General Purpose Photoelectric Sensor

MITY•EYE®

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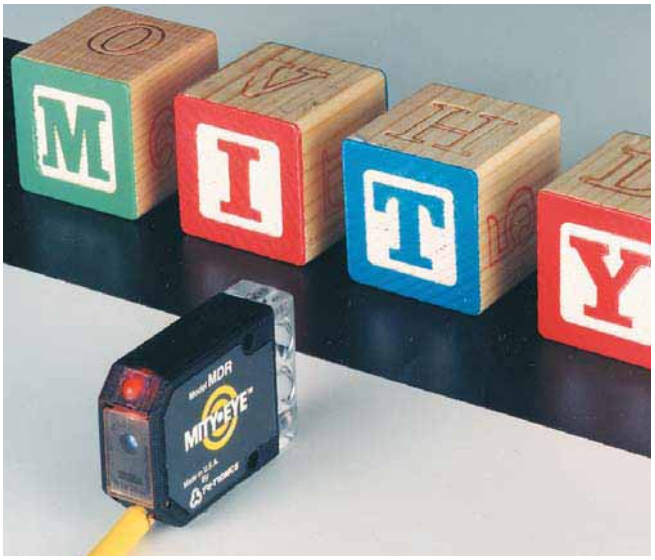
Designed for Trouble-Free Operation



Many design features have been incorporated into the **MITY•EYE®** to prevent mechanical or electrical damage and to provide trouble-free operation. The sensitivity pot is protected with a clutch to prevent damage from over-travel. The entire sensor is epoxy-encapsulated to ensure mechanical strength. The case itself is rugged and watertight.

To prevent electrical mishaps, the optically isolated AC solid state switch is protected by an MOV (Metal Oxide Varistor). In addition, the AC switch turns on synchronously at near zero volts which helps to prevent electrical line noise generated by hard relay contacts or inductive loads.

MITY•EYE's unique lensed optical blocks are molded of solid optical grade, high-impact plastic. This innovative concept helps to prevent condensation or fog buildup on the inside of the lens. Multiple varieties of optical blocks are available for operating the MITY•EYE® in either the retroreflective, polarized (nonglare), proximity, fiberoptic, or convergent sensing modes. A simple change of the optical block can be very useful in determining the best sensing mode for use in your specific sensing task. These inexpensive, interchangeable optical blocks reduce the inventory burden of replacement parts and eliminate the need for discarding a complete sensor in the case of damage to the optical block.

Features

- Cable or pigtail quick disconnect
- AC or DC models available
- NPN and PNP outputs or triac output, depending on model
- Interchangeable optical blocks
- 500 microsecond response time on DC models
- Potentiometer adjustment
- Light On/Dark On switch
- Bracket or through-hole mounting

Benefits

- Lower inventory costs
- Reduce maintenance costs
- Improve machine throughput
- Easy to use
- Small and compact for mechanical constraints

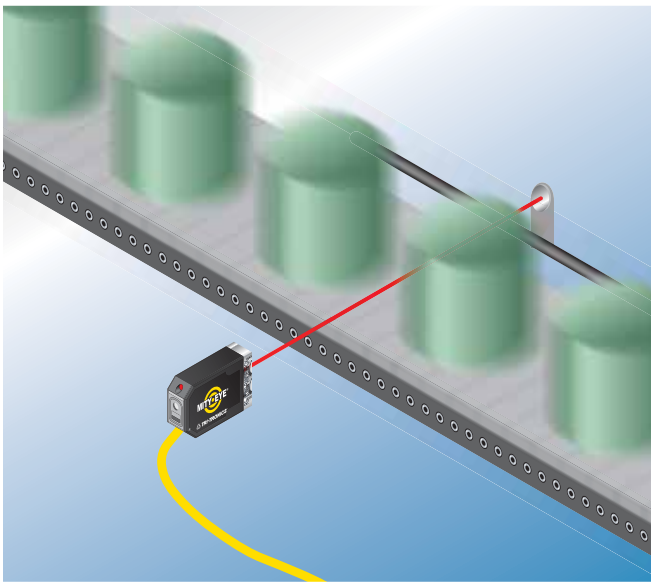
Applications

- Feeder bowl sensor
- Small parts detector
- High speed counting
- Printing/Marking/Coding

Typical Applications

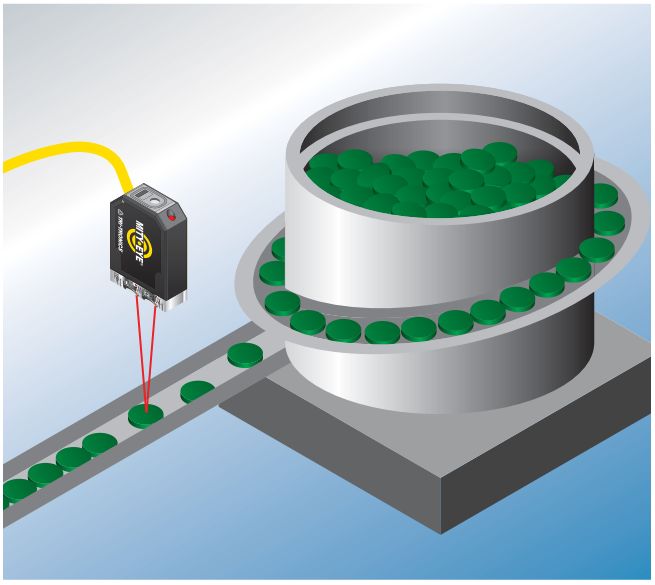
High Speed Applications:

The 500µs response time provides the **MITY•EYE®** with the ability to detect fast moving targets accurately for counting, labeling, printing, and filling applications. The interchangeable optical block feature allows for many different sensing options including fiber optic, retroreflective, and long range and short proximity, providing a flexible sensing option for a reasonable price.



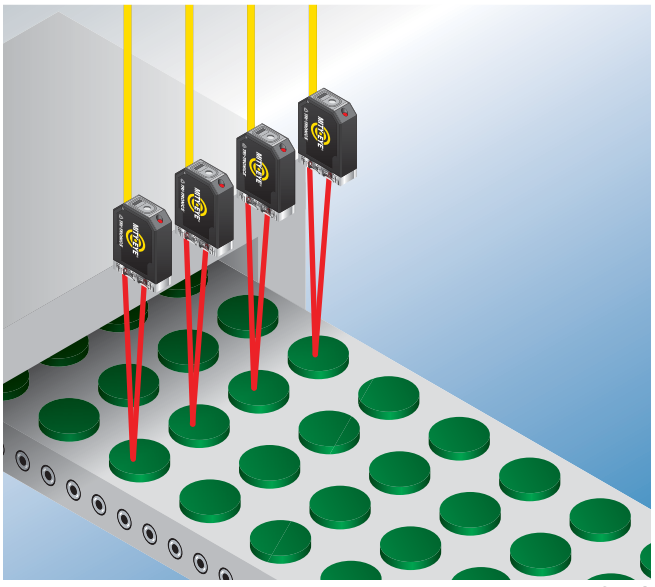
Small Target Detection:

The small, compact size of the **MITY•EYE®** is perfect for Small Target applications such as illustrated to the right. Having the ability to change to a pin point fiber optic light guide, or spot focus convergent lens provides a solution for small targets that is accurate, repeatable, and easy to change. The **MITY•EYE®** is available with 6 ft. cable, or 4-Pin, M12, 6 in. pigtail connector.



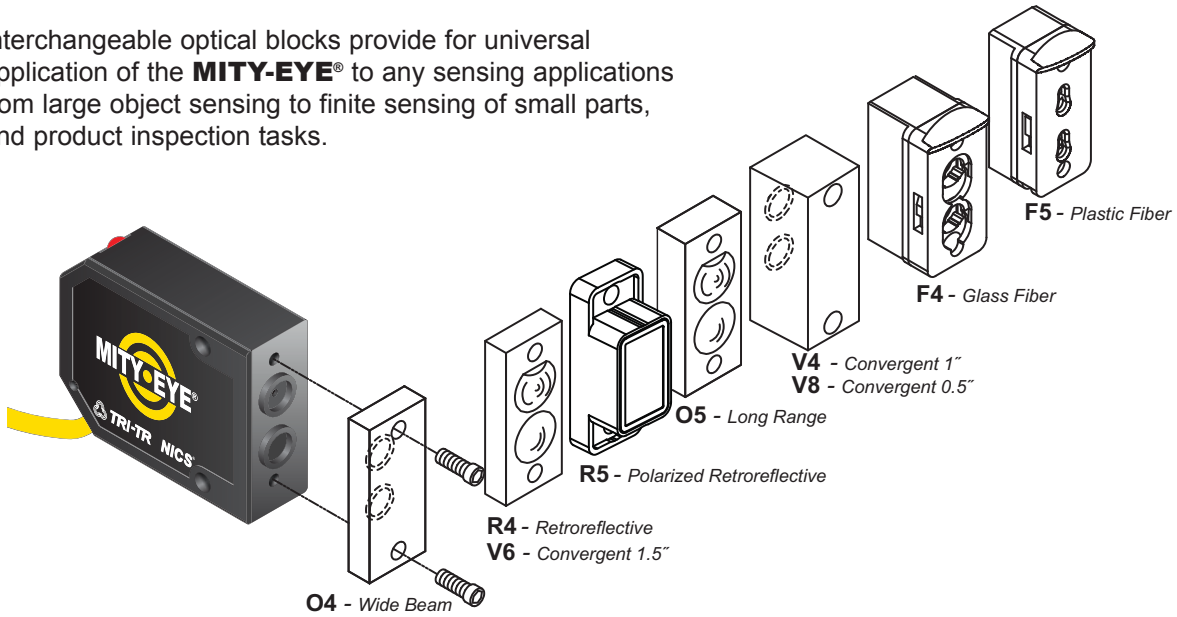
Multiple Target Sensing:

The small, compact size of the **MITY•EYE®** is desirable for applications that require multiple sensors in close mechanical spacing constraints. Being able to gang together the sensors in tight physical space is helpful as a solution in this environment.



Optical Block Selection

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

Optical Blocks	MITY•EYE® Models IR	RED	HI INT RED
04 Proximity	2 in.	1 in.	2 in.
05 Proximity	18 in.	9 in.	18 in.
R4 Retroreflective	20 ft.	16 ft.	N/A
R5 Polarized Retro	N/A	17 ft.	12 ft.
V4 Convergent	1 in.	1 in.	1 in.
V6 Convergent	1.5 in.	1.5 in.	1.5 in.
V8 Convergent	.5 in.	.5 in.	.5 in.
Glass Fiberoptics			
F4 Proximity	1.5 in.	.5 in.	1 in.
F4 Proximity w UAC-15 lens	8 in.	N/A	6 in.
F4 Opposed	3.5 in.	2.5 in.	3 in.
F4 Opposed w UAC-15 lens	15 ft.	8 ft.	15 ft.
Plastic Fiberoptics			
F5 Proximity	N/A	N/A	1/2 in.
F5 Opposed		1 in.	2 in.
F5 Opposed w HLA-1 lens	N/A	3.5 ft.	4.5 ft.

MITY•EYE® Sensors offer a selection of either Infrared (invisible), Red (visible), or High Intensity Red (visible) light sources.

Infrared – invisible light source recommended for opaque object sensing. The IR LED provides long-range sensing capabilities and maximizes the ability to penetrate contaminated lenses.

Red – visible red light source recommended for sensing transparent/translucent objects and for use with the polarized retroreflective lens.

High Intensity Red – recommended for long-range proximity sensing and for use with plastic fiberoptic light guides.

NOTES:Proximity test utilized a 90% reflective white target. Retroreflective tests utilized a 3˝ diam. round reflector, Model AR-3. Range tests utilized a .125˝ diam. glass fiber bundle or .040˝ diam. plastic fiber.

How To Specify

1. Select sensor model based on light source required:

DC POWERED
MDI = Infrared
MDHR = High Intensity RED
MDR = Red

AC POWERED
MAI = Infrared
MAHR = High Intensity RED
MAR = Red

2. Select connection required:
Blank = Cable
C = Connector

3. Select Optical Block based on mode of sensing required (see Range Guidelines)

Example: MDH R C V4

- MITY•EYE®
- Light Source
- Connector
- Optical Block

AC & DC Miniature Sensors

Accessories

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

TA-18
18mm Adapter

CAC15
Special AC MITY•EYE® Cable, 15' (4.6m)
NOTE: CAC15 power cable for AC MITY•EYE® ONLY

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

MEB-1
Mounting Bracket

MB-18
Mounting Bracket

DC MITY•EYE® Cable
4-wire, M12

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

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

Specifications

DC MODELS SUPPLY VOLTAGE
- 10 to 30 VDC @ 35mA (reverse polarity protected)

DC MODELS OUTPUT DEVICES
- Provide both NPN and PNP open collector output transistors capable of sinking or sourcing up to150mA continuous
- Short circuit protected
- Zener Diode protected to 36 volts
- Protected against false chattering/ pulsing during power up

DC MODELS RESPONSE TIME
- 500 microseconds (light or dark)

AC MODELS SUPPLY VOLTAGE
- 24 to 240 VDC @ 35mA (reverse polarity protected)

AC MODELS OUTPUT DEVICES
- 2-wire isolated solid state triac rated at 500mA rms continuous
- MOV protected
- Switches “On” and “Off” synchronously at near zero volts
- “Off” state leakage less than 1mA

AC MODELS RESPONSE TIME
- 4 microseconds

LED LIGHT SOURCE
- Infrared = 880nm, Red = 660nm, Blue = 480nm, White = Broadband Color Spectrum
- Pulse modulated

LIGHT IMMUNITY
- Pulse modulated to provide extremely high immunity to ambient light

SENSING RANGE
- Range determined by model type, mode of sensing, and optical block type as selected (see Range Chart for details).

ADJUSTMENTS/INDICATORS
- 4-turn clutched sensitivity adjustment
- 2-position light “on” / dark “on” selection switch
- Red LED indicator energizes when light beam is established

AMBIENT TEMPERATURE
- -20°C to 70°C (-20°F to 158°F)

RUGGED CONSTRUCTION
- Chemical resistant case, “O” ring sealed to provide moisture protection
- Epoxy encapsulated for mechanical stability
- NEMA 4X, 6P and IP67

LED LIGHT SOURCE WAVELENGTH
- Infrared = 880nm
- Red = 660nm
- High Intensity Red = 650nm

NOTE:DC Mity•Eye with 10” Pigtail is designed to be used with our 4-Wire M12 Power Cable.

RoHS Compliant
Product subject to change without notice

Connections and Dimensions — AC and DC MITY•EYE®