

# Specifications

## SUPPLY VOLTAGE

- 10 to 30Vdc
- Polarity Protected

## CURRENT REQUIREMENTS

- 45 milliamps (exclusive of load)

## OUTPUT TRANSISTORS

- (1) NPN and (1) PNP sensor output transistors
- Outputs sink or source up to 150 milliamps (current limit)
- All outputs are continuously short circuit protected

## REMOTE AUTOSET INPUT

- Opto-isolated momentary sinking input (10 milliamps)

## RESPONSE TIME

- Light/Dark state response = 45 microseconds

## LED LIGHT SOURCE

- White LED

## PUSH BUTTON CONTROL

- AUTOSET
- Manual Adjustments
- Set status of 5 options: 5) Lock, 4) Output Invert, and Pulse Stretches 3) 10ms, 2) 25ms, and 1) 50ms

## HYSTERESIS

- Set for high resolution ... less than one bar on the contrast indicator.

## LIGHT IMMUNITY

- Responds to sensor's pulsed modulated light source ... immune to most ambient light and strobes, including indirect sunlight.

## DIAGNOSTIC INDICATORS

- 5-LED Bargraph functions in one of two modes:
  1. Contrast Indicator... Displays scaled reading of sensor's response to contrasting light levels (light to dark).
  2. Status Indicator... Displays status of 5 selectable options.
- Red LED output indicator ... Illuminates when the sensor's output transistors are ON.
- NOTE: If Output LED flashes, a short circuit condition exists.
- Amber LED...Illuminates when in the options select mode.
- Yellow LED...Illuminates when Lock feature is activated.

## AMBIENT TEMPERATURE

- -40°C to 70°C (-40°F to 158°F)

## RUGGED CONSTRUCTION

- Chemical resistant high impact polycarbonate housing
- Epoxy encapsulated
- Industry Ratings: NEMA 4X, 6P, IP67



# MARK-EYE® PRO

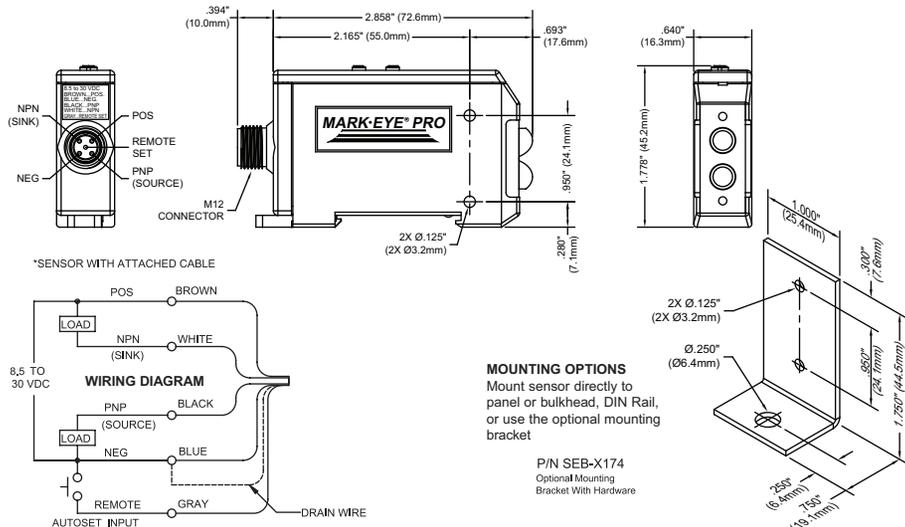
# Installation Manual

## High-Resolution Registration Mark Sensor



The **MARKEYE®-PRO** sensor is a high performance photoelectric sensor that can be adjusted by a single push of a button. As a result, there is no guess work on the part of the operator. Now you can throw away the screw-driver and the manual!

## Connections & Dimensions



P.O. Box 25135, Tampa, FL 33622-5135  
TEL: (813) 886-4000 / (800) 237-0946  
www.ttco.com / info@ttco.com

Product subject to change without notice.

070-0156, Rev. 2



## Features & Setup Instructions

### Dual Function Bargraph

Primary function: Contrast Indicator  
Secondary function: Status Indicator of 5 selectable options

### FIVE SELECTABLE OPTIONS

- #5 LOCK... for tamper-proof operation
- #4 Output Invert
- #3 10 ms pulse stretcher/OFF delay
- #2 25 ms pulse stretcher/OFF delay
- #1 50 ms pulse stretcher/OFF delay

### Option Status / Mode Select

Push both buttons for three seconds to switch bargraph display to status indicator of selectable options

### Option Status Mode Indicator

Illuminates in the ON state, switching at "3" on the contrast indicator

### Output Status Indicator

Illuminates in the ON state, switching at "3" on the contrast indicator

### Lock Status Indicator

### R4 Optical Block

Retroreflective lens

### Optional Timer

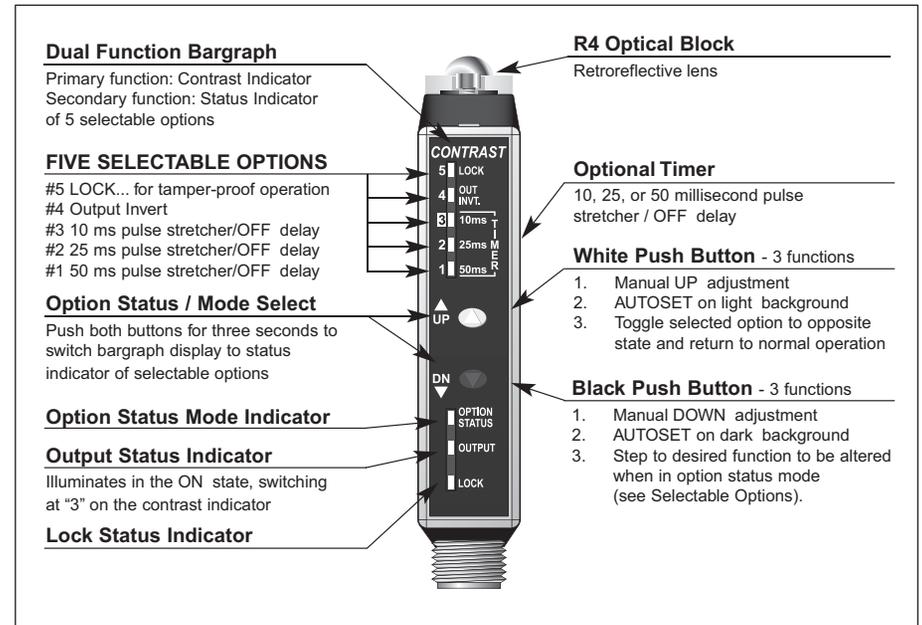
10, 25, or 50 millisecond pulse stretcher / OFF delay

### White Push Button - 3 functions

1. Manual UP adjustment
2. AUTOSET on light background
3. Toggle selected option to opposite state and return to normal operation

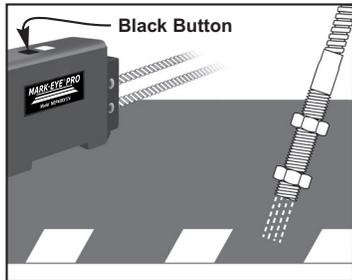
### Black Push Button - 3 functions

1. Manual DOWN adjustment
2. AUTOSET on dark background
3. Step to desired function to be altered when in option status mode (see Selectable Options).

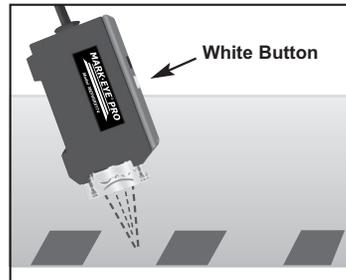


## SETUP Instructions

For best sensing results, it is recommended that the axis of the sensing tip be within 10 to 15 degrees of perpendicular to the target mark.



**Light Mark/Dark Background**  
Place the background in view and press the Black button.



**Dark Mark/Light Background**  
Place the background in view and press the White button.

**NOTE:** Use White UP or Black DOWN buttons to tweak adjustment.

**Remote AUTOSET:** To remotely AUTOSET the sensor, apply a momentary contact closure from the AUTOSET input wire to negative as shown in the wiring diagram. A remote AUTOSET command will duplicate the last manual AUTOSET command.

## Selectable Options

The **MARKEYE®-PRO** Sensor is equipped with the following 3 optional features that can help to adapt the sensor to specific application requirements.

**Lock** – When this feature is enabled the sensor becomes tamper proof (Note: The remote AUTOSET is not affected by the Lock).

**Output Invert** – Allows the sensor to be programmed for the output transistors to be ON or OFF when the registration mark comes into view.

**Timer** – When the OFF delay pulse stretcher is enabled, the output duration is extended by 10, 25, or 50 milliseconds (not additive). Enabling the Timer allows ample time for the controller to respond. The time durations of the gap between marks must be more than the selected delay.

### How to select options:

1. Press and hold the **White** and **Black** buttons simultaneously for 3 seconds. The 5-LED bargraph will go into a flashing routine and the 5-LED bargraph switches to a status indicator. The status of the selectable options will be displayed and the amber Option Status indicator will be lit.
2. Step to the desired function to be changed by tapping the **Black** button. For example, the first tap will step to the LOCK select function. To indicate the LOCK function has been selected, the #5 LED will **flash**. Once the LED next to the option is **flashing**, depress the **White** button to change the status to the opposite state. The sensor will then display the choice briefly before returning to normal operation. This sequence must be repeated for each function to be altered. If you make no change in the status of any control function, tap the **Black** button a sixth time, or wait 5 seconds to allow the sensor to automatically return to the preexisting selections.

### Options

LED	FEATURE	ON/OFF	STATUS
#5 LED	Lock	On Off ✓	The manual up/down and Auto-Set adjustments are disabled. The manual up/down and Auto-Set adjustments are enabled.
#4 LED	Output Invert	On Off ✓	Output is ON when mark is in view. Output is OFF when mark is in view.
#3 LED	10ms Timer	On Off ✓	10ms Timer/Pulse Stretcher is enabled. 10ms Timer/Pulse Stretcher is disabled.
#2 LED	25ms Timer	On Off ✓	25ms Timer/Pulse Stretcher is enabled. 25ms Timer/Pulse Stretcher is disabled.
#1 LED	50ms Timer	On Off ✓	50ms Timer/Pulse Stretcher is enabled. 50ms Timer/Pulse Stretcher is disabled.

✓ = Factory presets

## Diagnostics

The **MARKEYE®-PRO** Sensor's 5-LED Contrast Indicator provides at-a-glance analysis of the sensor's response to the **light state** vs. **dark state** sensing condition. This device is not only useful in static conditions for alignment purposes, but is also functional during dynamic conditions when input events are ongoing.

**NOTE:** If the Contrast Indicator is cycling repeatedly, check to insure that the gray wire is not shorted to ground.

## Output Indicator

Red LED illuminates when output transistor is in the "ON" state.

The "light state" reading must exceed "3"

The "dark state" reading must fall below "3"

**NOTE:** If the red output indicator flashes while the output transistor is in the "ON" state, one of the output leads is shorted (NPN to positive or PNP to negative/shield).