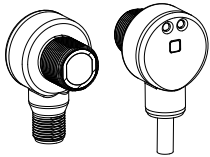


Installation Guide

View or download additional Information on this product, including excess gain curves, beam patterns, and accessories, at www.bannerengineering.com/155853.



WARNING: Not To Be Used for Personnel Protection

Never use this device as a sensing device for personnel protection. Doing so could lead to serious injury or death. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

Models					
Opposed Mode: 20 m Range		Polarized: 5.5 m* Range		Diffuse: 500 mm Range	
Model Number	Output	Model Number	Output	Model Number	Output
TM186E	None	TM18AP6LP	PNP, LO 3-wire	TM18AP6DV	PNP, LO 3-wire
TM18AP6R	PNP, LO 3-wire	TM18RP6LP	PNP, DO 3-wire	TM18RP6DV	PNP, DO 3-wire
TM18RP6R	PNP, DO 3-wire	TM18VP6LP	PNP, LO/DO 4-wire	TM18VP6DV	PNP, LO/DO 4-wire
TM18VP6R	PNP, LO/DO 4-wire	TM18AN6LP	NPN, LO 3-wire	TM18AN6DV	NPN, LO 3-wire
TM18AN6R	NPN, LO 3-wire	TM18RN6LP	NPN, DO 3-wire	TM18RN6DV	NPN, DO 3-wire
TM18RN6R	NPN, DO 3-wire	TM18VN6LP	NPN, LO/DO 4-wire	TM18VN6DV	NPN, LO/DO 4-wire
TM18VN6R	NPN, LO/DO 4-wire	* Range specified with BRT-84 reflector		QD Models are also available	

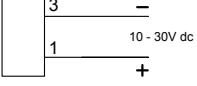
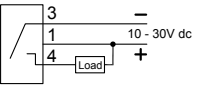
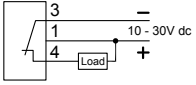
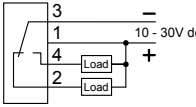
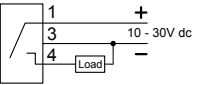
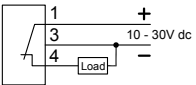
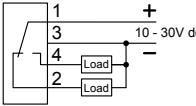
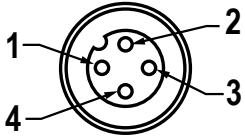
Fixed Field: 25 mm Range		Fixed Field: 50 mm Range		Fixed Field: 100 mm Range	
Model Number	Output	Model Number	Output	Model Number	Output
TM18AP6FF25	PNP, LO 3-wire	TM18AP6FF50	PNP, LO 3-wire	TM18AP6FF100	PNP, LO 3-wire
TM18VP6FF25	PNP, LO/DO 4-wire	TM18VP6FF50	PNP, LO/DO 4-wire	TM18VP6FF100	PNP, LO/DO 4-wire
TM18AN6FF25	NPN, LO 3-wire	TM18AN6FF50	NPN, LO 3-wire	TM18AN6FF100	NPN, LO 3-wire
TM18VN6FF25	NPN, LO/DO 4-wire	TM18VN6FF50	NPN, LO/DO 4-wire	TM18VN6FF100	NPN, LO/DO 4-wire

Fixed Field: 25 mm Range		Fixed Field: 50 mm Range		Fixed Field: 100 mm Range	
Model Number	Output	Model Number	Output	Model Number	Output
TM18AP6FF25IR	PNP, LO 3-wire	TM18AP6FF50IR	PNP, LO 3-wire	TM18AP6FF100IR	PNP, LO 3-wire
TM18VP6FF25IR	PNP, LO/DO 4-wire	TM18VP6FF50IR	PNP, LO/DO 4-wire	TM18VP6FF100IR	PNP, LO/DO 4-wire
TM18AN6FF25IR	NPN, LO 3-wire	TM18AN6FF50IR	NPN, LO 3-wire	TM18AN6FF100IR	NPN, LO 3-wire
TM18VN6FF25IR	NPN, LO/DO 4-wire	TM18VN6FF50IR	NPN, LO/DO 4-wire	TM18VN6FF100IR	NPN, LO/DO 4-wire

To order the 9 m (30 ft) cable model, add suffix "W/30" to the cabled model number. For example, "TM186E W/30". To order the 4-pin Euro M12 integral QD models, add suffix Q8 (for example, TM186EQ8). To order the 4-pin Euro M12 pigtail QD models: add suffix Q5 (for example, TM186EQ5).



Wiring

<p>Emitter</p> 	<p>NPN L.O. 3-Wire</p> 	<p>NPN D.O. 3-Wire</p> 	<p>NPN L.O./D.O. 4-Wire</p> 
	<p>PNP L.O. 3-Wire</p> 	<p>PNP D.O. 3-Wire</p> 	<p>PNP L.O./D.O. 4-Wire</p> 
<p>QD and cabled emitter wiring functionality is identical; black and white wires have no connection when not shown.</p>			<p>Wiring Key</p> <ul style="list-style-type: none"> 1 = Brown 2 = White 3 = Blue 4 = Black

Specifications

Supply Voltage and Current - Class 2

10 to 30 V dc (10% max. ripple within specified limits); supply current (exclusive of load current):
 Emitters: 25 mA
 Receivers: 20 mA
 Polarized Retroreflective: 20 mA
 Diffuse and Fixed-Field: 35 mA

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Effective Beam

13 mm for opposed mode sensors

Adjustments

Diffuse models only: single turn rear panel sensitivity control

Indicators

Two LEDs (Green and Amber)

Complementary (4-Wire) Models	
Indicator	Description
Green ON Solid	Power ON
Green Flashing*	Output is overloaded
Amber ON Solid	N.O. Output is conducting
Amber Flashing*	Marginal excess gain (1 to 1.5x)

* Not valid for Diffuse or Fixed Field Models.

Single Output (3-Wire) Models	
Indicator	Description
Green ON Solid	Power ON
Green Flashing	N.A.
Amber ON Solid	Output is conducting
Amber Flashing	N.A.

Construction

Housing: Zinc die cast with nickel plating
 Lens: PMMA or PC (opposed mode only)
 Black Cover: PBT polyester housing

Connections

2 m (6.5 ft) or 9 m (30 ft) PVC attached cable
 4-pin M12 Euro style integral QD
 4-pin M12 Euro style PVC pigtail QD

Output Configuration

NPN (current sinking) or PNP (current sourcing), depending on model
 Light Operate: Output conducts when sensor receives its own (or the emitter's) modulated light
 Dark Operate: Output conducts when sensor does not receive its own (or the emitter's) modulated light

Output Rating

150 mA maximum each output at 25 °C, derated to 100 mA at 70 °C (derate about 1 mA per °C)
 OFF-state leakage current: < 1 microamp at 30 V dc
 ON-state saturation voltage: < 1 V at 10 mA dc; < 1.5 V at 150 mA dc

Output Protection Circuitry

Protected against false pulse on power-up and continuous overload or short circuit of outputs

Output Response Time (TM18)

Opposed mode: 1.5 ms ON, 0.75 ms OFF
 Retro: 3 ms ON and OFF
 Diffuse and Fixed Field: 3 ms ON, 1.5 ms OFF
 Note: 100 ms delay on power-up; outputs do not conduct during this time.

Repeatability (TM18)

Opposed mode: 190 µs
 Retro: 585 µs
 Diffuse and Fixed Field: 185 µs

Environmental Rating

Leakproof design rated IP67, IP69K QD Models and cable models when PVC jacket is protected

Operating Conditions

Temperature: -40 to 70 °C (-40 to 158 °F)
 Relative humidity: 90% at 50 °C (non-condensing)

Vibration and Mechanical Shock

All models meet Mil. Std. 202F requirements. Method 201A (Vibration; frequency 10 to 60 Hz, max., double amplitude 0.06 in acceleration 10G). Method 213B conditions H&I (Shock: 75G with unit operating; 100G for non-operation)

Certifications

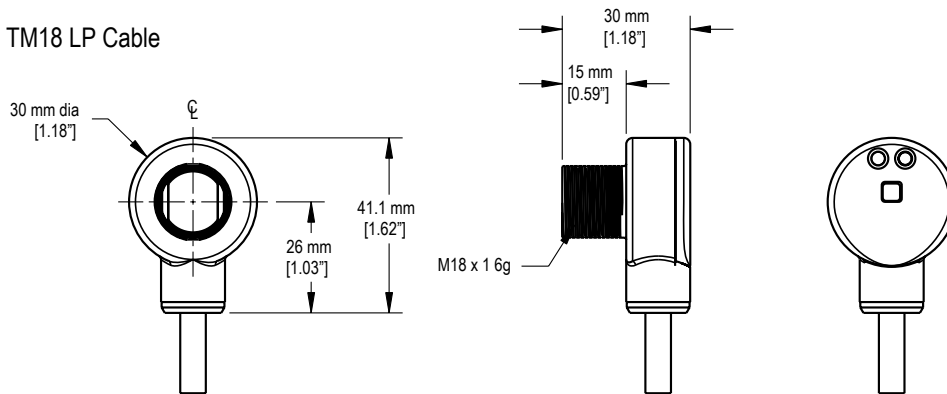


Class 2 supply Required;

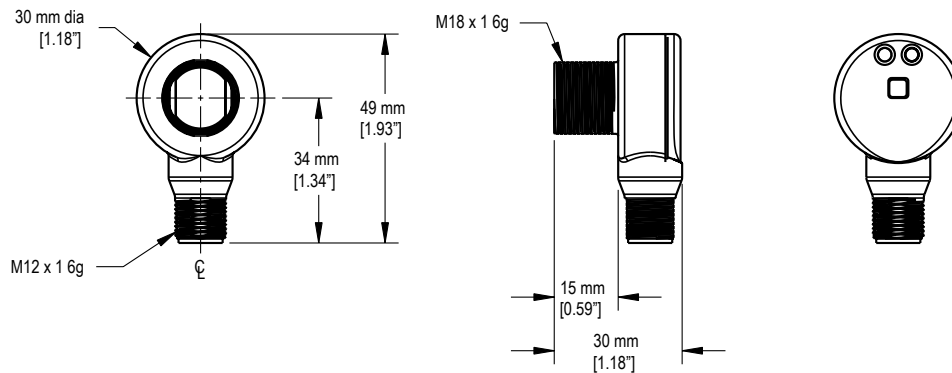


Dimensions

TM18 LP Cable



TM18 LP QD



Maximum Torque specification: 5.6 nm or 50 in-lbs. Lockwasher and M18 nut included.

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.

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