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T30 DC-Voltage Sensor Quick Start Guide

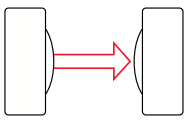
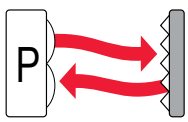
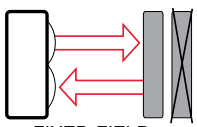
Features



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
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p/n: 116161 Rev. E

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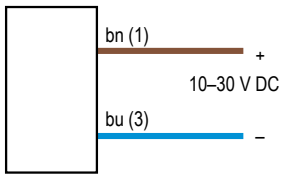
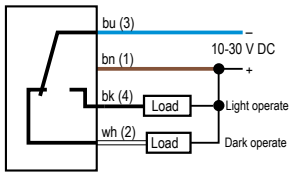
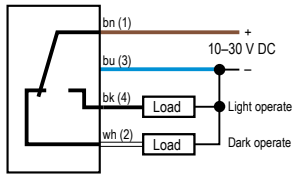
Cabled emitters



NPN standard

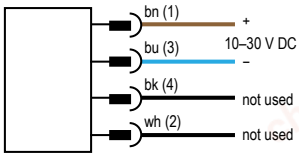


PNP standard

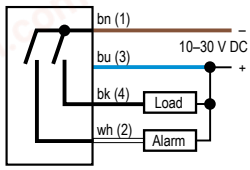


Key:
1 = Brown
2 = White
3 = Blue
4 = Black

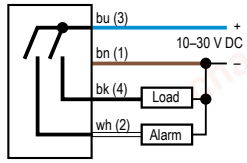
Quick disconnect emitters



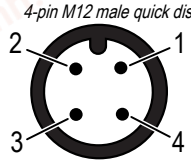
NPN alarm



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

Banner Engineering BV
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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