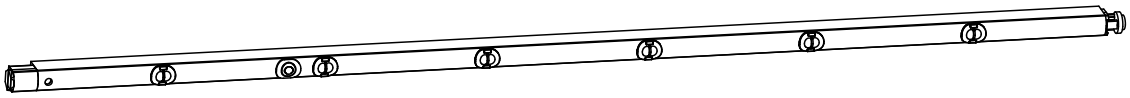
TTR Features



- 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

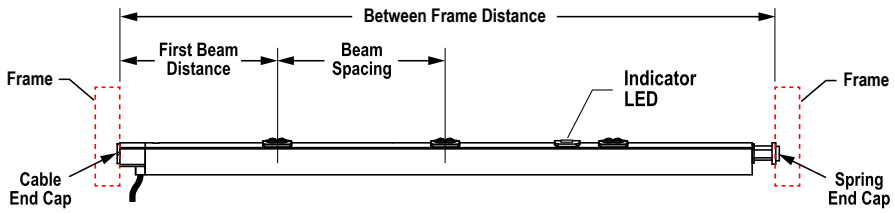
Model Name = TTR 384 AP S A 6 T - 2.0 FL CTR

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.

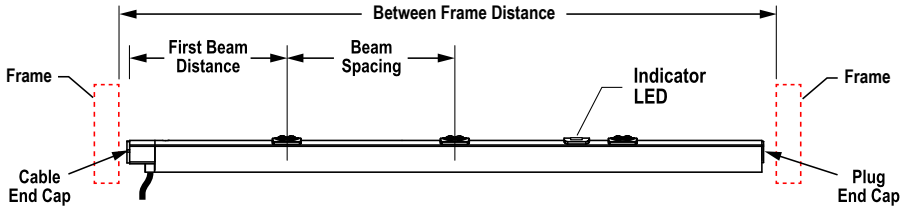
Configurations

Spring End Cap Configuration

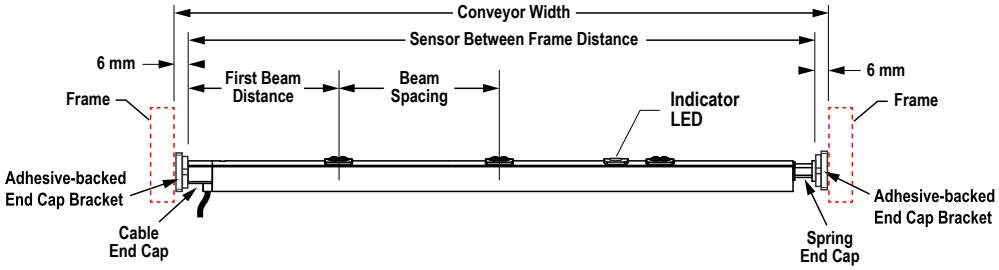


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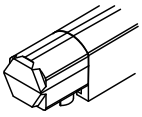
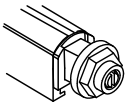
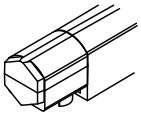
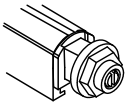
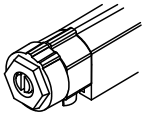
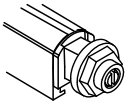
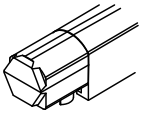
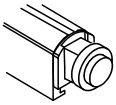
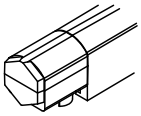
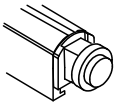
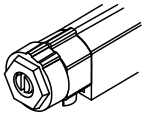
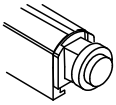
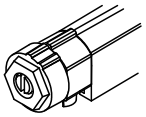
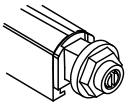
T-Slot Configuration



Adhesive End Cap Configuration



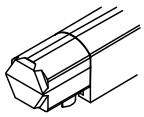
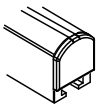
End Cap Styles

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

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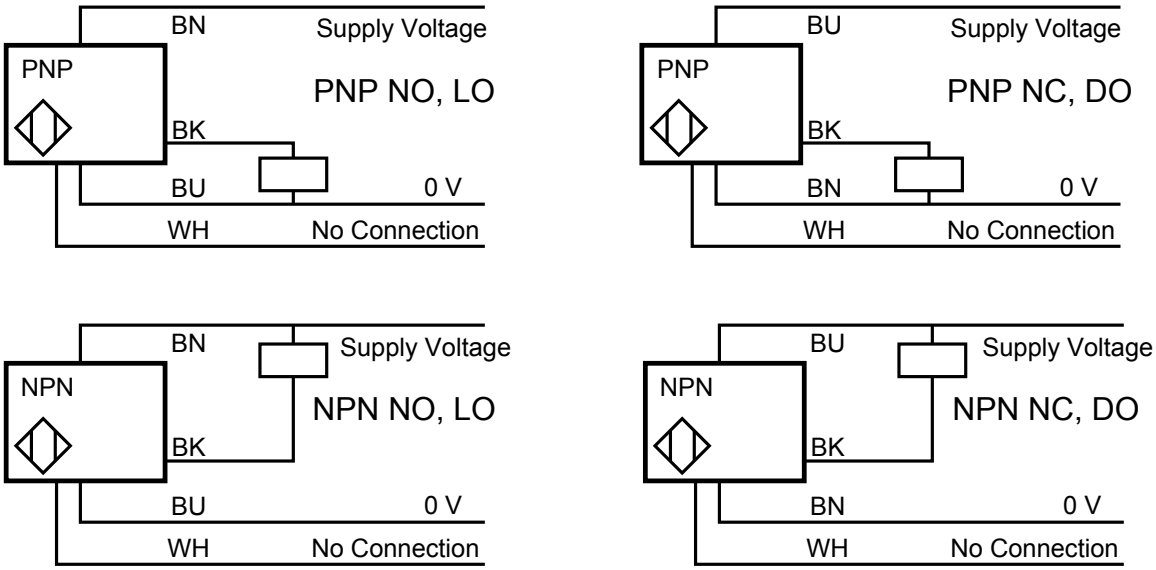
Continued from page 2

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

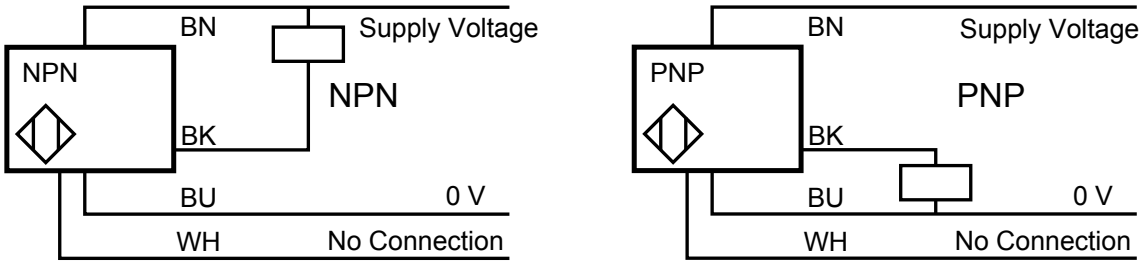
NOTE: T-Slot mounted sensors with the **T** End Cap Style are 6 mm shorter than the specified Between Frame Distance.

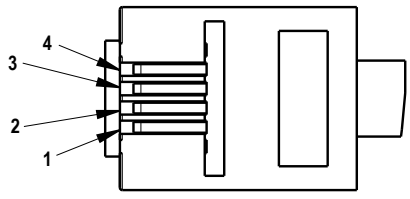
TTR Wiring

Bimodal output wiring diagrams

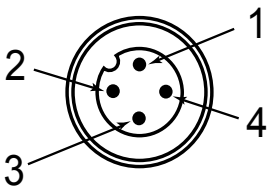


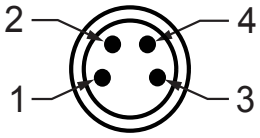
Fixed NPN and PNP output wiring diagrams: light and dark operate by model number



RJ-11 Pinout	RJ-11 Key
	1. Brown 2. Black 3. White 4. Blue

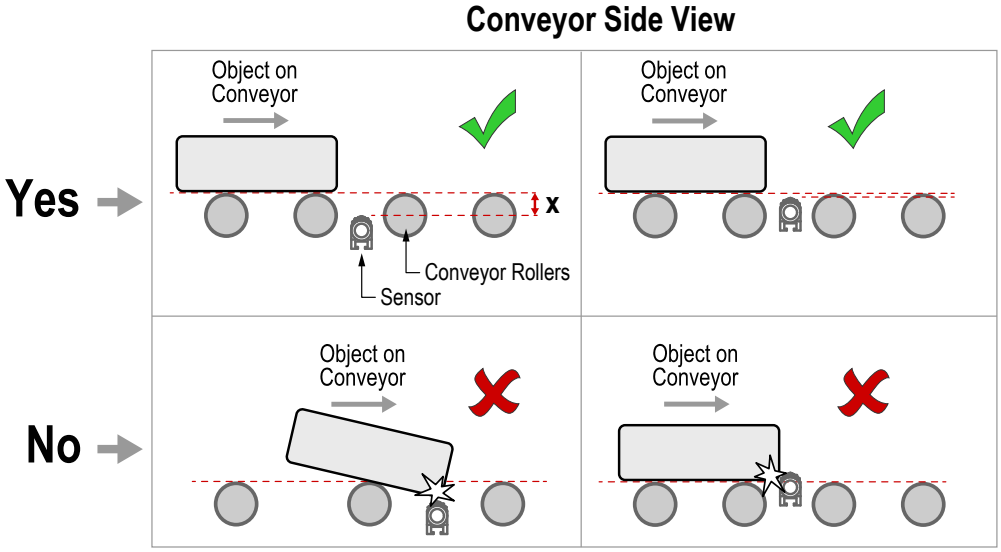
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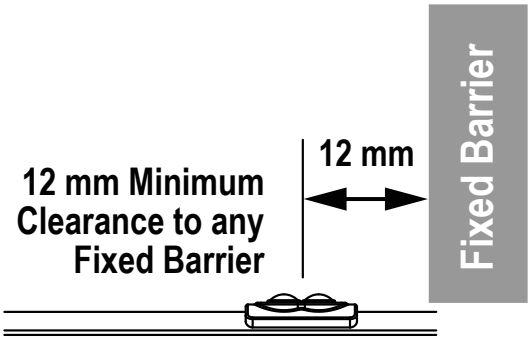
M12 Pinout (Male)	M12 Key
	1. Brown 2. White 3. Blue 4. Black

M8 Snap Connector Pinout (Male)	M8 Key
	1. Brown 2. White 3. Blue 4. Black

Installation

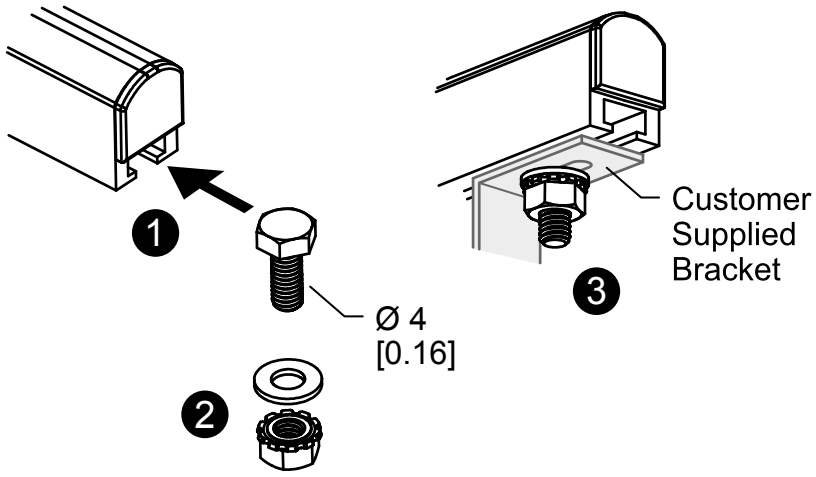
TTR Mounting Considerations





TTR T-Slot Installation

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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 Vsupply – 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

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

Certifications

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

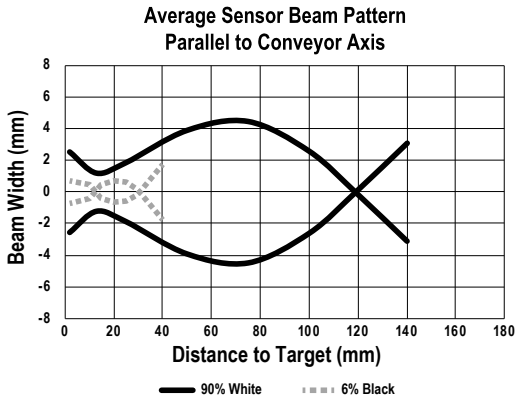
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Blenheim Court
Wickford, Essex SS11 8YT
GREAT BRITAIN

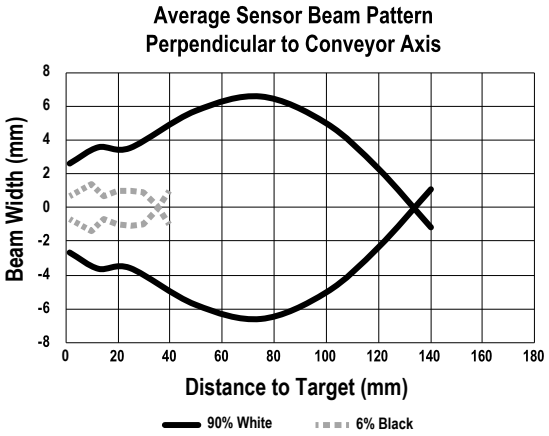
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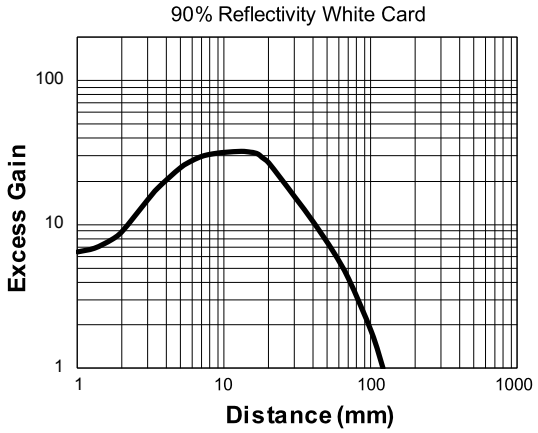
TTR Performance Curves

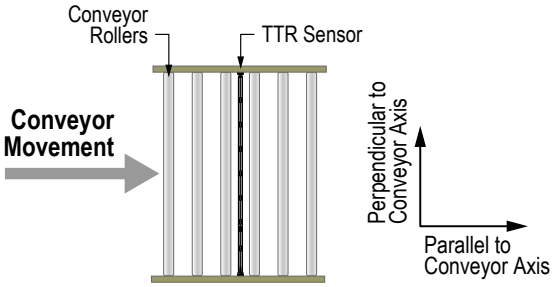
NOTE: The Beam Pattern and Excess Gain performance curve diagrams represent the Standard Gain (Special Feature S and G) models.

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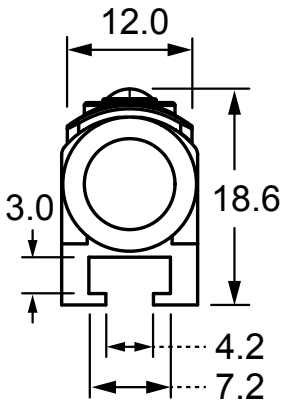




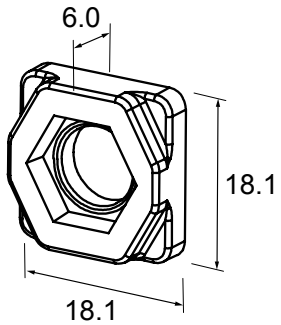
TTR Dimensions

All measurements are listed in millimeters, unless noted otherwise.

End view



Adhesive end cap



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Accessories for the TTR Family

TTR-HK1 • Hardware packet for T-style End-Cap TTRs • (2) M4 screws • (2) Hex nuts • (2) Lock washers	**TTR-HK2** • Hardware packet for G-style End-Cap TTRs • (2) Adhesive-backed mounting brackets
TTR-HK20 • Hardware packet for G-style End-Cap TTRs • (20) Adhesive-backed mounting brackets	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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Document title: Through the Roller (TTR) Sensor Family Datasheet
Part number: 216696
Revision: E
Original Instructions
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S18UUAQ SMA912DQD Q20EQ Q20PRQ QS18VN6DQ8 QS18VP6DQ8 SM2A312D QS18RPWLV S18SP6DLQ SL30VB6VQ SM2A312F VS3RN5XLP SM31EQD Q25SP6LPQ Q85VR3DL-T9-B S18-2VPRL-2M SM2A912DQD SM31ELQD Q45AD9LPQ Q85VR3LP SM31RL D10UNFP QS18VN6FPQ5 SM2A312LVAGQD SM31RQDP SMA30PELQDB Q25SP6FF100Q Q60VR3AFV1000 Q20PDXLQ7 Q20PLPQ7