General Purpose Photoelectric Sensor
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 its 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
Mounting and Light Source Guidelines

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 V4
Convergent 1” “V” Axis
Useable range of 1” to 5”.

Type V5
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

<table>
<thead>
<tr>
<th>Convergent / Proximity / Retroreflective</th>
<th>Glass Fiberoptics</th>
<th>Plastic Fiberoptics</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPTICAL BLOCKS</td>
<td>IR</td>
<td>RED</td>
</tr>
<tr>
<td>V4, V4A</td>
<td>1 in.</td>
<td>1 in.</td>
</tr>
<tr>
<td>V6</td>
<td>1.5 in.</td>
<td>1.5 in.</td>
</tr>
<tr>
<td>V8</td>
<td>0.5 in.</td>
<td>0.5 in.</td>
</tr>
<tr>
<td>O4</td>
<td>5 in.</td>
<td>2.5 in.</td>
</tr>
<tr>
<td>O5</td>
<td>3 ft.</td>
<td>1.5 ft.</td>
</tr>
<tr>
<td>R4</td>
<td>20+ ft.</td>
<td>18 ft.</td>
</tr>
<tr>
<td>R5</td>
<td>N/A</td>
<td>10 ft.</td>
</tr>
</tbody>
</table>

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

OPTI-EYE®

General Application Photoelectric Sensors

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How To Specify

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)

Example:

<table>
<thead>
<tr>
<th>O</th>
<th>R</th>
<th>C</th>
<th>V4</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPTI-EYE®</td>
<td>Light Source</td>
<td>Connector</td>
<td>Optical Block</td>
</tr>
</tbody>
</table>

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.

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.)
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
Specifications

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

Connections and Dimensions

OPTI-EYE® PHOTOELECTRIC SENSOR

Connections Options:
Choice Of Built-In 6 Foot
Shielded Cable Or M12 Connector
For Use With Optional Cables

P/N DRB1
Universal Mounting
for DIN Rail or Site
Mounting Included

P/N SEB-3
Optional Mounting
Bracket With Hardware

Optical Blocks

4-40 x 1/4" Or 1/2"
Socket Hd. Cap Screw
(3/32 Hex Key)

Connection Options:

P/N TA-18
Optional 18mm
Barrel Adaptor
For Through-Hole
Mounting

RoHS Compliant
Product subject to change without notice