



General Purpose Photoelectric Sensor

OPTI-EYE®

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OPTI-EYE® Photoelectric Sensors are high performance and versatile when applied to tough industrial sensing tasks. This sensor provides a combination of high gain and high speed of response (500 microseconds). High gain enables the sensor to resolve low contrast sensing tasks. High speed response provides resolution of the exact position of objects traveling at high speed.

OPTI-EYE® offers many unique features including a range adjustment (light source intensity) and three LED setup indicators. The range adjustment allows operation over a wide dynamic range. The green beam status LED indicator illuminates when the received light level exceeds the sensor's light state switch point. The yellow light intensity LED indicator displays the intensity of the sensor's light source. This indicator provides the installer an idea of where in the overall dynamic operating range the adjustment has been set. This is particularly important when using the invisible IR light source. The red output LED illuminates when the output transistors are in the "on" state. Now you can set up and adjust the sensor as easily as monitoring the status of three LED indicators.

With seven interchangeable optical blocks; DIN rail, side, and bracket mounting; as well as cable or connector version options, the Opti-Eye is one of the most versatile, low cost, general purpose sensors available in it's class... Opti-mal for most high contrast sensing applications.



Features

- 500 microseconds response time
- Potentiometer range adjustment
- Cable or quick disconnect
- NPN and PNP outputs
- DIN rail, bracket, or through-hole mounting
- Interchangeable Optical Blocks

Benefits

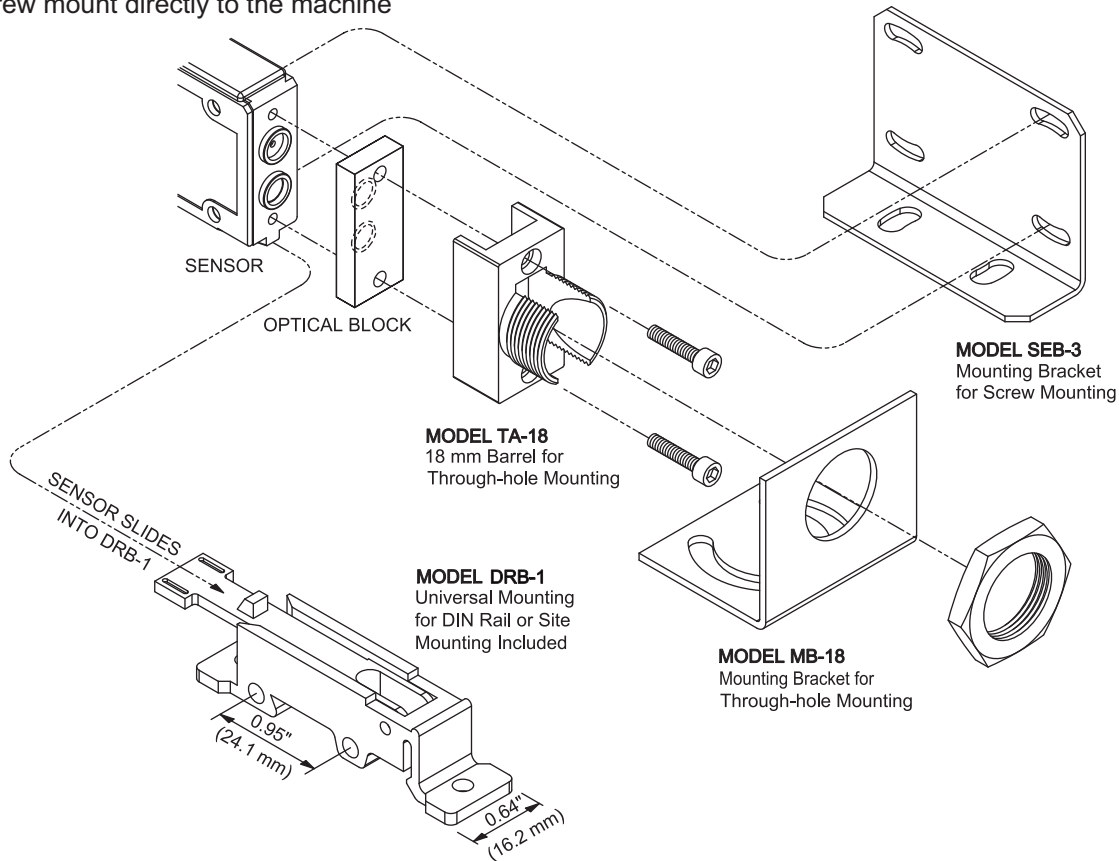
- Easy to use
- Lower maintenance costs
- Reduce downtime
- Improve machine throughput

Applications

- High speed counting
- Product/object detector
- Inspection sensing
- Product Orientation
- Labeling
- Printing/Marking/Coding

Five Mounting Options:

1. Snap Mount onto a DIN rail with Universal Bracket Model DRB-1
2. Screw mount at sensing site with Universal Bracket Model DRB-1
3. Through-hole mount with optional 18mm Threaded Barrel Adapter Model TA-18
4. Screw mount with optional "L" Shaped Stainless Steel Bracket Model SEB-3
5. Screw mount directly to the machine



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. Useful in penetrating containers for verification of contents. Also useful in detecting overlapped splices in dense materials.
- G. Color perception; tends to favor blue colored objects.

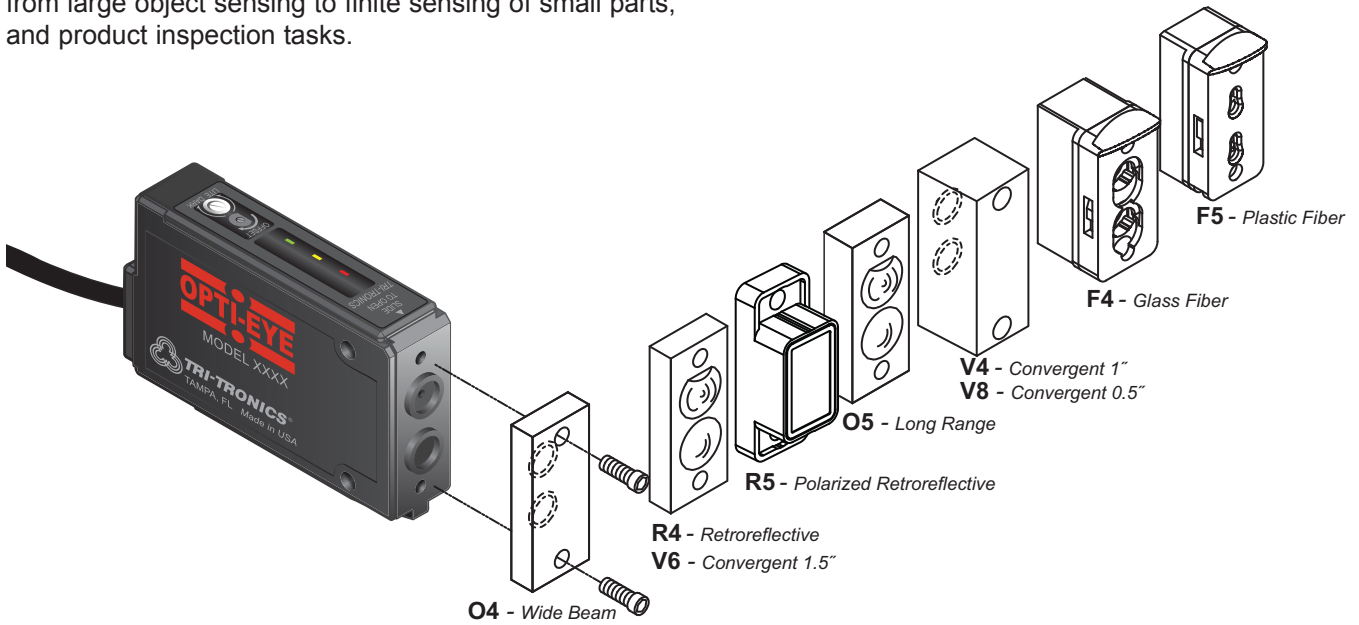
RED LIGHT SOURCE (660nm)

- A. Best choice for use with plastic fiberoptic light guides.
- B. Useful when sensing translucent objects in proximity (Beam Make) mode.
- C. Useful when sensing transparent objects in fiberoptic retroreflective (Beam Break) mode.
- D. Can be polarized for retroreflective (Beam Break) sensing to reduce proxing on shiny objects.
- E. Used as red filter for color perception advantages.

Optical Block Selection



Interchangeable optical blocks provide for universal application of the **OPTI-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

OPTICAL BLOCKS	IR	RED
V4, V4A	1 in.	1 in.
V6	1.5 in.	1.5 in.
V8	0.5 in .	0.5 in.
O4	5 in.	2.5 in.
O5	3 ft.	1.5 ft.
R4	20+ ft.	18 ft.
R5	N/A	10 ft.

NOTE: Proximity test utilized a 90% reflective white target. Retroreflective tests utilized a 3" diam. round reflector, Model AR-3

Glass fiberoptics

OPTICAL BLOCKS	IR	RED
Opposed Mode		
F4	8 in.	4 in.
F4 w/lens	20 ft.	18 ft.
Proximity Mode		
F4	3 in.	1.25 in.
F4 w/lens	6 in.	3 in.

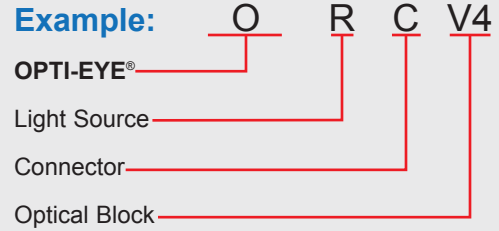
NOTE: Range tests utilized a .125" diam. fiber bundle and UAC-15 lens

Plastic fiberoptics

OPTICAL BLOCKS	IR	RED
Opposed Mode		
F5	N/A	2 in.
F5 w/lens	N/A	2 ft.
F5 w/right angle lens	N/A	1 ft.
Proximity Mode		
F5	N/A	5 in.
F5 w/lens	N/A	1 ft.

NOTE: Range tests utilized a .040" diam. fiber

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



Accessories

Micro Cable Selection Guide, 4-wire M12



Yellow Shielded Cable Assemblies

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

SEC-15
15' (4.6m) cable with connector

SEC-25
25' (7.62m) cable with connector



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

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

RSEC-25
25' (7.62m) cable / right angle conn.



Black Shielded Cable Assemblies (Lightweight)

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

BSEC-15
15' (4.6m) cable with connector

BSEC-25
25' (7.62m) cable with connector



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

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

BRSEC-25
25' (7.62m) cable / right angle conn.



BX-10
10' (3.1m) Extension cable

BX-25
25' (7.62m) Extension cable



Grey Unshielded Cable Assemblies

GSEC-2MU
6.5' (2.0m) Low-cost

GSEC-5MU
16.4' (5.0m) Low-cost



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



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



SEB-3
Stainless "L" Bracket



TA-18
18mm Adapter



MB-18
Mounting Bracket



DRB-1
Bracket

IMPORTANT:

To reduce the possibility of electrical interference, use TRI-TRONICS molded plug/shielded cable assembly

SUPPLY VOLTAGE

- 12 to 24 VDC
- Polarity Protected

CURRENT REQUIREMENTS

- 60mA (exclusive of load)

OUTPUT TRANSISTORS

- (1) NPN and (1) PNP output transistors:
NPN: Sink up to 150mA
PNP: Source up to 150mA
- Momentary short circuit protected
- Outputs protected from pulsing during power up
- Light/Dark switch determines output status:
LT = Light "ON" operate
DK = Dark "ON" operate

RESPONSE TIME

- Minimum duration of input event:
500 microseconds

HYSTERESIS

- Set for Medium-to-Low contrast application

LED LIGHT SOURCE

- Choice of color: Infrared = 880nm
or Visible Red = 660nm

LIGHT IMMUNITY

- Responds to sensor's pulse modulated light source – immune to most ambient light

RANGE ADJUSTMENT

- 15 turn Light Source Intensity control

AMBIENT TEMPERATURE

- -40°C to 70°C (-40°F to 158°F)



INDICATORS

- **OUTPUT INDICATOR**
RED LED illuminates when the output transistors are in the "ON" state as determined by the Light/Dark switch
- **BEAM STATUS INDICATOR**
GREEN LED illuminates when received light level exceeds the sensor's light state switch point
- **LIGHT SOURCE INTENSITY INDICATOR**
YELLOW LED illuminates proportionally to the Light Source intensity as determined by the Range adjustment

RUGGED CONSTRUCTION

- Chemical resistant housing
- Waterproof, ratings, NEMA 4X, 6P and IP67
- Epoxy encapsulated for mechanical strength

RoHS Compliant
Product subject to change without notice

Connections and Dimensions

OPTI-EYE® PHOTOELECTRIC SENSOR

