

# **Smart Sensing Solutions Since 1954**

# MINI-EYETM



**Miniature Sensor** 

# MINI-FYF<sup>TM</sup>

TRI-TRONICS MINI-EYE™ sensors are designed to be low in cost and high in value. The sensors are waterproof and are enclosed in a high-impact plastic housing.

**Through-Beam Models** utilize a separate light source and receiver for Beam Break sensing. Recommended for long-range sensing or for use in environments where dust or dirt buildup may cover the lens.

The sensors provide a narrow beam path from the light source to the receiver and are perfect for sensing small gaps or precise sensing tasks, which is critical when attempting to resolve the exact location of passing objects. The light source requires a simple two-wire connection and functions independently of other receivers.

**Retroreflective Models** operate in either the Beam Make or Beam Break sensing mode and are designed to be used with a prismatic reflector. Detection occurs when the light beam is broken by a passing target.

The visible, red, polarized model helps to prevent proxing or responding to undesirable light reflecting from shiny objects, such as cans, glass, and clear plastic. The infrared light source model is recommended for long-range sensing.

**Proximity Models** are designed for close range sensing tasks and operate by detecting the reflected light from targeted objects.

The red LED light source is recommended for detecting transparent objects, such as clear glass or plastic bottles. The invisible infrared LED light source is recommended for general purpose sensing tasks.

All MINI-EYE™ sensors are available with a quick disconnect M8 or M12 4-PIN connector or a potted 6′ (1.8 m) 4-wire cable, and with a red or infrared LED light source. The MINI-EYE is easy to set up and can operate in either the light ON or dark ON mode. For light ON operation, connect the white wire to negative and for dark ON operation, connect the white wire to positive.

The MINI-EYE™ is a tough little sensor that outperforms anything in its price range.



### **Features**

- 18mm mounting
- · Laser through-beam
- NPN or PNP output transistor
- Fixed Optics Proximity, Retroreflective, Polarized Retroreflective, and Through-Beam
- Selectable Light ON or dark ON operation
- High immunity to ambient light and strobes
- · Waterproof with high-impact housing
- Available in 6 foot 4-Wire cable, M8 4-Pin connector, or M12 4-Pin 6 inch pigtail
- Reverse polarity protection
- Short circuit protection
- Power-up output suppression
- 5VDC models available (please consult factory)

### **Benefits**

- Easy to use
- Lower inventory costs
- Lower maintenance costs
- Flexible

### **Applications**

- Presence/Absence Detection
- Material Handling
- Counting
- Sorting
- Orientation
- Web Break Detection

## **GAIN (SENSITIVITY)**

**Features** 

Screwdriver adjustment (Adjustment N/A on receiver models)

### **POWER INDICATOR**

GREEN LED illuminates when power is ON.

### **OUTPUT STATUS INDICATOR**

RED LED illuminates when outputs (N/A on Light Source models)

### LED LIGHT SOURCE

- LED, Red = 660nm
- LED, Infrared = 880nm Laser, Red = 650nm, Class 1

### **CONNECTION**

Choice of: Built-in 6ft (1.8m) cable, M8 4-pin connector, or M12 4-pin connector.



Sensor

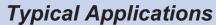


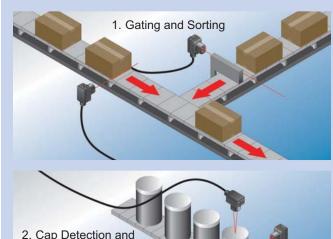
**Light Source** 

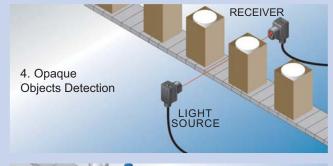


Receiver

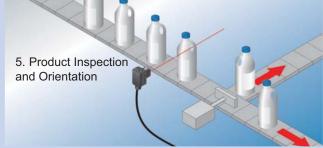


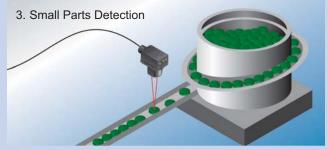


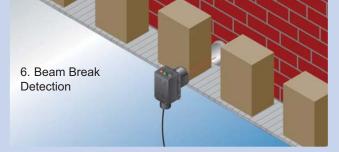












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# **Selection Guidelines**

HOW TO SPECIFY				
MODELS		DESCRIPTION		ANGE
STANDARD	18mm	SHORT RANGE PROXIMITY	STANDARD	18mm
MIVC	MIVC-18	IR, NPN, connector	5in (127.0mm)	6in (152.4mm)
MIV	MIV-18	IR, NPN, cabled	5in (127.0mm)	6in (152.4mm)
MRVC	MRVC-18	Red, NPN, connector	4in (101.6mm)	5in (127.0mm)
MRV	MRV-18	Red, NPN, cabled	4in (101.6mm)	5in (127.0mm)
PMIVC	PMIVC-18	IR, PNP, connector	5in (127.0mm)	6in (152.4mm)
PMIV	PMIV-18	IR, PNP, cabled	5in (127.0mm)	6in (152.4mm)
PMRVC	PMRVC-18	Red, PNP, connector	4in (101.6mm)	5in (127.0mm)
PMRV	PMRV-18	Red, PNP, cabled	4in (101.6mm)	5in (127.0mm)
LONG RANGE PROXIMITY				
MIPC	MIPC-18	IR, NPN, connector	20in (508.0mm)	20in (508.0mm)
MIP	MIP-18	IR, NPN, cabled	20in (508.0mm)	20in (508.0mm)
MRPC	MRPC-18	Red, NPN, connector	14in (355.6mm)	8in (203.2mm)
MRP	MRP-18	Red, NPN, cabled	14in (355.6mm)	8in (203.2mm)
PMIPC	PMIPC-18	IR, PNP, connector	20in (508.0mm)	20in (508.0mm)
PMIP	PMIP-18	IR, PNP, cabled	20in (508.0mm)	20in (508.0mm)
PMRPC	PMRPC-18	Red, PNP, connector	14in (355.6mm)	8in (203.2mm)
PMRP	PMRP-18	Red, PNP, cabled	14in (355.6mm)	8in (203.2mm)
TWIN	I with 10	RETROREFLECTIVE	1411 (000.011111)	OII1 (200.2I1IIII)
MIRC	MIRC-18	IR, NPN, connector	12ft (3.7m)	15ft (3.8m), 35ft (8.8m)*
MIR	MIR-18	IR, NPN, cabled	12ft (3.7m)	15ft (3.8m), 35ft (8.8m)*
MRRC	MRRC-18	Red, Polarized, NPN, connector	3.5ft (0.9m), 8.5ft (2.2m)	, , , , , ,
MRR	MRR-18	Red, Polarized, NPN, cabled	3.5ft (0.9m), 8.5ft (2.2m)	
PMIRC	PMIRC-18	IR, PNP, connector	12ft (3.7m)	15ft (3.8m), 35ft (8.8m)*
PMIR	PMIR-18	IR, PNP, cabled	12ft (3.7m)	15ft (3.8m), 35ft (8.8m)*
PMRRC	PMRRC-18	Red, Polarized, PNP, connector	3.5ft (0.9m), 8.5ft (2.2m)	, , , , , , , , , , , , , , , , , , , ,
PMRR	PMRR-18	Red, Polarized, PNP, cabled	3.5ft (0.9m), 8.5ft (2.2m)	
T WILLY	Trivilla 1	THROUGH-BEAM	0.011 (0.011), 0.011 (2.211)	on (1.6m), Ton (1.6m)
LIGHT SOURCE (Range to receivers below)				
MLSIC	MLSIC-18	Infrared, connector	65ft (19.8m)	65ft (19.8m)
MLSI	MLSI-18	Infrared, cabled	65ft (19.8m)	65ft (19.8m)
MLSRC	MLSRC-18	Red, connector	45ft (13.7m)	15ft (4.6m)
MLSR	MLSR-18	Red, cabled	45ft (13.7m)	15ft (4.6m)
	(Range w/ reciev	,	1 4011 (10.7111)	1011 (4.0111)
MRC	MRC-18	NPN, connector		
MR	MR-18	NPN, cabled		
PMRC	PMRC-18	PNP, connector		
PMR	PMR-18	PNP, cabled		
LASER THRO		1 W., Cabled		
LIGHT SOURCE				
MLZRC	MLZRC-18	Red, connector	60ft (18.2m)	60ft (18.2m)
MLZR	MLZR-18	Red, cabled	60ft (18.2m)	60ft (18.2m)
RECEIVERS	1	Tod, odbiod	0011 (10.2111)	3011 (10.2111)
MLRC	MLRC-18	NPN, connector		
MLR	MLR-18	NPN, cabled		
PMLRC	PMLRC-18	PNP, connector		
PMLR	PMLR-18	PNP, cabled		
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			1	

<sup>\*</sup>AR82 High performance reflector.

Note: Standard connector models utilize an M8 4-pin connector. M12 4-pin 6in pigtails are built to order. Ex. MIVC-18M12

NOTE: Retroreflective sensors equipped with a red light source are polarized to prevent proxing off shiny objects. Proximity test utilized a 90% reflective white target. Retroreflective tests utilized a 3in diam, round reflector, Model AR3.

NOTE: Receivers can be used with either IR or Red Light Sources.

## **Accessories**

### 4-Wire Nano Cable, M8



**GEC-6** 6ft (1.8m) cable

**GEC-15** 15ft (4.6m) cable

**GEC-25** 25ft (7.62m) cable



4-Wire Extension Cable, M8

**GEX-9** 9ft (2.7m) extension cable



**RGEC-6** 6ft (1.8m) right angle

**RGEC-15** 15ft (4.6m) right angle

**RGEC-25** 25ft (7.6m) right angle

### **Screw Mount Reflectors**



**78P**Screw Mount
4.4in x 1.9in
(111.8mm x 48.3mm)



AR3 Screw Mount 3in (76.2mm) diam.

## **Prismatic High Performance Reflectors**



AR4060 Screw Mount (40.5 x 60mm)



AR6151, AR6151G Screw Mount (chemical resistant glass cover) 2.4in x 2.0in (61 x 51mm)



AR46 Screw Mount (46mm) diam.

## **Optional Mounting Brackets**



MB-18 18mm Bracket, for use with TA-18



MIB-1 MINI•EYE™ Stainless Bracket Assembly



MIB-2 MINI•EYE™ Stainless Bracket Assembly



MIB-3 MINI•EYE™ Standard Mounting Bracket



MIB-4 MINI•EYE™ 18mm Mounting Bracket

# Specifications SUPPLY VOLTAGE

### SUPPLY VULIA

- 10 to 30VDC
- Polarity Protected Note: 5VDC +/- 10%

### **CURRENT REQUIREMENTS**

30mA (exclusive of load)

### **OUTPUT TRANSISTORS**

- NPN: Sink up to 100mA
- PNP: Source up to 100mA
- All outputs are continuously short circuit protected

### **RESPONSE TIME**

- Light State response = 600μs (1,100μs, Through-Beam)
- Dark State response = 600μs (1,100μs, Through-Beam)

### **LED LIGHT SOURCE**

- LED, Red = 660nm
- LED, Infrared = 880nm
- Pulse modulated
- Laser, Red = 650nm, Class 1

### **LIGHT/DARK ON OPERATION**

- Light ON achieved by connecting white wire to negative lead
- Dark ON achieved by connecting white wire to positive lead

### **RANGE**

 Dependent on model, see Selection Guidelines Note: 5VDC models, range reduced by 10%

### **HYSTERESIS**

Approximately 20% of signal

### **LIGHT IMMUNITY**

 Responds to sensor's pulsemodulated light source, resulting in high immunity to most ambient light, including high intensity strobes

### **DIAGNOSTIC INDICATORS**

- Red LED = Output Status
- Green LED = Power ON

### **AMBIENT TEMPERATURE**

• -40°C to 70°C (-40°F to 158°F)

### **RUGGED CONSTRUCTION**

- Chemical resistant, high-impact polycarbonate housing
- Waterproof ratings: NEMA 4X, IP66

RoHS Compliant Product subject to change without notice

#### Connections and Dimensions MINI-EYE™ 18MM MODELS STANDARD MODELS .74" [18.9 mm] Dim. "B" -[16.9 mm] [13.0 mm] (18.7 mm) Dim. "A" 1.20" (30.6 mm) [43.5 mm] (29.5 mm (43.4 mm) [24.1 mm] 2X Ø 12 1.16" [Ø3.0 mm] 67" (42.4 ...... 1.71" M18 X 1 "A" = .50" (12.7 mm) All Standard Models Threaded 2X Ø.12" .51" mm) (Ø3.1 mm) .69" (17.6 mm) Polarized Retroreflective Receivers \*Note: Laser and .52" 18mm through-beam Models Only (13.2 mm) has adjustment on the receiver instead. Light Retroreflective & Proximity Mode Sensors **Optional Mounting** 90. MB-18 50" POS RED O\_\_\_\_\_ (1)BROWN\* .75" mm NOTE 1 LT/DK WHITE POS RED (1)BROWN 19.1 10 TO 10 TO (12.7 mm) GREEN 1.26" NEG BLACK LOAD (4) BLACK\* NOTE 2 (3) BLUE\* BLACK (3) BLUE\* Optional Mounting Bracket w/ Hardware Note: Wiring Diagram Applies To Standard & 18mm Mini-Eye C ∈ c(ÛL)us .12" 28.4 MIB-1 Models Only. Visit Us At ttco.com For Laser Wiring And RoHS Compliant 18mm Dimensions. Note 1: Dark "ON" Operation: Terminate To Positive Light "ON" Operation: Terminate To Negative Note 2: NPN (Sink) Output Models: Terminate Load To Positive PNP (Source) Output Models: Terminate Load To Negative R 12' Note 3: No Contact On This Line For CJx Models (R 3.1 mm) [Wired Internally For Either Light On (L) or Dark On (D)]. Connector Connector (18.1 mm) Choice of: Built-In 6 ft (1.8 m) Cable, or M8 (or M12) 4-Pin Connector For Use With Optional Cables .98"\_/ Pin-Out For M8 Models Pin-Out For (24.9 mm)