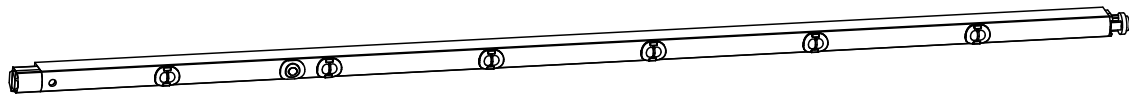


TTR Features



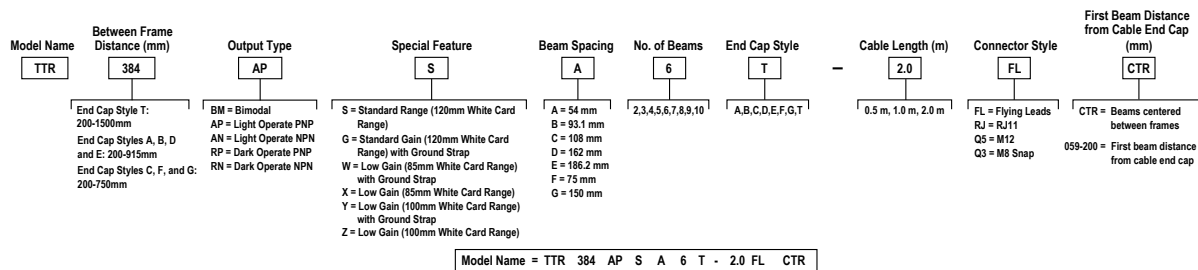
- Reliable leading-edge detection of letters, thin packages, poly bags, totes, boxes or other products on roller conveyors
- Mounts between conveyor roller gap to standard hex or round side rail holes with no extra hardware required or on the T-Slot with customer-supplied bracket and hardware
- Spring-loaded end caps reduce installation and alignment time for reduced labor costs
- Built to order with specified length and beam spacing: 200 mm to up to 1500 mm (8 in to up to 59 in) depending on mounting configuration, with 2 to 10 sensors for maximum flexibility
- Robust aluminum housing, ambient light and ESD resistance for enhanced durability

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.

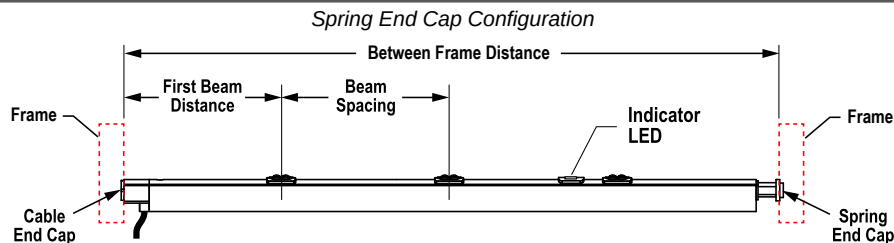
Models

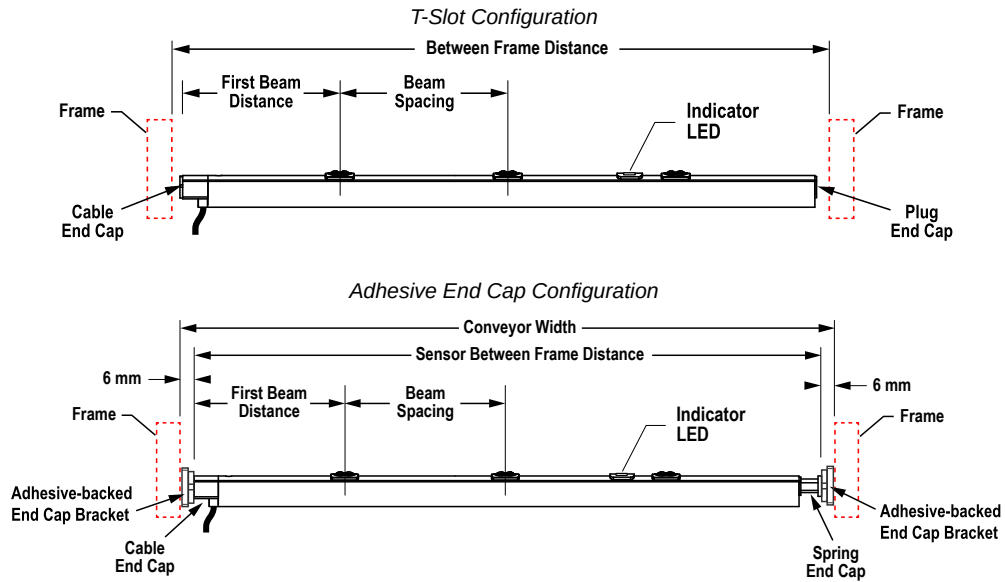


NOTE: For definition of the End Cap Styles, see "[Configurations](#)" on page 1.

NOTE: Sensors with more than 7 beams have higher minimum supply voltage requirements, see "[TTR Specifications](#)" on page 5.

Configurations





End Cap Styles

End Cap Style		End 1		End 2	
A	11 mm Hex, flat side up			Spring 11 mm hex / 8 mm round	
B	11 mm Hex, point up			Spring 11 mm hex / 8 mm round	
C	Adjustable 11 mm Hex, can be positioned in 10 degree increments			Spring 11 mm hex / 8 mm round	
D	11 mm Hex, flat side up			Spring 8 mm round	
E	11 mm Hex, point up			Spring 8 mm round	
F	Adjustable 11 mm Hex, can be positioned in 10 degree increments			Spring 8 mm round	
G	Adjustable 11 mm Hex, can be positioned in 10 degree increments / adhesive backed bracket			Spring 11 mm hex / 8 mm round / adhesive backed bracket	

Continued on page 3

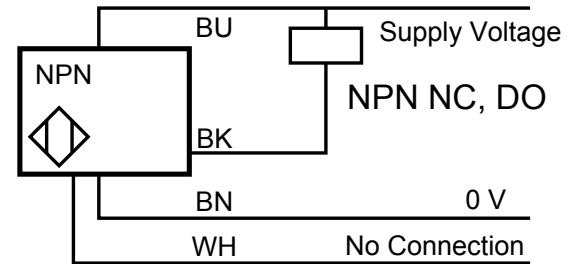
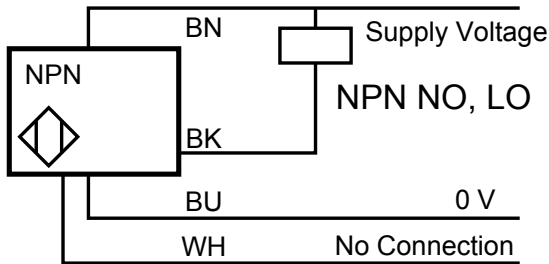
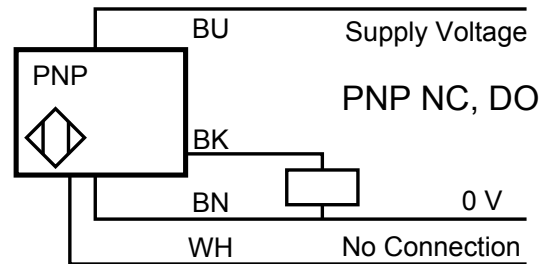
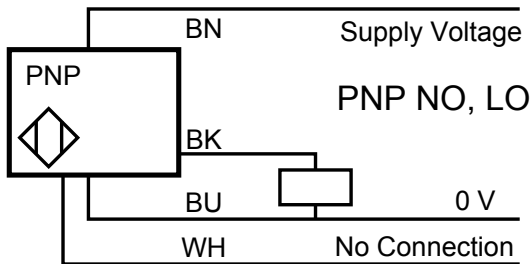
Continued from page 2

End Cap Style	End 1		End 2	
T	11 mm Hex, flat side up		Plug	

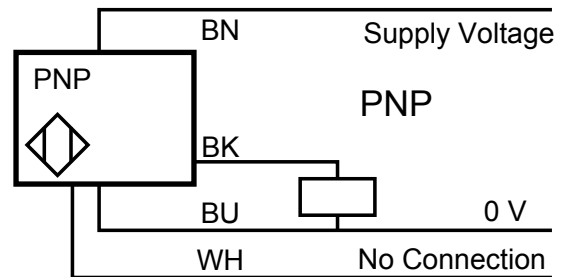
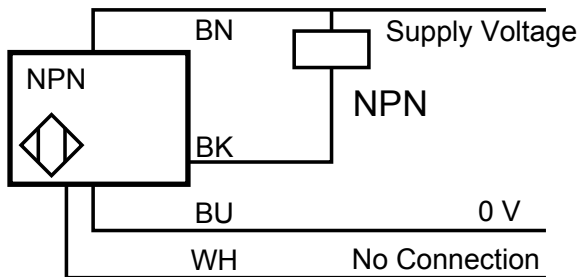
NOTE: T-Slot mounted sensors with the T End Cap Style are 6 mm shorter than the specified Between Frame Distance.

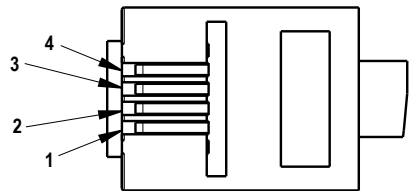
TTR Wiring

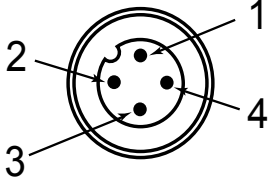
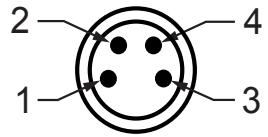
Bimodal output wiring diagrams



Fixed NPN and PNP output wiring diagrams: light and dark operate by model number

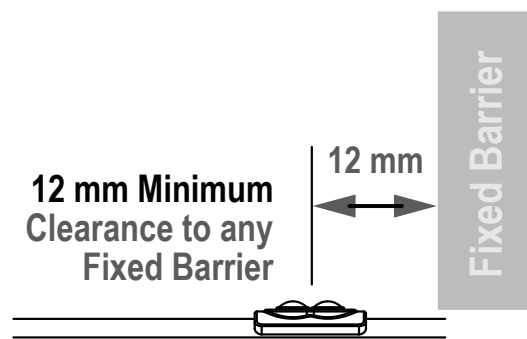
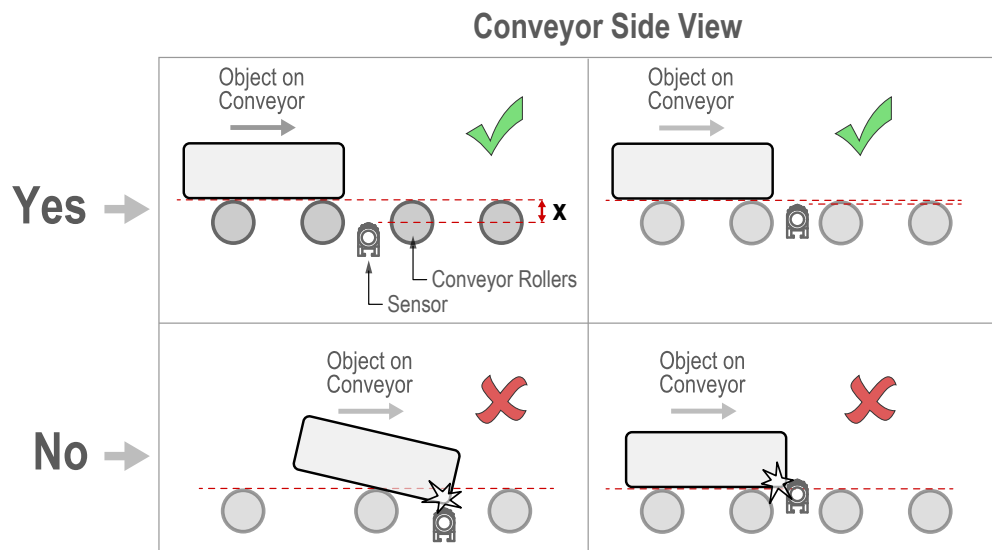


RJ-11 Pinout	RJ-11 Key
	<ol style="list-style-type: none"> 1. Brown 2. Black 3. White 4. Blue

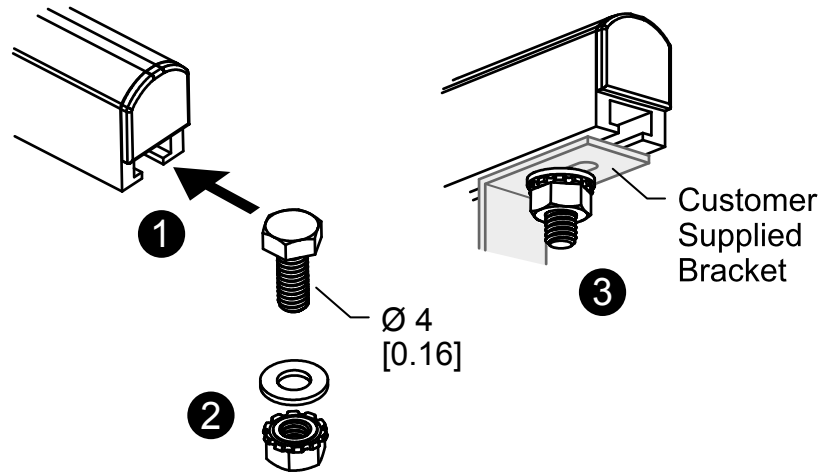
M12 Pinout (Male)	M12 Key
	<ul style="list-style-type: none"> 1. Brown 2. White 3. Blue 4. Black
M8 Snap Connector Pinout (Male)	M8 Key
	<ul style="list-style-type: none"> 1. Brown 2. White 3. Blue 4. Black

Installation

TTR Mounting Considerations



TTR T-Slot Installation



TTR Specifications

Supply Current

45 mA

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Wavelength

Infrared LED, 940 nm

Output Response

1 ms on/off

Indicators

Amber on: Light sensed

Sensing Mode

Diffuse, Infrared, 940 nm

Operating Conditions

-10 °C to +55 °C (+14 °F to +131 °F)

Environmental Rating

IP50

Output Configuration

Rating: 100 mA max output at 25 °C

Output Voltage High: Greater than $V_{supply} - 2.5 V$

Output Voltage Low: Less than 2.5 V

For loads less than 1 Meg Ohm

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

Vibration and Mechanical Shock

All models meet IEC 60068-2-6, IEC 60947-5-2, UL491 Section 40, MIL-STD-202F, Method 201A (Vibration: 10 Hz to 60 Hz, 0.5 mm peak-to-peak)

Shock: 30G 11 ms duration, half sine wave per IEC 60068-2-27

Certifications



Banner Engineering BV
Park Lane, Culliganlaan 2F bus 3
1831 Diegem, BELGIUM

Cable

Minimum static bend radius: 20 mm

Flex life > 10,000 cycles at flexing bend radius > 40 mm

Supply Voltage

Number of Sensing Beams	Supply Voltage with 10% Maximum Ripple
2, 3, 4, 5, 6, 7	18 V DC to 30 V DC
8	22 V DC to 30 V DC
9	24 V DC to 30 V DC
10	26 V DC to 30 V DC

Use only with a suitable Class 2 power supply (UL) or SELV power supply (CE)

Range

Special Feature Type	Range		
	90% White Card	18% Gray Card	6% Black Card
S and G	0 to ≥ 120 mm	0 to ≥ 50 mm	≤ 3 to ≥ 30 mm
Y and Z	0 to ≥ 100 mm	0 to ≥ 40 mm	≤ 4 to ≥ 25 mm
W and X	0 to ≥ 85 mm	0 to ≥ 35 mm	≤ 6 to ≥ 20 mm



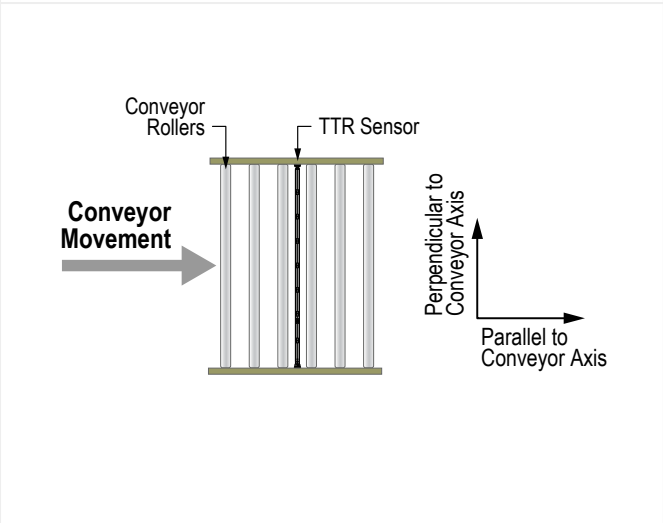
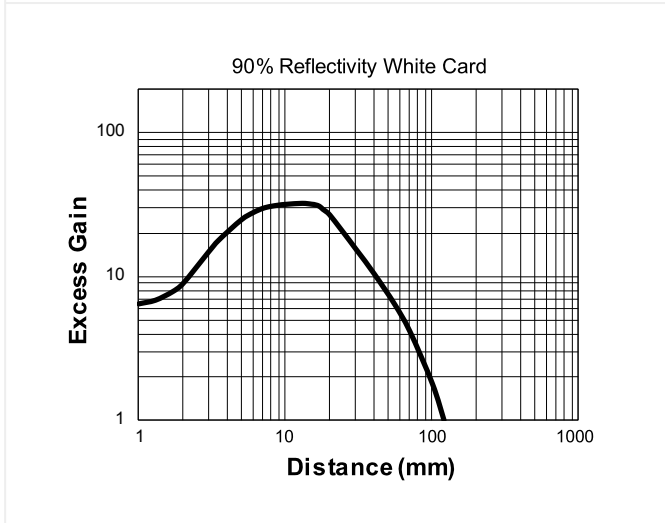
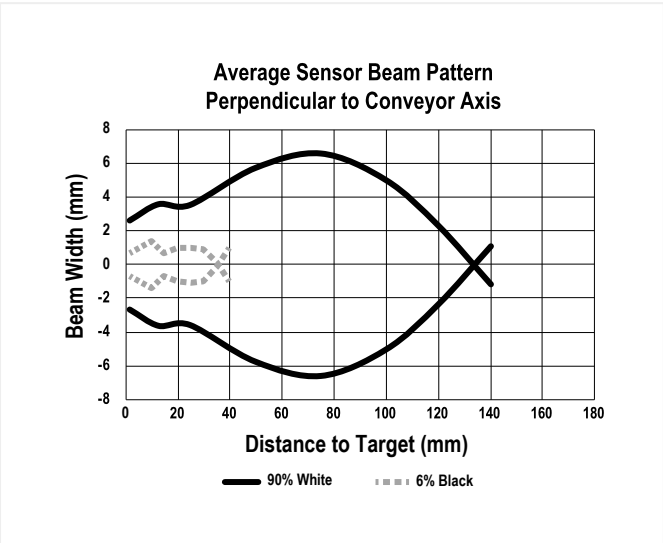
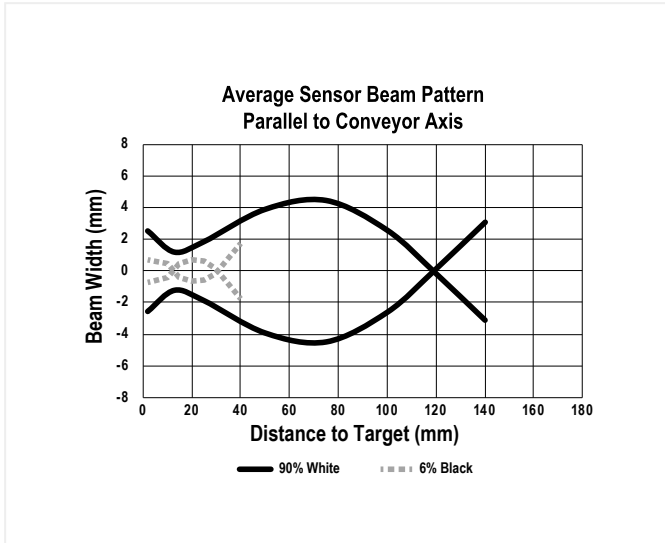
Turck Banner LTD Blenheim House
Blenheim Court
Wickford, Essex SS11 8YT
GREAT BRITAIN



IND. CONT. EQ.
E224071

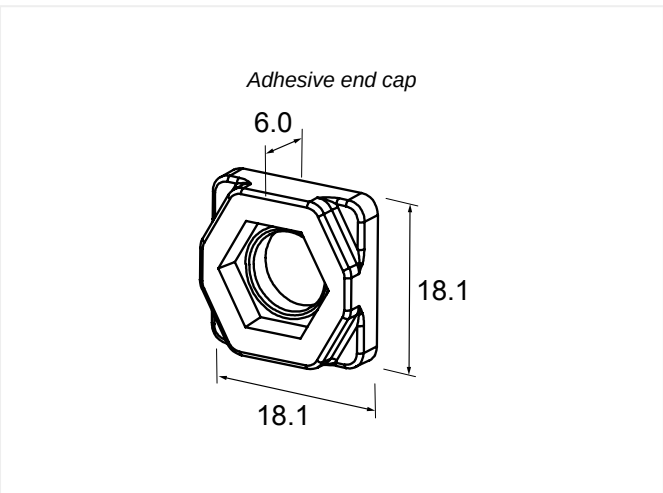
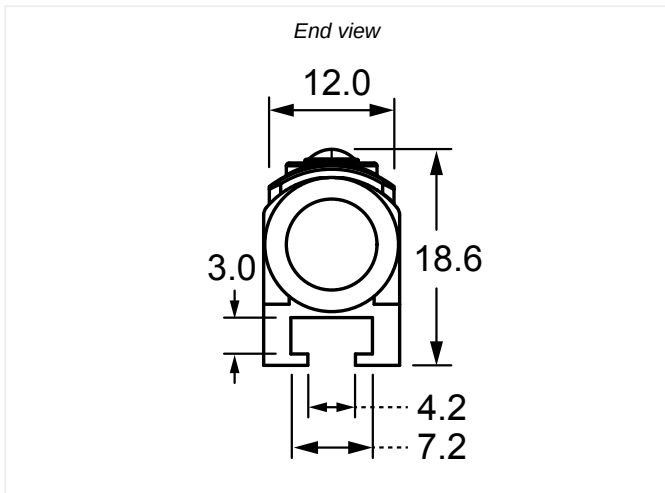
TTR Performance Curves

NOTE: The Beam Pattern and Excess Gain performance curve diagrams represent the Standard Gain (Special Feature S and G) models.



TTR Dimensions

All measurements are listed in millimeters, unless noted otherwise.



Accessories for the TTR Family

<p>TTR-HK1</p> <ul style="list-style-type: none"> • Hardware packet for T-style End-Cap TTRs • (2) M4 screws • (2) Hex nuts • (2) Lock washers 	<p>TTR-HK2</p> <ul style="list-style-type: none"> • Hardware packet for G-style End-Cap TTRs • (2) Adhesive-backed mounting brackets
<p>TTR-HK20</p> <ul style="list-style-type: none"> • Hardware packet for G-style End-Cap TTRs • (20) Adhesive-backed mounting brackets 	<p>Two adhesive-backed mounting brackets are included with each G-style sensor. Adhesive-backed mounting brackets are also compatible with A-, B-, or C-style sensors.</p>

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

Document title: Through the Roller (TTR) Sensor Family Datasheet

Part number: 216696

Revision: E

Original Instructions

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