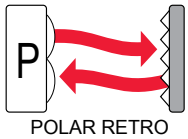
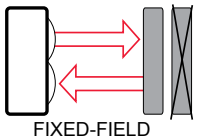
## Features



For complete technical information about this product, including installation instructions, application requirements and guidelines, technical specifications, and accessories, go to www.bannerengineering.com and search for 121524.

**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

| Sensing Mode | Model | Output | Range | Connection |
|---|---|---|---|---|
|  OPPOSED | T306E | - | 60 m (196.8 ft) | 2 m (6.5 ft) cable |
| | T306E W/30 | - | | 9 m cable |
| | T306EQ | - | | 4-pin M12 quick disconnect (QD) |
| | T30SN6R | NPN | | 2 m (6.5 ft) cable |
| | T30SN6R W/30 | NPN | | 9 m cable |
| | T30SN6RQ | NPN | | 4-pin M12 QD |
| | T30SP6R | PNP | | 2 m (6.5 ft) cable |
| | T30SP6R W/30 | PNP | | 9 m cable |
| | T30SP6RQ | PNP | | 4-pin M12 QD |
|  POLAR RETRO | T30SN6LP | NPN | 6 m (19.7 ft) | 2 m (6.5 ft) cable |
| | T30SN6LPQ | NPN | | 4-pin M12 QD |
| | T30SP6LP | PNP | | 2 m (6.5 ft) cable |
| | T30SP6LP W/30 | PNP | | 9 m cable |
| | T30SP6LPQ | PNP | | 4-pin M12 QD |
|  FIXED-FIELD | T30SN6FF200 | NPN | 200 mm (7.9 in) cutoff | 2 m (6.5 ft) cable |
| | T30SN6FF200 W/30 | NPN | | 9 m cable |
| | T30SN6FF200Q | NPN | | 4-pin M12 QD |
| | T30SP6FF200 | PNP | | 2 m (6.5 ft) cable |
| | T30SP6FF200 W/30 | PNP | | 9 m cable |
| | T30SP6FF200Q | PNP | | 4-pin M12 QD |
| | T30SN6FF400 | NPN | 400 mm (15.7 in) cutoff | 2 m (6.5 ft) cable |
| | T30SN6FF400Q | NPN | | 4-pin M12 QD |
| | T30SP6FF400 | PNP | | 2 m (6.5 ft) cable |
| | T30SP6FF400 W/30 | PNP | | 9 m cable |
| | T30SP6FF400Q | PNP | | 4-pin M12 QD |
| | T30SN6FF600 | NPN | 600 mm (23.6 in) cutoff | 2 m (6.5 ft) cable |
| | T30SN6FF600Q | NPN | | 4-pin M12 QD |
| | T30SP6FF600 | PNP | | 2 m (6.5 ft) cable |
| | T30SP6FF600 W/30 | PNP | | 9 m cable |
| | T30SP6FF600Q | PNP | | 4-pin M12 QD |

Integral 2 m (6.5 ft) unterminated cable models are listed. Models with a quick disconnect require a mating cordset.

## Wiring Diagrams

In light operate (LO) mode, the output is ON when the target returns the same or more light to the sensor and OFF when the sensor detects less light than the configured/taught target. In **opposed and retroreflective sensing modes**, light operate is active when the beam is unblocked. In **diffuse, fixed field, and adjustable field sensor modes**, light operate is active when the target is present.

In dark operate (DO) mode, the output is ON when the target returns less light to the sensor than the configured target and OFF when the sensor detects more light than the configured/taught target. In **opposed and retroreflective sensing modes**, dark operate is active when the beam is blocked. In **diffuse, fixed field, and adjustable field sensor modes**, dark operate is active when the target is absent.

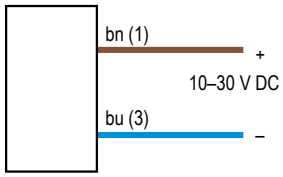
Original Instructions
22-Jul-26

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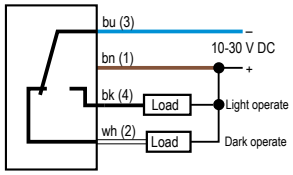
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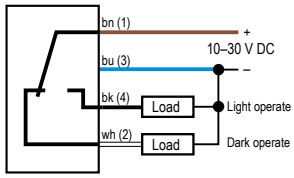
*Cabled emitters*




*NPN standard*

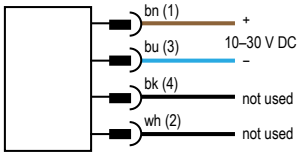



*PNP standard*

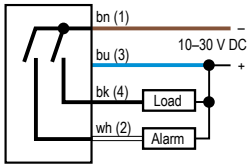



**Key:**
1 = Brown
2 = White
3 = Blue
4 = Black

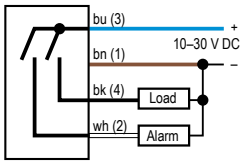
*Quick disconnect emitters*



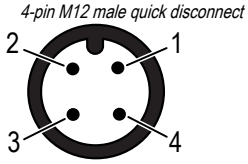

*NPN alarm*




*PNP alarm*




*4-pin M12 male quick disconnect*




## Specifications

**Supply Voltage and Current**

10 V DC to 30 V DC (10% maximum ripple)

Supply current (exclusive of load current):
Emitters, Non-Polarized, Retro: 25 mA
Receivers: 20 mA
Polarized Retroreflective: 30 mA
Fixed-Field: 35 mA

**Supply Protection Circuitry**

Protected against reverse polarity and transient voltages

**Output Protection Circuitry**

Protected against output short-circuit, continuous overload, and false pulse on power-up

**LED**

Opposed mode models: Infrared, 950 nm

Polarized retroreflective mode models: Visible red, 680 nm

Fixed-field mode models: Infrared, 880 nm

**Output Configuration**

SPDT solid-state DC switch; NPN or PNP outputs, depending on model

Light Operate: Normally open output conducts when sensor sees its own (or the emitter's) modulated light

Dark Operate: Normally closed output conducts when the sensor sees dark; the normally closed output may be wired as a normally open marginal signal alarm output, depending on wiring to power supply

**Output Rating**

150 mA maximum each

When wired for alarm output, the total load may not exceed 150 mA

OFF-state leakage current: < 1 µA at 30 V DC

ON-state saturation voltage: < 1 V at 10 mA DC; < 1.5 V at 150 mA DC

**Connections**

2 m (6.5 ft), 9 m (30 ft) integral PVC cable, or Integral 4-pin M12 male quick-disconnect connector, depending on your model

**Output Response Time**

Opposed mode: 3 ms ON, 1.5 ms OFF

Retro, Fixed-Field and Diffuse: 3 ms ON and OFF

**NOTE:** 100 ms delay on power-up; outputs do not conduct during this time

**Repeatability**

Opposed mode: 375 µs

Retro, Fixed-Field and Diffuse: 750 µs

Repeatability and response are independent of signal strength

**Indicators**

Two LEDs (Green and Amber)

**Green ON steady:** power to sensor is ON

**Green flashing:** output is overloaded

**Amber ON steady:** N.O. output is conducting

**Amber flashing:** excess gain marginal (1 to 1.5 times) in light condition

**Construction**

Housing: PBT polyester

Lens: Polycarbonate (opposed-mode) or acrylic

**Environmental Rating**

Leakproof design rated IP69K per ISO 20653

**Operating Conditions**

**Temperature:** –40 °C to +70 °C (–40 °F to +158 °F)

**Humidity:** 90% at +50 °C maximum relative humidity (non-condensing)

**Vibration and Mechanical Shock**

All models meet MIL-STD-202F, Method 201A (Vibration: 10 Hz to 60 Hz maximum, 0.06 inch (1.52 mm) double amplitude, 10G acceleration) requirements. Method 213B conditions H&I. (Shock: 75G with device operating; 100G for non-operation)

**Certifications**

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Park Lane, Culliganlaan 2F bus 3
1831 Diegem, BELGIUM

Turck Banner LTD Blenheim House
Blenheim Court
Wickford, Essex SS11 8YT
GREAT BRITAIN

**Required Overcurrent Protection**

**WARNING:** Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.

Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

Supply wiring leads < 24 AWG shall not be spliced.

For additional product support, go to www.bannerengineering.com.

| Supply Wiring (AWG) | Required Overcurrent Protection (A) | Supply Wiring (AWG) | Required Overcurrent Protection (A) |
|---|---|---|---|
| 20 | 5.0 | 26 | 1.0 |
| 22 | 3.0 | 28 | 0.8 |
| 24 | 2.0 | 30 | 0.5 |

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