TRI-TRONICS®

EZ EYE™

The Affordable, All-Purpose Sensor That's EZ To Use!

TRI-TRONICS®

Miniature Push-button Photoelectric Sensor

EZ EYE™

for...

- **Object Detection**
- **Web Break Detection**
- **Counting**
- **Inspection**
- **Orientation**

and much

EZ-EYE™ miniature photoelectric sensors fulfill the need for an affordable, push-button sensor that is EZ to align and EZ to adjust. Optimized for machine control automation, the setup is easy with the unique one-touch AUTOSET™ routine. Simply place the sensor in the Light State condition and push the button once for a perfect setting. That's all there is to it!

Push-button Adjustment: EZ to select higher excess gain… just tap the button twice to increase the excess gain (sensitivity). Note: Initiating the AUTOSET™ routine followed by tapping the button emulates a screwdriver adjustment.

Optical Block Options: Unique lensed optical blocks are molded of solid, optical-grade, high-impact plastic. This innovative concept helps to prevent condensation on the inside of the lens. Ten varieties of optical blocks are available for operating the EZ-EYE, such as retroreflective, polarized retroreflective, proximity, fiberoptic or convergent sensing modes. A simple change of the optical block can be very useful in determining the best sensing mode for your specific sensing task. These inexpensive, interchangeable optical blocks eliminate the need for discarding a complete sensor in the case of damage to the optical block.

The **EZ-EYE™** photoelectric sensor by TRI-TRONICS® fulfills the need for an affordable, push-button sensor that is EZ to align and EZ to adjust.

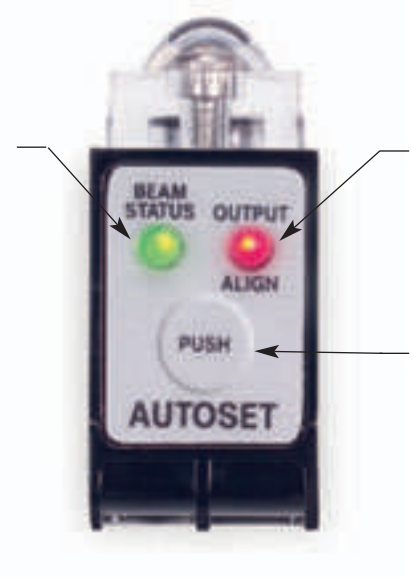
FEATURES & BENEFITS

- EZ to adjust...AUTOSET™ routine requires a single push of a button.
- EZ to align...Flash Rate Indicator monitors received light intensity.
- EZ to select higher excess gain...Tap the button twice to increase excess gain (sensitivity).
  Note: Initiating the AUTOSET™ routine followed by tapping the button emulates a screwdriver adjustment.
- EZ to select sensing mode...Choose from ten completely interchangeable optical blocks.
- EZ-EYE™ sensors are available with either infrared (IR) or red LED light sources.
- EZ EYE™ sensors are equipped with both NPN and PNP output transistors.
- Power supply requirements: 10 to 24 VDC.
- Responds to sensor's pulsed modulated light source...immune to most ambient light.

Dual Function LED Indicator

• GREEN indicates "ON" after AUTOSET™ routine

• Flashes twice, then turns AMBER after Excess Gain Adjustment



Triple Function LED Indicator
- RED indicates output status. Illuminates when transistors are in the "ON" state condition
- GREEN indicates flash rate alignment
- AMBER flashes when AUTOSET™ routine is complete

Push-button Control
- AUTOSET™...Place sensor in Light State condition, then press and hold until the Alignment Indicator flashes, then release
- Press and hold to use Flash Rate Alignment Indicator
- Tap 2 times to advance excess gain
- Tap 5 times to toggle output status

LIGHT SOURCE GUIDELINES

INVISIBLE INFRARED LIGHT SOURCE (880 NM)

A. Best choice in most opaque object sensing tasks.

B. Provides longest possible sensing range in either Beam Make or Beam Break sensing modes.

C. Best choice in hostile environments. Useful in penetrating lens contamination.

D. Preferred for use with small glass fiberoptic light guides. Note: Do not use IR light with plastic fiberoptic light guides.

E. Preferred when sensing dark colored objects in the proximity (Beam Make) mode, i.e., black, blue, green, etc.

F. Useful in penetrating containers for verification of contents. Also useful in detecting overlapped splices in dense materials.

RED LIGHT SOURCE (660 NM)

A. Best choice for use with plastic fiberoptic light guides.

B. Useful when sensing translucent or transparent objects in proximity (Beam Make) mode.

C. Can be polarized for retroreflective (Beam Break) sensing to reduce proxing on shiny objects.

D. Opposed fiberoptic light guides can be polarized for sensing some translucent plastic containers. Consult factory for details.

OPTICAL BLOCK SELECTION

Interchangeable optical blocks provide for universal application of the **EZ-EYE™** to any sensing application from large object sensing to finite sensing of small parts and product inspection tasks.

Type O4
Proximity
Wide beam optics useful for short-range sensing of transparent, translucent or irregular shaped shiny objects.

Type O5
Proximity
Narrow beam optics useful in long-range sensing of medium to large size objects.

Type R4
Retroreflective
Very narrow beam optics designed to sense reflectors or reflective materials at long range. Designed for Beam Break sensing.

Type R5
Polarized Anti-Glare Retroreflective
Polarized to reduce response to "hot spot" glare from shiny surface of detected object. Use with red light source.

Type V4
Convergent 1" "V" Axis
Narrow beam optics that focus at a sensing range of 1". Useful for sensing small parts. Also useful for proximity sensing (range of 1" to 5") to minimize response to reflected light from background objects.

Type V4A
Convergent Aperture 1" "V" Axis
Aperture provides spot focus light beam at a sensing range of 1". Useful for sensing small parts or narrow gaps. Also useful for proximity sensing (range of 1" to 5") to minimize response to reflected light from background objects.

Type V6
Convergent 1.5" "V" Axis
Narrow beam optics that focus at a sensing range of 1.5". Useful for sensing small parts. Also useful for proximity sensing (range of 1.5" to 8") to minimize response to reflected light from background objects.

Type V8
Convergent .5" "V" Axis
Narrow beam optics that focus at a sensing range of .5". Useful for sensing small parts. Also useful for proximity sensing (range of .25" to 5") to minimize response to reflected light from background objects.

Type F4
Glass Fiber Optics
Adapts for use with a wide variety of glass fiberoptic light guides (.187 O.D.) for both the proximity and opposed sensing modes.

Type F5
Plastic Fiber Optics
Adapts for use with a wide variety of plastic fiberoptic light guides (.090 O.D.) for both the proximity and opposed sensing modes.

RANGE GUIDELINES

OPTICAL BLOCKS	PZI Infrared LED	PZR Red LED
O4 Proximity	5" (127 mm)	2.0" (51 mm)
O5 Proximity	3' (914 mm)	16" (406 mm)
R4 Retroreflective	40' (12.0 M)	20' (6.09 M)
R5 Polarized Retro.	N/A	12' (3.6 M)
V4, V4A Convergent	1" (25.4 mm)	1" (25.4 mm)
V6 Convergent	1.5" (38 mm)	1.5" (38 mm)
V8 Convergent	.5" (12.7 mm)	.5" (12.7 mm)

NOTE: All proximity tests utilized a 90% reflective, white target. All retroreflective tests utilized model AR6151 high-performance reflector.

GLASS FIBER OPTICS	PZI Infrared LED	PZR Red LED
Type F4, .125" dia. (3.175 mm)		
Proximity	5" (127 mm)	1.25" (31.75 mm)
Proximity w/ UAC-15	8" (203 mm)	6" (152.4 mm)
Opposed	9" (228 mm)	3.5" (88.9 mm)
Opposed w/ UAC-15	10' (3.048 M)	5' (1.524 M

PLASTIC FIBER OPTICS	Type F5, .040" dia. (1.016 mm)	
Proximity	N/A	1" (25.4 mm)
Opposed	N/A	4.5" (114.3 mm)
Opposed w/ HLA-2 Lens	N/A	10' (3.048 M)

HOW TO SPECIFY

Example: PZ R C V6

- PZ — EZ-EYE™
- R — Red LED = R; Infrared LED= I
- C — C = Connector; Blank = Cable
- V6 — Optical Blocks F4, F5, O4, O5, R4, R5, V4, V4A, V6, V8 (See Range Guidelines)

ACCESSORIES

4-Wire Nano Cable, M8

GEC-6
6' (1.8 M) cable with connector

GEC-15
15' (4.6 M) cable with connector

RGEC-6
6' (1.8 M) cable / right angle conn.

RGEC-15
15' (4.6 M) cable / right angle conn.

Screw Mount Reflectors

78P
4.4" x 1.9"
(111.7 mm x 48.3 mm)

AR3
3" dia.
(76.2 mm dia.)

Optional Prismatic High-Performance Reflectors NEMA 4, IP67

AR6151
2.4" x 2.0"
(61 x 51 mm)

AR4060
1.6" x 2.36"
(40.5 x 60 mm)

AR46
1.8" dia.
(46 mm dia.)
Glue Mount

EEB-1
Vertical Stainless Mounting Bracket

EEB-2
Horizontal Mounting Bracket

FMB-2
Miniature Fiberoptic Mounting Bracket

LK-4
Lens Kit

FMB-1
Standard Fiberoptic Mounting Bracket

Go to ttco.com for fiberoptic light guide selections

SPECIFICATIONS

SUPPLY VOLTAGE
- 10 to 24 VDC
- Polarity Protected

CURRENT REQUIREMENTS
- 50 mA (exclusive of load)

OUTPUT TRANSISTORS
- (1) NPN and (1) PNP sensor output transistor
- Sensor's output can sink or source up to 150 mA (current limited)
- Outputs are continuously short-circuit protected

RESPONSE TIME
- Light State response = 500 microseconds
- Dark State response = 500 microseconds

LED LIGHT SOURCE
- Red = 660 NM
- Infrared = 880 NM
- Pulse Modulated

PUSH BUTTON CONTROL
- AUTOSET™ Routine: Push and release with sensor in "light" state
- Excess Gain Adjustment: Tap twice to step to higher excess gain
- Push and hold to activate Flash Rate Alignment Indicator
- Light /Dark "ON" selection: Tap 5 times to toggle

RANGE
- Dependent on optical block (see range guidelines)

HYSTERESIS
- Approximately 15% of signal

LIGHT IMMUNITY
- Responds to sensor's pulse-modulated light source, resulting in high immunity to most ambient light, including high intensity strobes.

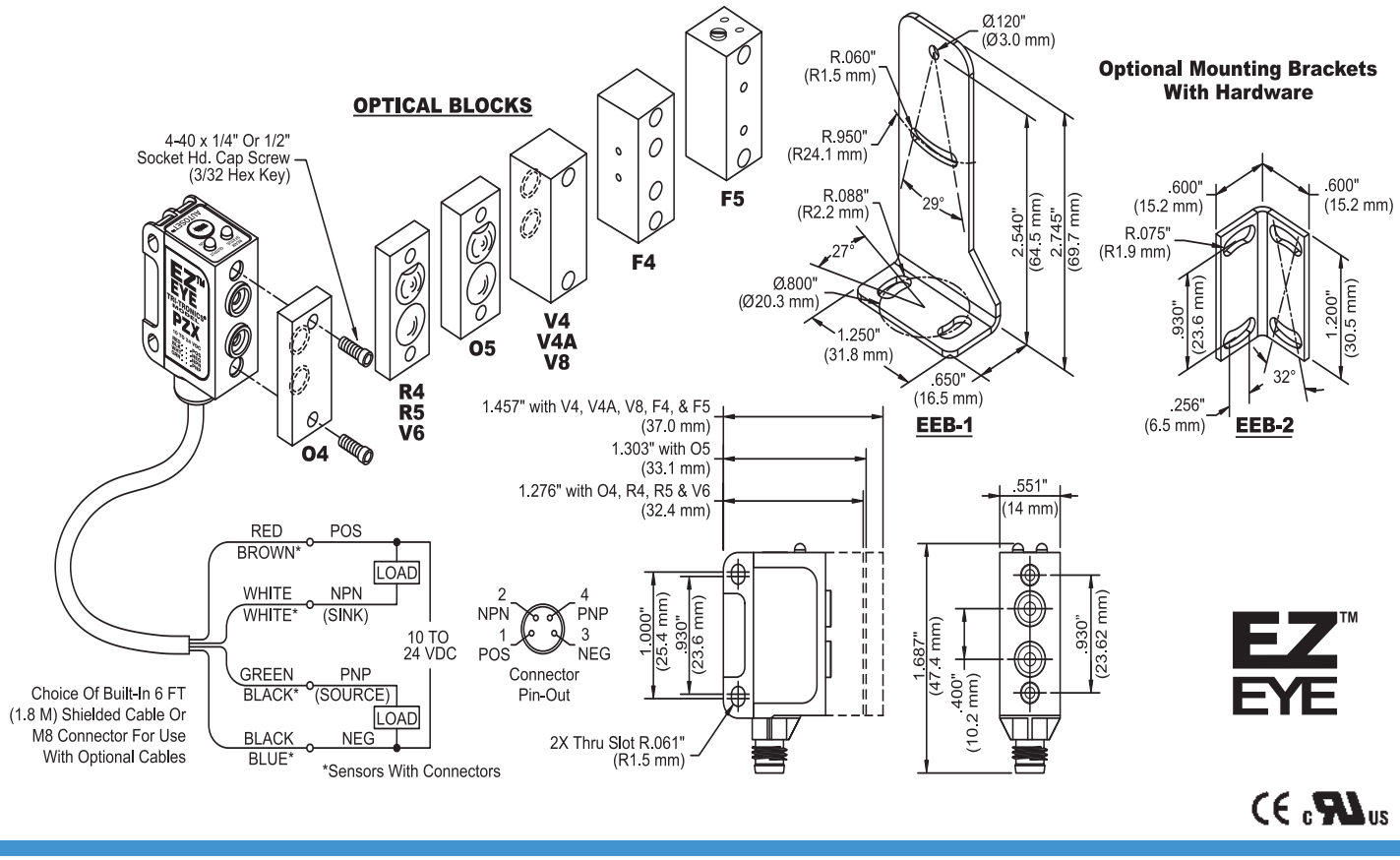
DIAGNOSTIC INDICATORS
- Dual Red/Green LED
  Red = Output Status
  Green = Flash Rate Alignment Indicator
- Dual Green/Amber LED
  Green = "ON" After AUTOSET™ Routine
  Amber = "ON" After Excess Gain Adjustment

AMBIENT TEMPERATURE
- -40° to 70°C (-40° to 158° F)

RUGGED CONSTRUCTION
- Chemical resistant, high impact polycarbonate housing
- Waterproof ratings: NEMA 4, IP67
- Conforms to heavy industry grade CE requirements

Product subject to change without notice.

CONNECTIONS AND DIMENSIONS



EZ EYE™

A wide variety of objects can be detected by the EZ-EYE™ regardless of size, shape or color!

Other Popular Models...

RETROSMART®
Flawless detection of anything...from clear, filled PET bottles to shiny cans.

LABEL•EYE®
Optimized specifically for label detection with automatic One-Touch Setup.

SMARTEYE® EZ-PRO™
Local or remote One-Touch Setup with automatic adjusting options.

TRI-TRONICS®

Made in the U.S.A.

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