TRI-TRONICS®

Smart Sensing Solutions Since 1954

EZ™ EYE

Miniature Push-Button Sensor

EZ EYE™

The **EZ-EYE™** miniature 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. Place the sensor in the Light State condition and push the button once for a perfect setting.

Easy to select higher excess gain, 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, fiber optic or convergent sensing modes. A simple change of the optical block can be 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
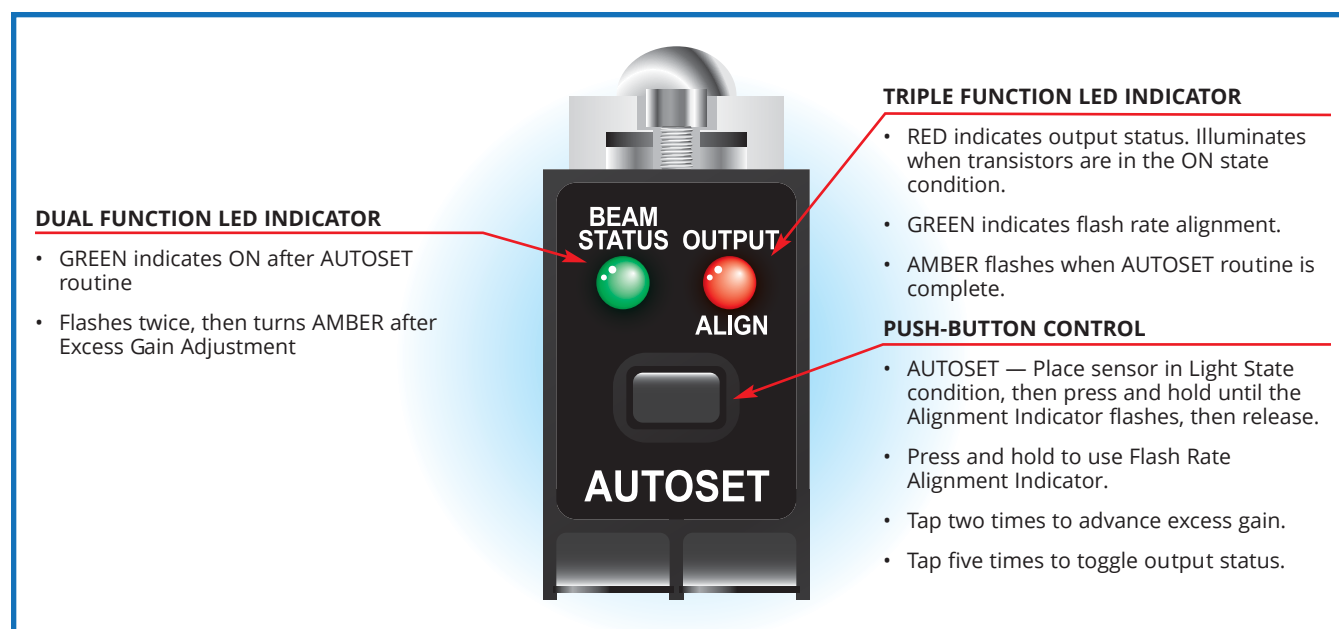- Reduce downtime
- Increase machine throughput

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 or red LED light sources.
- EZ EYE™ sensors are equipped with both NPN and PNP output transistors.
- Power supply requirements: 10 to 24VDC.
- Responds to sensor's pulsed modulated light source, resulting in high immunity to most ambient light, including strobes.

DUAL FUNCTION LED INDICATOR

- GREEN indicates ON after AUTOSET routine
- Flashes twice, then turns AMBER after Excess Gain Adjustment

BEAM
STATUS

OUTPUT

ALIGN

AUTOSET

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 two times to advance excess gain.
- Tap five times to toggle output status.

Light Source Guidelines

INVISIBLE INFRARED LIGHT SOURCE (880nm)	RED LIGHT SOURCE (660nm)
A. Best choice in most opaque object sensing tasks.	A. Best choice for use with plastic fiber optic light guides.
B. Provides longest possible sensing range.	B. Useful when sensing translucent objects in proximity mode.
C. Best choice in penetrating lens contamination.	C. Useful when sensing transparent objects in fiber optic retroreflective mode.
D. Preferred for use with small glass fiber optic light guides Note: Not recommended for plastic fiber optic light guides.	D. Can be polarized for retroreflective sensing to reduce proxing on shiny objects.
E. Best for sensing dark colored (black, blue, green, etc.) objects in the proximity mode.	E. Opposed fiber optic light guides can be polarized for sensing some translucent plastic containers.
F. Useful in penetrating containers for verification of contents, or detecting overlapped splices in dense materials.	F. Used as red filter for color perception advantages.

Optical Block Selection

EZ-EYE™

General Application Photoelectric Sensors

Convergent V-Axis Blocks
Narrow beam optics useful for proximity sensing to minimize response to reflected light from background objects.

V4
Convergent 1in V-Axis
Useable range of 1in to 5in.

V4A
Convergent 1in V-Axis, Apertured
Useable range of 1in to 5in.

V6
Convergent 1.5in V-Axis
Useable range of 1.5in to 8in.

V8
Convergent .5in V-Axis
Useable range of .25in to 5in

Proximity Blocks

O4
Proximity
Wide beam optics useful for short-range sensing of a variety of objects.

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

Retroreflective Blocks

R4
Retroreflective
Narrow beam optics designed to sense reflectors or reflective materials at long range.

R5
Polarized Anti-Glare Retroreflective
Polarized to reduce response to hot-spot glare from shiny surfaces. Use with visible light source.

Fiber Optic Blocks

F4
Glass Fiber Optics
Adapter for use glass fiber optic light guides.

F5
Plastic Fiber Optics
Adapter for use plastic fiber optic light guides.

Sensing Range Guidelines

1in = 25.4mm / 1ft = 0.3048 meters

Convergent / Proximity / Retroreflective			Glass Fiber Optics			Plastic Fiber Optics		
OPTICAL BLOCKS	IR	RED	OPTICAL BLOCKS	IR	RED	OPTICAL BLOCKS	IR	RED
V4, V4A	1in (25.4mm)	1in (25.4mm)	**Opposed Mode**			**Opposed Mode**		
V6	1.5in (38.1mm)	1.5in (38.1mm)	F4	7in (177.8mm)	3.5in (88.9mm)	F5	N/A	4.5in (114.3mm)
V8	0.5in (12.7mm)	0.5in (12.7mm)	F4 w/lens	10ft (3.0m)	5ft (1.5m)	F5 w/lens	N/A	10ft (3.0m)
O4	5in (127mm)	2in (50.8mm)						
O5	3ft (0.9m)	16in (0.5m)	**Proximity Mode**			**Proximity Mode**		
R4	40+ft (12.2m)	20+ft (6.1m)	F4	2.5in (63.5mm)	1.25in (31.75mm)	F5	N/A	1in (25.4mm)
R5	N/A	12ft (3.6m)	F4 w/lens	5in (127mm)	6in (152.4mm)	F5 w/lens	N/A	N/A

Note: Proximity tests utilized a 90% reflective white target. Retroreflective tests utilized a 3in diameter round reflector, Model AR3.

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

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

How To Specify

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)

Example: PZ   R   C   F5

EZ-EYE®
Light Source
Connection
Optical Block
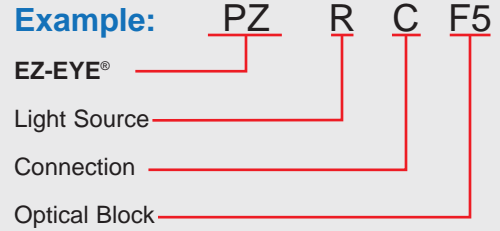
Accessories

4-Wire Nano Cable, M8

GEC-6
6ft (1.8m) cable

GEC-15
15ft (4.6m) cable

GEC-25
25ft (7.62m) cable

RGEC-6
6ft (1.8m) right angle

RGEC-15
15ft (4.6m) right angle

RGEC-25
25ft (7.6m) right angle

4-Wire Extension Cable, M8

GEX-9
9ft (2.7m) extension cable

Mounting Brackets

EEB-1
Vertical Mount

EEB-2
Horizontal Mount

LK-4
Lens Kit (includes F4, F5, O4, O5, R4, R5, V4, V4A, V6, V8 alan wrenches and screws)

Fiber Optic Mounting Brackets

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

FMB-2
(5.1mm diam.)
Miniature Glass Fiber Optic Mounting Bracket

FMB-3
(3.1mm diam.)
Plastic Fiber Optic Mounting Bracket

Screw Mount Reflectors

78P
4.4in x 1.9in
(111.8mm x 48.3mm)

AR3
3in (76.2mm) diam.

Prismatic High Performance Reflectors

AR4060
(40.5 x 60mm)

AR6151, AR6151G
2.4in x 2.0in
(61 x 51mm)

AR46
(46mm) diam.

Specifications

SUPPLY VOLTAGE
• 10 to 24VDC
• 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 five 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

Connections and Dimensions　　　　EZ-EYE™ PHOTOELECTRIC SENSOR