

EZ-EYETM



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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.

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.

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.



Features

- Single button push AUTOSET
- NPN and PNP outputs
- Cable or quick disconnect
- Interchangeable optical blocks
- 500 microsecond response time
- Immune to most ambient light

Benefits

- Easy to use
- Small and compact for mechanical space issues
- Lower maintenance costs
- Reduce downtime
- Increase machine throughput

Applications

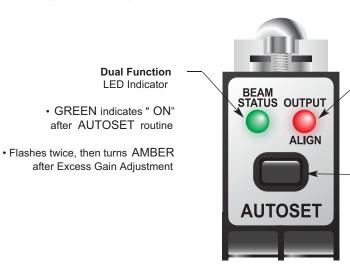
- Product presence/absence
- High speed counting
- Object detector
- Printing/Marking/Coding
- Inspection trigger



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... resulting in high immunity to most ambient light, including strobes.



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 (880nm)

- 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 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. Also useful in detecting overlapped splices in dense materials.

RED LIGHT SOURCE (660nm)

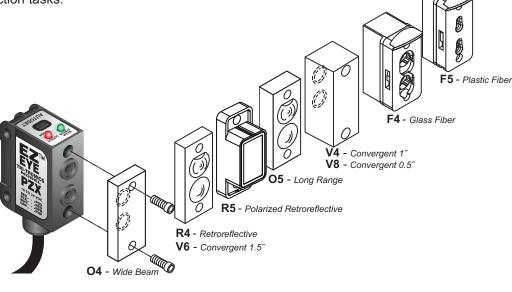
- A. Best choice for use with plastic fiberoptic light guides.
- B. Useful when sensing translucent or transparent objects in proximity (Beam Make) mode.
- C. Can be polarized for retroreflective (Beam Break) sensing to reduce proxing on shiny objects.

ΕΖ-ΕΥΕ ΤΜ

OPTICAL BLOCK SELECTION



Interchangeable optical blocks provide for universal application of the EZ-EYE® to any sensing applications 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, opaque, 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 visible light source.

Type F4 **Glass Fiberoptics**

Adapter for use with a wide variety of glass fiberoptic light guides for both the proximity and opposed sensing modes.

Type F5 **Plastic Fiberoptics**

Adapter for use with a wide variety of plastic fiberoptic light guides for both the proximity and opposed sensing modes

Type V4

Convergent 1" "V" Axis Useable range of 1" to 5".

Type V6 Convergent 1.5" "V" Axis Useable range of 1.5" to 8".

Type V8 Convergent .5" "V" Axis

Useable range of .25" to 5"

Narrow beam optics useful for sensing small parts. Also useful for proximity sensing to minimize response to reflected light from background objects ..

Sensing Range Guidelines

Convergent / Proximity / Retroreflective				Glass Fiberoptics			Plastic Fiberoptics		
	OPTICAL BLOCKS	IR	RED	OPTICAL BLOCKS	IR	RED	OPTICAL BLOCKS	IR	RED
	V4	1 in.	1 in.	Opposed Mode			Opposed Mode		
	V6	1.5 in.	1.5 in.	F4	7 in.	3.5 in.	F5	N/A	4.5 in.
	V8	0.5 in.	0.5 in.	F4 w/ UAC-15	10 ft.	5 ft.	F5 w/lens	N/A	10 ft.
	O4	5 in.	2 in.						
	O5	3 ft.	16 in.	Proximity Mode			Proximity Mode		
	R4	40 ft.	20 ft.	F4	2.5 in.	1.25 in.	F5	N/A	1 in.
	R5	N/A	12 ft.	F4 w/ UAC-15	5 in.	6 in.	F5 w/lens	N/A	N/A
	Note: Proximity	tests utilized a s	90% reflective	Note: Provimity to to utilized o 195"			Note: Provinity tests utilized a 040"		

white target. Retroreflective tests utilized a 3" diameter round reflector, Model AR3.

Note: Proximity tests utilized a .125' diameter fiber bundle.

1 in. = 25.4mm / 1 ft. = 0.3048 meters

Note: Proximity tests utilized a .040" diameter fiber bundle.

HOW TO SPECIFY



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F5

EZ-EYE TM

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ΡZ

R

- 1. Select sensor model based on light source required: PZI = Infrared PZR = Red
- 2. Select connection required: Blank = Cable C = Connector
- **3.** Select Optical Block based on mode of sensing required: (see Range Guidelines)

Accessories 4-Wire Nano Cable, M8



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

GEC-15 15' (4.6m) cable with connector GEC-25

25' (7.6m) cable with connector



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

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



GEX-9 9' (2.7m) extension cable

Screw Mount Reflectors



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



AR3 3" diam. (76.2mm diam.)

Optional Prismatic High-Performance Reflectors NEMA 4, IP67



AR6151 AR6151G (Chemical Resistant Glass Cover) 2.4" x 2.0" (61 x 51mm)



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



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



Example:

Light Source

Optical Block-

Connector.

EZ-EYE®



EEB-1 Vertical Stainless Bracket Assembly



FMB-1 (8.4mm diam.) Standard Fiberoptic Mounting Bracket



FMB-2 (5.1mm diam.) FMB-3 (3.1mm diam.) Miniature Glass or Plastic Fiberoptic Mounting Brackets

General Application Photoelectric Sensors

EEB-2

Horizontal

LK-4 Lens Kit (See Optical Blocks Accessories for contents)



Go to ttco.com for fiberoptic light guide selections

Specifications



SUPPLY VOLTAGE

- 10 to 24 VDC
- Polarity Protected

CURRENT REQUIREMENTS

50mA (exclusive of load)

OUTPUT TRANSISTORS

- (1) NPN and (1) PNP sensor output transistor
- Sensor's output can sink or source up to 150mA (current limited)
- Outputs are continuously short-circuit protected **RESPONSE TIME**
- Light State response = 500 microseconds
- Dark State response = 500 microseconds

LED LIGHT SOURCE

- Red = 660nm
- Infrared = 880nm
- 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

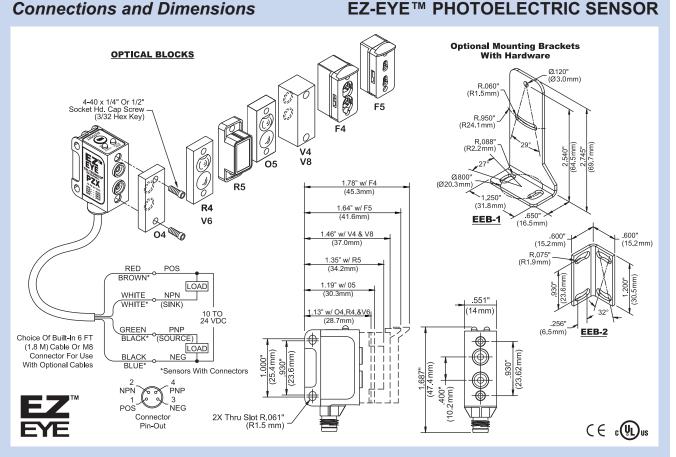
- Dual Red/Green LED Red = Output Status NOTE: If Output LED flashes, a short circuit condition exists.
 Green = Flash Rate Alignment Indicator
- Dual Green/Amber LED Green = "ON" After AUTOSET™ Routine Amber = "ON" After Excess Gain Adjustment

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

RUGGED CONSTRUCTION

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

RoHS Compliant Product subject to change without notice



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