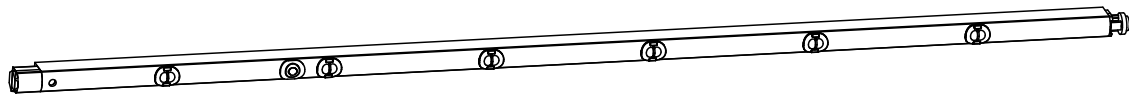


## TTR Features



- 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.

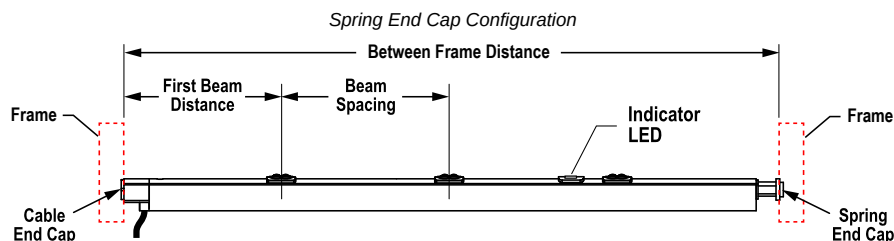
## Models

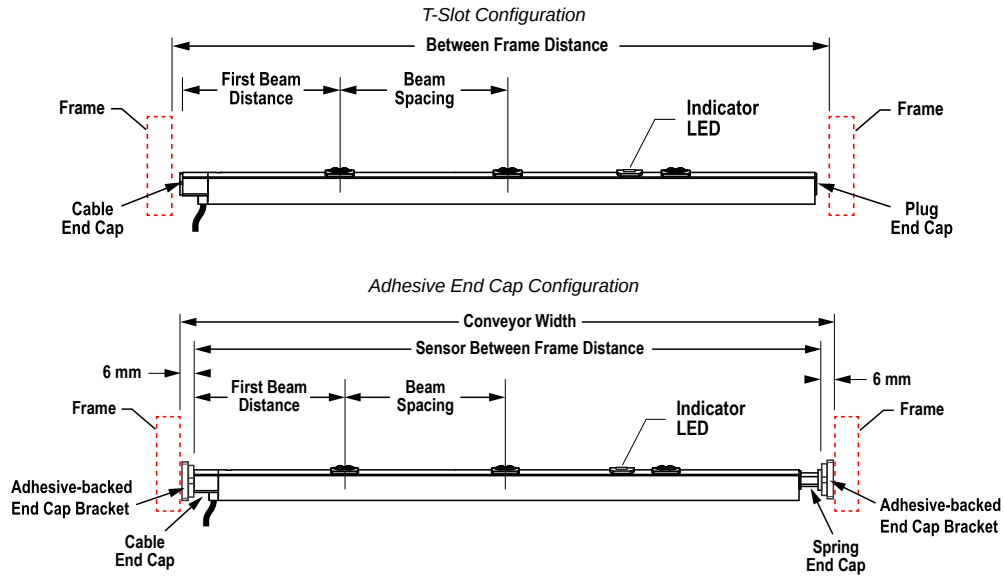
Model Name	Between Frame Distance (mm)	Output Type	Special Feature	Beam Spacing	No. of Beams	End Cap Style	Cable Length (m)	Connector Style	First Beam Distance from Cable End Cap (mm)
TTR	384	AP	S	A	6	T	2.0	FL	CTR
End Cap Style T: 200-1500mm End Cap Styles A, B, D and E: 200-915mm End Cap Styles C, F, and G: 200-750mm BM = Bimodal AP = Light Operate PNP AN = Light Operate NPN RP = Dark Operate PNP RN = Dark Operate NPN S = Standard Range (120mm White Card Range) G = Standard Gain (120mm White Card Range) with Ground Strap W = Low Gain (85mm White Card Range) with Ground Strap X = Low Gain (85mm White Card Range) Y = Low Gain (100mm White Card Range) with Ground Strap Z = Low Gain (100mm White Card Range) A = 54 mm B = 93.1 mm C = 108 mm D = 162 mm E = 186.2 mm F = 75 mm G = 150 mm 2,3,4,5,6,7,8,9,10 A,B,C,D,E,F,G,T 0.5 m, 1.0 m, 2.0 m FL = Flying Leads RJ = RJ11 Q5 = M12 Q3 = M8 Snap CTR = Beams centered between frames 059-200 = First beam distance from cable end cap									
Model Name = TTR 384 AP S A 6 T 2.0 FL CTR									

**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

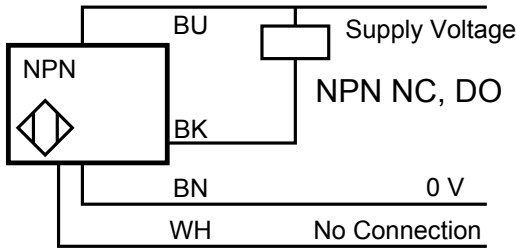
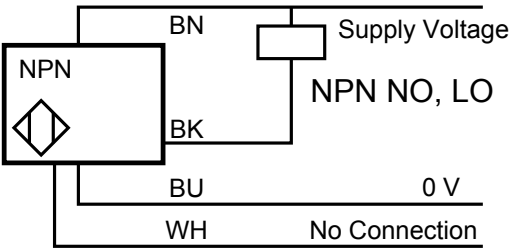
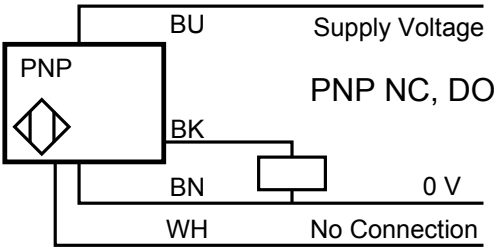
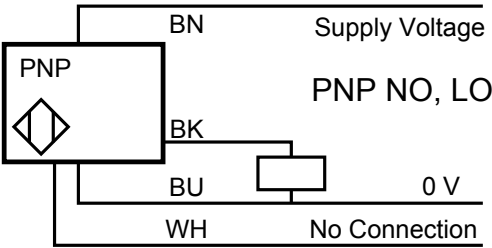
Continued from page 2

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

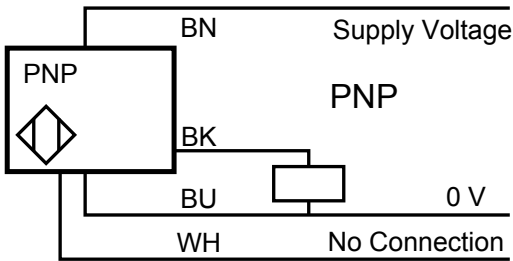
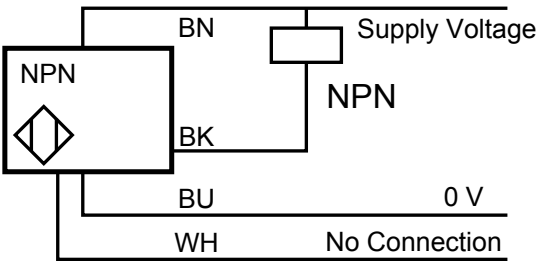
**NOTE:** T-Slot mounted sensors with the T End Cap Style are 6 mm shorter than the specified Between Frame Distance.

TTR Wiring

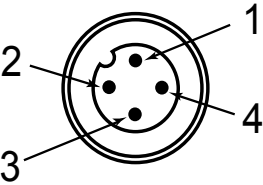
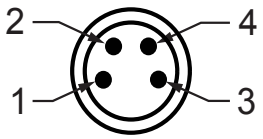
Bimodal output wiring diagrams



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

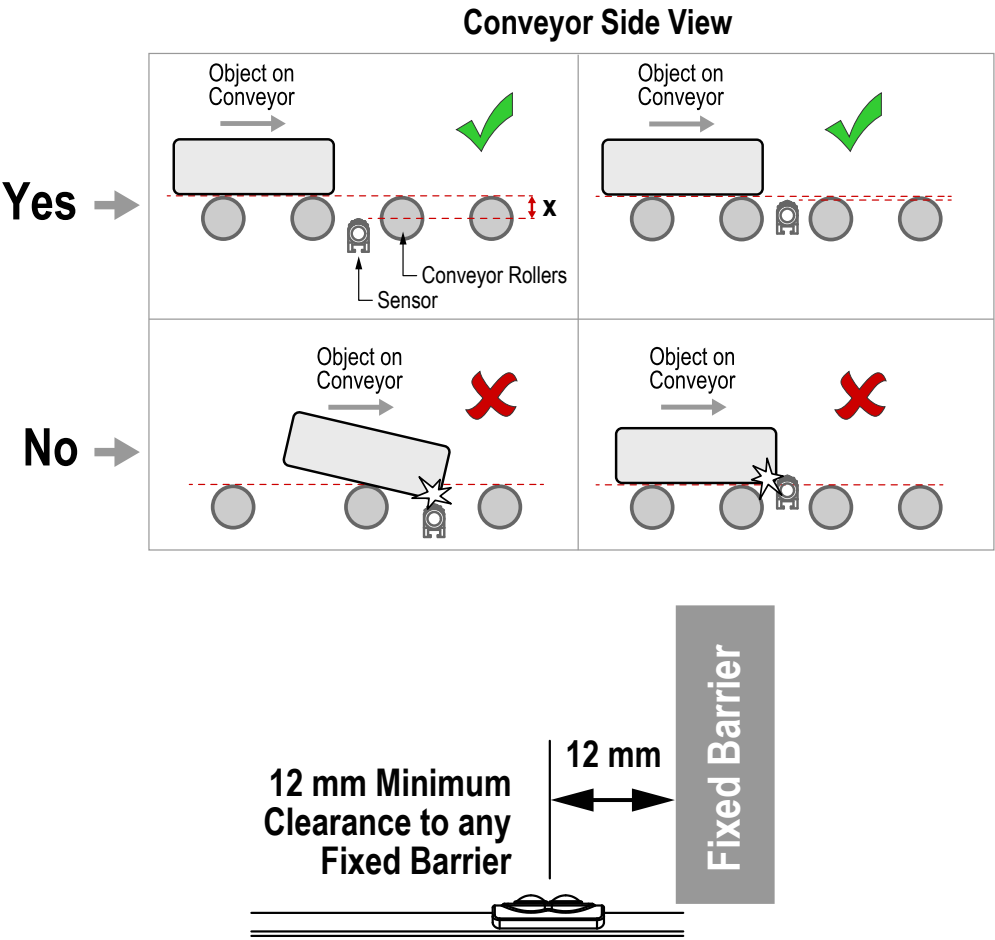


RJ-11 Pinout	RJ-11 Key
	<ul style="list-style-type: none"><li>1. Brown</li><li>2. Black</li><li>3. White</li><li>4. Blue</li></ul>

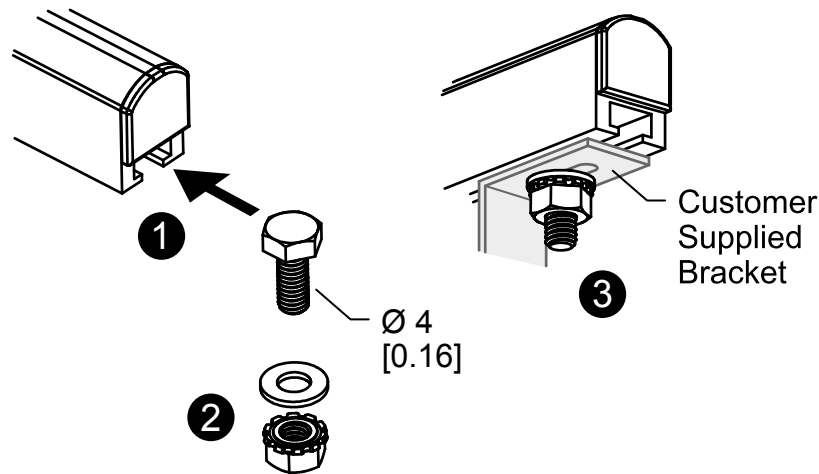
M12 Pinout (Male)	M12 Key
	<ul style="list-style-type: none"><li>1. Brown</li><li>2. White</li><li>3. Blue</li><li>4. Black</li></ul>
M8 Snap Connector Pinout (Male)	M8 Key
	<ul style="list-style-type: none"><li>1. Brown</li><li>2. White</li><li>3. Blue</li><li>4. Black</li></ul>

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 $\geq 120$ mm	0 to $\geq 50$ mm	$\leq 3$ to $\geq 30$ mm
Y and Z	0 to $\geq 100$ mm	0 to $\geq 40$ mm	$\leq 4$ to $\geq 25$ mm
W and X	0 to $\geq 85$ mm	0 to $\geq 35$ mm	$\leq 6$ to $\geq 20$ mm



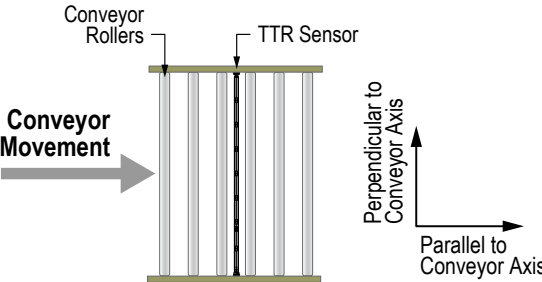
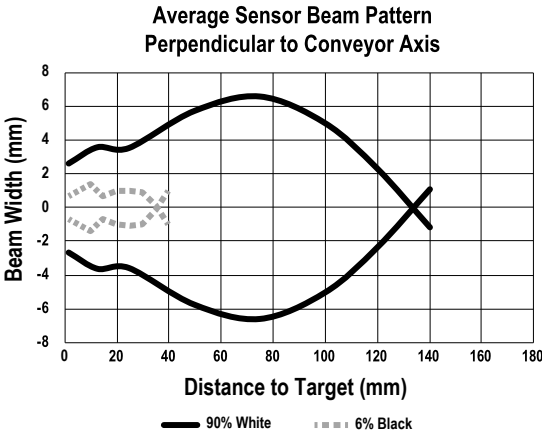
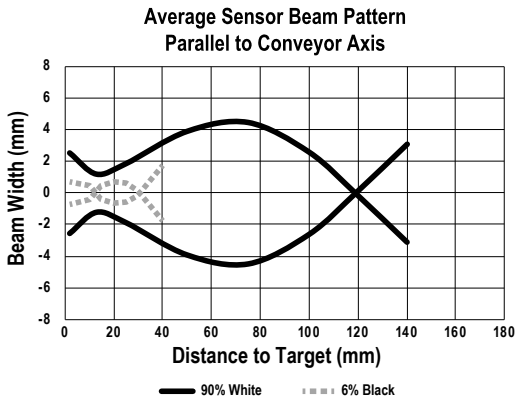
Turck Banner LTD Blenheim House  
Blenheim Court  
Wickford, Essex SS11 8YT  
GREAT BRITAIN



IND. CONT. EQ.  
E224071

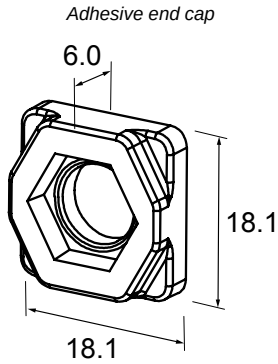
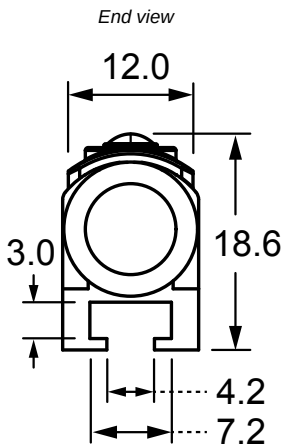
## TTR Performance Curves

**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

<b>TTR-HK1</b> <ul style="list-style-type: none"> <li>• Hardware packet for T-style End-Cap TTRs</li> <li>• (2) M4 screws</li> <li>• (2) Hex nuts</li> <li>• (2) Lock washers</li> </ul>	<b>TTR-HK2</b> <ul style="list-style-type: none"> <li>• Hardware packet for G-style End-Cap TTRs</li> <li>• (2) Adhesive-backed mounting brackets</li> </ul>
<b>TTR-HK20</b> <ul style="list-style-type: none"> <li>• Hardware packet for G-style End-Cap TTRs</li> <li>• (20) Adhesive-backed mounting brackets</li> </ul>	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.

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For patent information, see [www.bannerengineering.com/patents](http://www.bannerengineering.com/patents).

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

Part number: 216696

Revision: E

Original Instructions

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CTR-M8 TTR533APSC4D-2.0RJ-CTR TTR610APSB5D-2.0RJ-CTR