Opacity Mode Registration Mark Gap Sensor

Mark·Eye® By Tri-Tronics

Registration Mark Gap Sensor

The **Mark•Eye**® is a registration mark sensor designed to see printed registration marks on most packaging materials on a continuous web. The "onetouch" setup enables the sensor to be adjusted with a single push of a button. There is no more guess work, making the operator's adjustment procedure easy.

The Mark•Eye® utilizes a white LED light source that is optimized to detect printed registration marks on translucent, transparent, and many metallized films and paper. This sensor is particularly useful on form, fill, and seal machines. Note that most packaging materials (except foil) are translucent. Many of the translucent packaging materials that we have tested allow light to penetrate either the backing material or the registration mark. Because this sensor operates in the opacity sensing mode, the color of the registration mark simply doesn't matter. Note: Marks as small as 1/16" wide by 1/4" long can be detected, dependent upon web opacity (contrast) and velocity.

The Mark•Eye® operates on 10 to 30 VDC and is pulse modulated to prevent any problems with ambient light. Its design incorporates a white LED light source directing a beam of light across the gap to the receiving lens of a photoelectric detector. In operation, the moving web of packaging material passes through the gap/slot. This sensor can detect registration marks in a wide variety of applications, as long as the size of the mark and velocity meets the capability of the sensor. When the intensity of the light beam transmitted through the web of material is altered by the presence of printed registration mark, the Mark•Eye® will switch its output accordingly. *Note: For metallized film that does not produce the desired response, we recommend sensing with a reflective mode sensor, such as the Smarteye X-Mark, X-Pro, or the Mark•Eye® Pro sensor.*

Setup: The Mark•Eye® is an automatic sensor...it is not a conventional "teach mode" sensor. As a result, all that is required to adjust the sensor is to place the web between the marks and push the appropriate AUTOSET button one time. The sensor will

Features

- ■ One touch AUTOSET
- ■ Two AUTOSET options; background lighter than mark or background darker than mark
- ■ 100µs response time
- ■ Remote AUTOSET; repeats last button pushed
- ■ 15ms pulse stretcher
- ■ Cable or M12 quick disconnect
- ■ Accurate edge detection
- ■ White light LED

Benefits

- ■ Fast & Easy setup minimizes down time
- ■ Accessible in hard to reach areas
- ■ Reliable and repeatable performance
- ■ Consistent detection of mark from startup to full speed, unnoticeable migration
- ■ Simple mounting configurations - through-holes and threaded inserts

automatically adjust itself to a perfect setting. The Mark•Eye® will now sense the difference or contrast between the light level penetrating through the web, giving an output when the mark is in view. Provision for a remote AUTOSET switch is also provided.

How to Specify

Model | **Description**
MEWL | White LED, 5-conductor, 6' (1.8m) cable attached
MEWLC | White LED, 5-pin micro connector (M12)

1. Sensor model: ME
2. White LED Light Emitter; Full Spectrum
3. Select Connector
Blank = 6' (1.8m) Cable, C = Connector, 6" (152mm) pigtail, M12 5-Pin

Example: ME WL C
MARK•EYE® ───
Light Emitter ───
Connector ───

Features

One button AUTOSET!

LOCATOR TABS
Help to center optics for proper detection of registration marks

LIGHTER THAN MARK
1. AUTOSET: Press and hold for 1 second with light background in view.
2. Hold down both buttons for 2 seconds to change output from Dark ON to Light ON.

DARKER THAN MARK
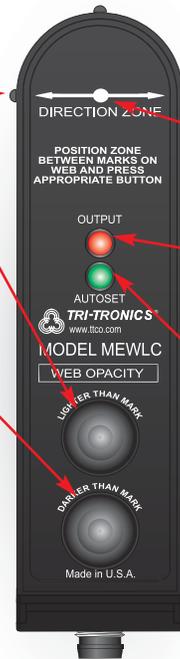1. AUTOSET: Press and hold for 1 second with dark background in view.
2. Hold down both buttons for 2 seconds to change output from Dark ON to Light ON.

NOTE: Optimized for registration mark sensing.

PULSE STRETCHER: To enable Pulse Stretcher, please refer to Setup Instructions.

DIRECTION ZONE
POSITION ZONE BETWEEN MARKS ON WEB AND PRESS APPROPRIATE BUTTON
OUTPUT
AUTOSET
TRI-TRONICS
www.ttco.com
MODEL MEWLC
WEB OPACITY
LIGHTER THAN MARK
DARKER THAN MARK
Made in U.S.A.

CENTER of DETECTION
This point marks the exact center of light source and receiver through-beam.

RED LED OUTPUT INDICATOR
Illuminates when output is on
Flashes when sensor is shorted or overloaded

GREEN LED AUTOSET
Flashes rapidly during AUTOSET, for about 1/2 a second, and remains illuminated when complete
Flashes rapidly during AUTOSET, for about 1 second, and then flashes slowly with red LED Output Indicator four times when AUTOSET incomplete

Accessories

GSEC-6
6' (1.8m) Shielded cable

GSEC-15
15' (4.6m) Shielded cable

GSEC-25
25' (7.62m) Shielded cable

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

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

GRSEC-6
6' (1.8m) Right angle shielded cable

GRSEC-15
15' (4.6m) Right angle shielded cable

GRSEC-25
25' (7.62m) Right angle shielded cable

GX-25
25' (7.62m) extension cable

(Mark Samples)

White Light Source
(Broadband Color Spectrum)

The "White Light" LED light source built into the **Mark•Eye®** promotes easy detection of the largest variety of color marks printed on the largest variety of colored web materials. By combining a White LED light source, our Contrast Indicator, and the one-push AUTOSET setup, you have a winning combination of high performance with an easy to use sensor:

• The best choice for detecting printed registration marks on packaging materials
• The best choice for detecting pale yellow marks on white backgrounds

Specifications

SUPPLY VOLTAGE
- 10 to 30 VDC
- Polarity Protected

CURRENT REQUIREMENTS
- 45mA (exclusive of load)

OUTPUT TRANSISTORS
- (1) NPN and (1) PNP output transistor
- Sensor outputs can sink or source up to 150mA (current limit)
- All outputs are continuously short circuit protected

REMOTE AUTOSET INPUT
- Opto isolated momentary sinking input (10mA)

RESPONSE TIME
- Light/Dark state response = 100 microseconds

LED LIGHT SOURCE
- High intensity white LED
- Pulse modulated

PULSE STRETCHER TIMER
  (Selectabe)
- Provides minimum of 15 millisecond output duration

PUSH-BUTTON CONTROL
- Automatic setup routines based on web opacity
- One push-button setup
- Pushing both buttons simultaneously inverts output

HYSTERESIS
- Minimal hysteresis promotes detection of low contrast registration marks

LIGHT IMMUNITY
- Responds to sensor's pulsed modulated light source resulting in high immunity to most ambient light

INDICATORS
- Green LED flashes when AUTOSET routine is activated and stays illuminated when AUTOSET is completed
- Red LED illuminates when sensor's output transistors are "ON". NOTE: The status of the output transistors can be inverted by pushing both buttons simultaneously.

AMBIENT TEMPERATURE
- -40°C to 70°C (-40°F to 158°F)

RUGGED CONSTRUCTION
- Chemical resistant high thermoplastic PPS housing
- Waterproof, ratings: NEMA 4 and IP66
- Conforms to heavy industry grade CE and UL requirements

> **NOTE:** Red flashing LED —
> Short circuit condition exists
>
> Green flashing LED —
> No contrast through web

RoHS Compliant
Product subject to change without notice

Connections and Dimensions   MARK·EYE®

Micro Cable (M12)

6 IN. Pigtail 152.4 mm

6 FT. Cable (182.9 cm)

Ø 0.167" (4.25 mm)
0.71" (18.00 mm)
2.12" (53.76 mm)
0.93" (23.5 mm)
1.07" (27.2 mm)
0.47" (11.8 mm)
0.71" (18.0 mm)
0.100" (2.54 mm)

Front   Back

6-32 x 1/4" Deep Mounting Holes (2)
2.520" (64.00 mm)
0.630" (16.00 mm)
0.472" (12.00 mm)

3.641" (92.47 mm)
0.984" (25.00 mm)

BROWN   POS
WHITE   NPN (SINK) 150 MA MAX
BLACK   PNP (SOURCE)
BLUE   NEG
GREY   REMOTE AUTOSET INPUT
10 TO 30 VDC

RED   POS
WHITE   NPN (SINK) 150 MA MAX
GREEN   PNP (SOURCE)
BLACK   NEG
BLUE   REMOTE AUTOSET INPUT
10 TO 30 VDC

NPN (SINK)   POSITIVE
NEGATIVE   PNP (SOURCE)
REMOTE SET

NPN (SINK)   POSITIVE
NEGATIVE   PNP (SOURCE)