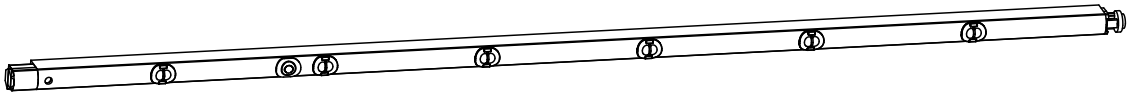
# Features



- 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<br>End Cap Styles A, B, D and E: 200-915mm<br>End Cap Styles C, F, and G: 200-750mm | BM = Bimodal<br>AP = Light Operate PNP<br>AN = Light Operate NPN<br>RP = Dark Operate PNP<br>RN = Dark Operate NPN | S = Standard Range (120mm White Card Range)<br>G = Standard Gain (120mm White Card Range) with Ground Strap<br>W = Low Gain (85mm White Card Range) with Ground Strap<br>X = Low Gain (85mm White Card Range)<br>Y = Low Gain (100mm White Card Range) with Ground Strap<br>Z = Low Gain (100mm White Card Range) | A = 54 mm<br>B = 93.1 mm<br>C = 108 mm<br>D = 162 mm<br>E = 186.2 mm<br>F = 75 mm<br>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<br>RJ = RJ11<br>Q5 = M12<br>Q3 = M8 Snap | CTR = Beams centered between frames<br>059-200 = First beam distance from cable end cap |

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

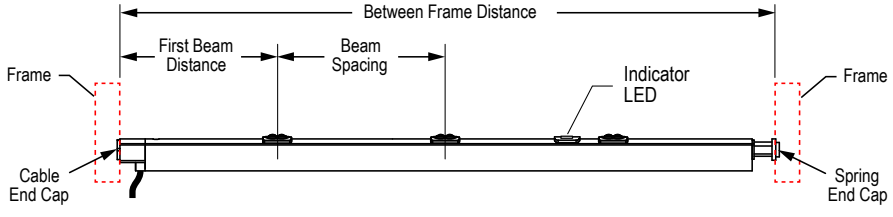
**NOTE:** For a definition of the End Cap Styles, see "Configurations" on page 1.

**NOTE:** Sensors with more than 7 beams have higher minimum supply voltage requirements, see Specifications.

Note that not all model combinations are available. Contact your Banner Engineering Corp representative for more information.

# Configurations

*Spring End Cap Configuration*



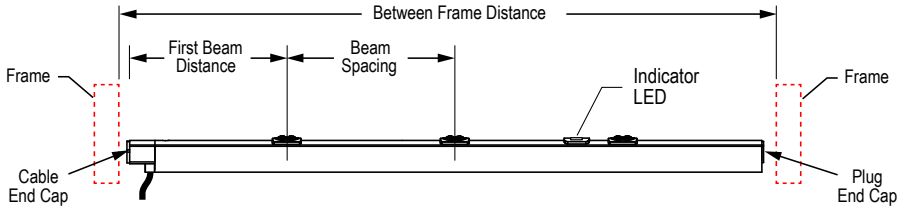

Original Instructions
07-Aug-26

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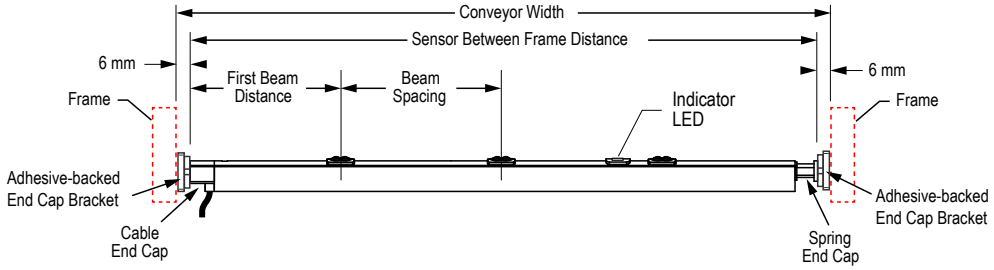
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p/n: 216696 Rev. F

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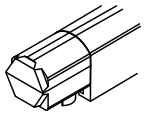
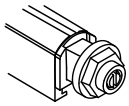
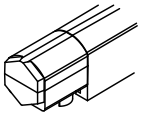
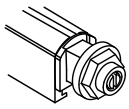
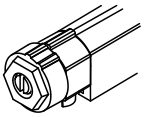
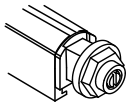
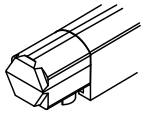
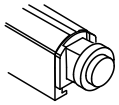
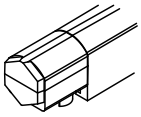
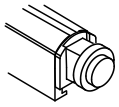
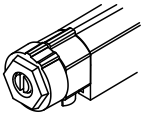
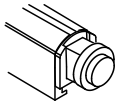
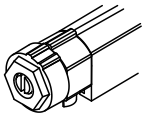
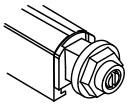
*T-Slot Configuration*




*Adhesive End Cap Configuration*



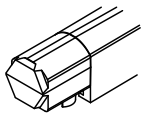
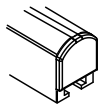

*End Cap Styles*

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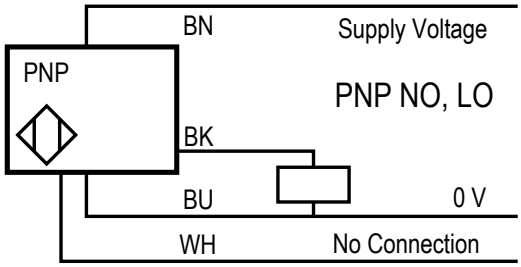
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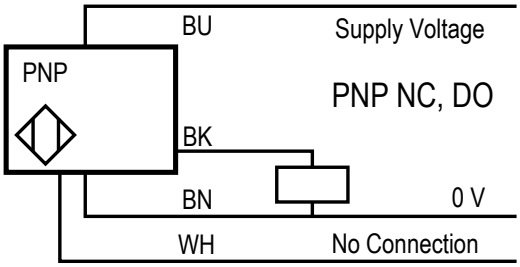
| End Cap Style | End 1 | | End 2 | |
|---|---|---|---|---|
| T | 11 mm Hex, flat side up |  | Plug |  |

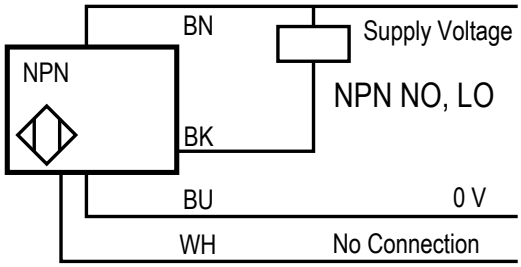
**NOTE:** T-Slot mounted sensors with the **T** End Cap Style are 6 mm shorter than the specified Between Frame Distance.

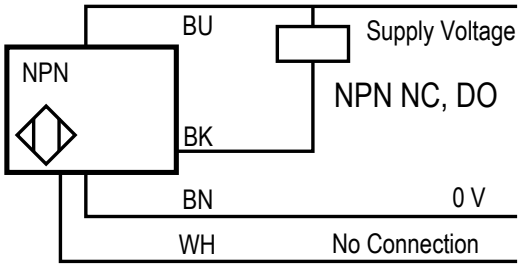
## Wiring

*Bimodal output wiring diagrams*

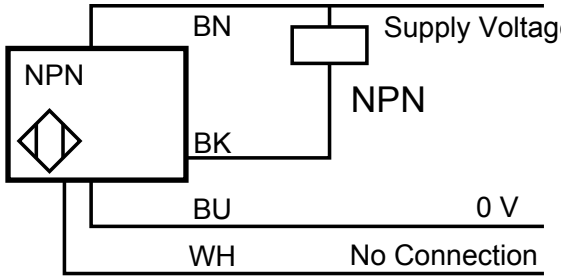


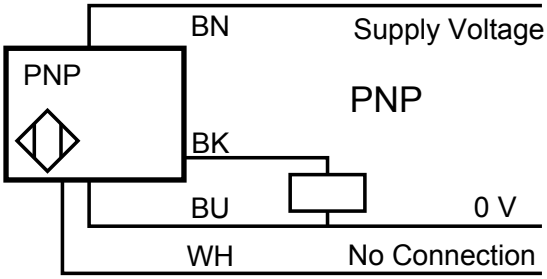



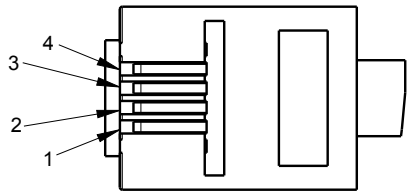




*Fixed NPN and PNP output wiring diagrams: light and dark operate by model number*

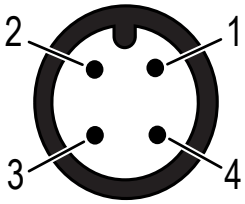


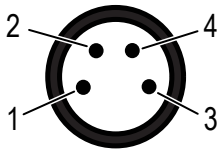




| RJ-11 Pinout | RJ-11 Key |
|---|---|
|  | 1. Brown<br>2. Black<br>3. White<br>4. Blue |



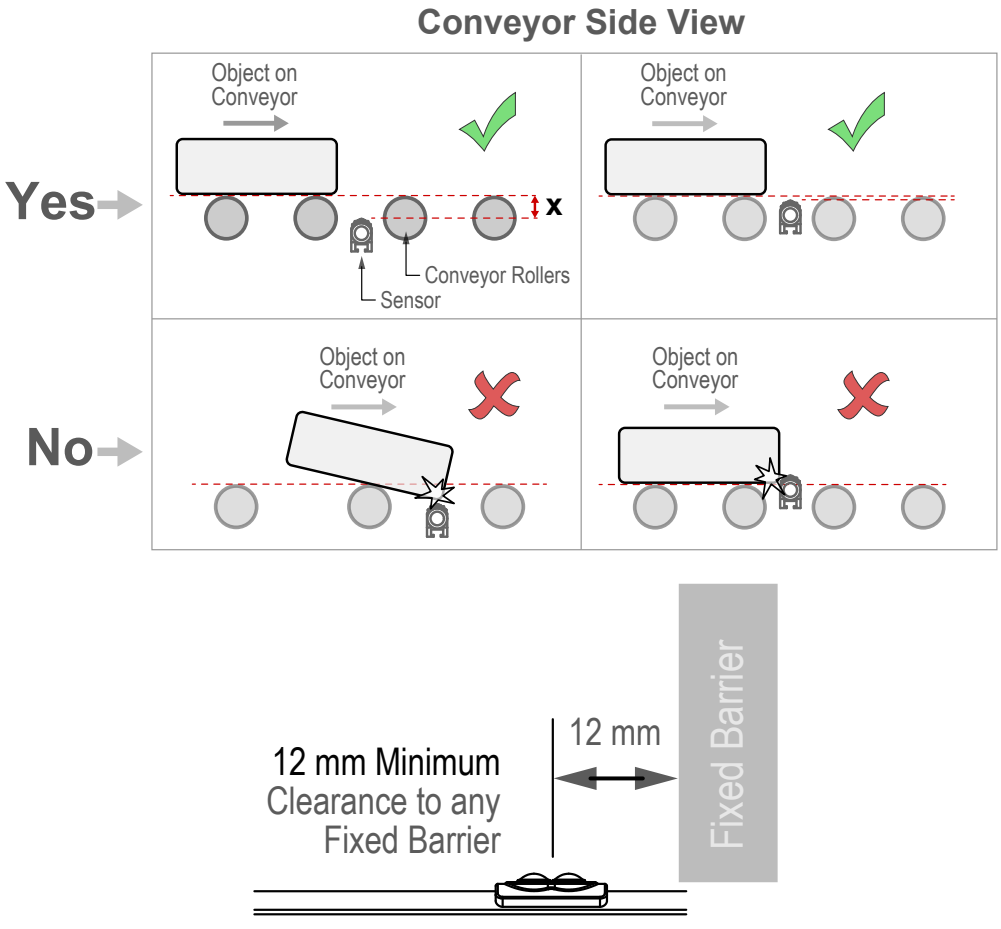

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| M12 Pinout (Male) | M12 Key |
|---|---|
|  | 1. Brown<br>2. White<br>3. Blue<br>4. Black |

| M8 Snap Connector Pinout (Male) | M8 Key |
|---|---|
|  | 1. Brown<br>2. White<br>3. Blue<br>4. Black |

# Installation

## TTR Mounting Considerations

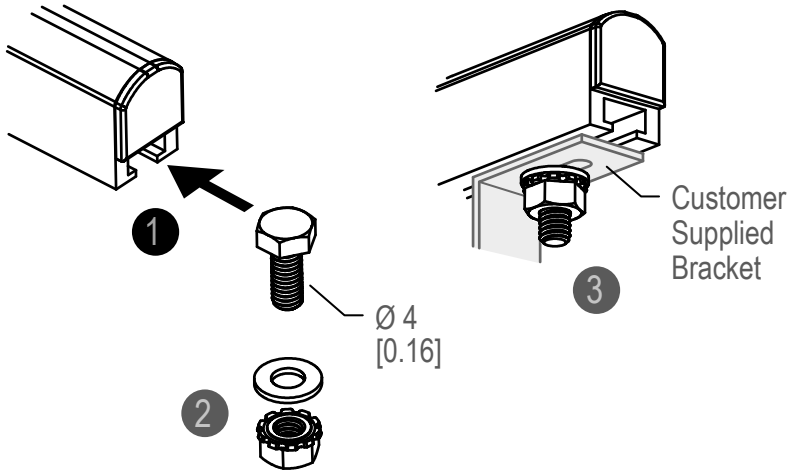







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## TTR T-Slot Installation




# 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

**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 |

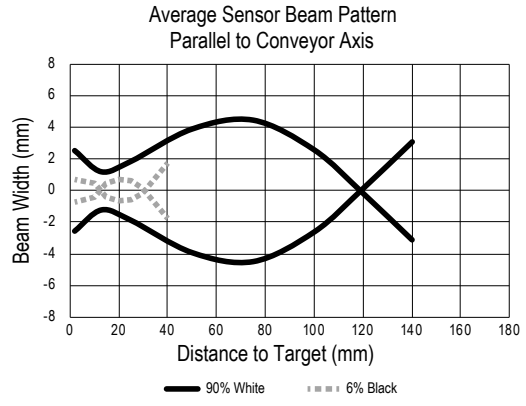
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GREAT BRITAIN

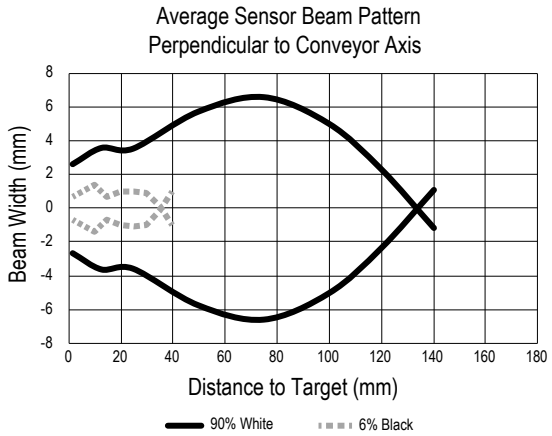
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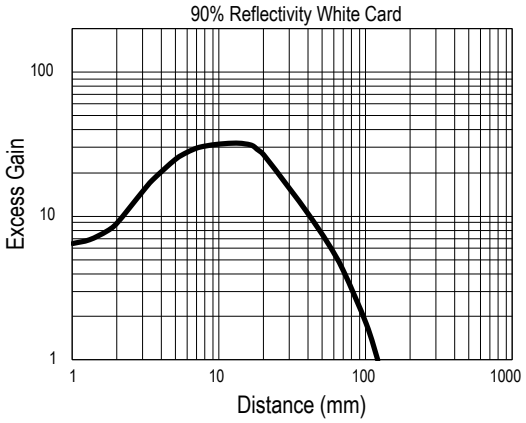

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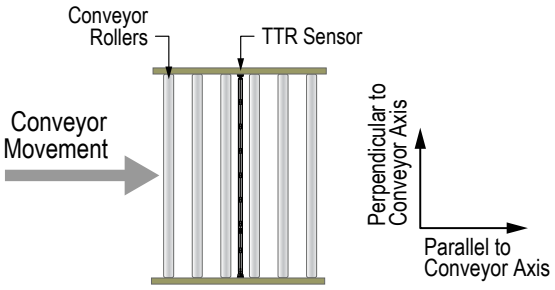
# Performance Curves

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



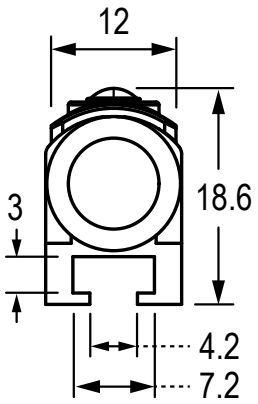


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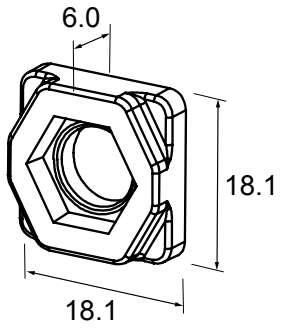
## Dimensions

All measurements are listed in millimeters, unless noted otherwise. The measurements provided are subject to change.

*End view*




*Adhesive end cap*




# Accessories for the TTR Family

| | |
|---|---|
| **TTR-HK1**<br>• Hardware packet for T-style End-Cap TTRs<br>• (2) M4 screws<br>• (2) Hex nuts<br>• (2) Lock washers | **TTR-HK2**<br>• Hardware packet for G-style End-Cap TTRs<br>• (2) Adhesive-backed mounting brackets |
| **TTR-HK20**<br>• Hardware packet for G-style End-Cap TTRs<br>• (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. |

# 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.

**THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.**

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. **IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.**

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