

# Installation Instructions

## Ultrasonic Discrete Sensors

**IMPORTANT: SAVE THESE INSTRUCTIONS FOR FUTURE USE.**



### Specifications

| General                       | 300 mm Models                                            | 800 mm Models              |
|-------------------------------|----------------------------------------------------------|----------------------------|
| Sensing range [mm (in.)]      | 30...300<br>(1.18...11.81)                               | 50...800<br>(1.96...31.49) |
| Adjustment range [mm (in.)]   | 50...300<br>(1.96...11.81)                               | 70...800<br>(2.75...31.49) |
| Blind Zone [mm (in.)]         | 0...30 (0...1.18)                                        | 0...50 (0...0.96 )         |
| Standard target [mm (in.)]    | 100 x 100 (3.93 x 3.93)                                  |                            |
| Frequency                     | Approx. 390 kHz                                          | Approx. 255 kHz            |
| Response delay                | Approx. 30 ms                                            | Approx. 100 ms             |
| Operating temperature [C (F)] | -25...70° (-13...158°)                                   |                            |
| Storage temperature [C (F)]   | -40...85° (-40...185°)                                   |                            |
| Electrical                    |                                                          |                            |
| Operating voltage             | 10...30V DC                                              |                            |
| Output current                | 200 mA                                                   |                            |
| Current consumption           | ≤20 mA                                                   |                            |
| Protection type               | Short-circuit, reverse polarity, overload                |                            |
| Voltage drop                  | <3V                                                      |                            |
| Output                        |                                                          |                            |
| Output type                   | Discrete-PNP with N.O./N.C.                              |                            |
| Output Rating                 | 200 mA max.                                              |                            |
| Repeatability                 | <1%                                                      |                            |
| Switching frequency           | <13 Hz                                                   | <4 Hz                      |
| Hysteresis                    | 1% of the set operating distance                         |                            |
| Sensitivity adjustment        | Remote teach/optional programming cable                  |                            |
| Environmental                 |                                                          |                            |
| Enclosure type rating         | IP67                                                     |                            |
| Shock                         | 30 g, 11 ms                                              |                            |
| Housing material              | Brass, nickel-plated                                     |                            |
| Connection                    | Micro-quick disconnect                                   |                            |
| Certifications                | cULus Listed and CE Marked for all applicable directives |                            |

#### IMPORTANT

Solid-state devices can be susceptible to radio frequency (RF) interference depending on the power and the frequency of the transmitting source. If RF transmitting equipment is to be used in the vicinity of the solid-state devices, thorough testing should be performed to assure that transmitter operation is restricted to a safe operating distance from the sensor equipment and its wiring.

#### ATTENTION



If a hazardous condition can result from unintended operation of this device, access to the sensing area should be guarded.

Models to be covered:

873M-D18PO300-D4  
873M-D18RPO300-D4  
873M-D18PO800-D4  
873M-D18RPO800-D4

### Discrete Output Mode

- Discrete sensors feature normally-open/normally-closed PNP outputs.
- Includes two teachable set points and multiple output functions.
- The upper and lower sensing range can be scaled to a distance-fixed window.
- The sensor is taught using an easy four-step remote teach process or an optional programming cord.

### LED Displays

| Operating Mode                  | Red LED   | Yellow LED       | Green LED |
|---------------------------------|-----------|------------------|-----------|
| Teach Mode                      |           |                  |           |
| Target detected                 | One flash | Continuous flash | Off       |
| No target detected              | Flashes   | Off              |           |
| Target marginal (invalid teach) |           |                  |           |
| Standard Mode                   |           |                  |           |
| Target present                  | Off       | On               | On        |
| Target not present              |           | Off              |           |



## Adjusting Switching Points

Pertaining to the 873M, there are five modes of operation in detecting a target object in discrete mode.

**Window Mode, N.O.:** Two set points are taught in defined sensing range creating a sensing window. Once a target object passes through the window, the output triggers on.

**Window Mode, N.C.:** Two set points are taught in the defined sensing range creating a sensing window. Output is initially ON. Once a target object passes through the window, the output triggers off.

**One set point, N.O.:** One set point is taught within a defined sensing range of the sensor with the output off. When a target passes between the sensor and the taught set point, the output triggers and turns on.

**One set point, N.C.:** One set point is taught within a defined sensing range of the sensor while the output is on. When a target passes between the sensor and the taught set point, output triggers and turns off.

**Object Presence Mode:** Also known as resetting to factory defaults settings. Once the sensor is taught, all set points are removed and the sensor returns to the factory default specified range depending on the catalog number. Any object will be detected within a specified sensing range [50...300 or 70...800 mm (1.96...11.81 or 2.75...31.49 in.)]

### Window Mode, N.O.:

1. Place the target at the desired near-set point.
2. Using the white wire, connect to **(0V DC (-))** or press A1 on the optional programming cable.
3. Set the target to desired far-set point.
4. Using the white wire, connect to **(10...30V DC (+))** or press A2 on optional programming cable.

### Window Mode, N.C.:

1. Place the target at the desired near-set point.
2. Using the white wire, connect to **(10...30V DC (+))** or press A2 on the optional programming cable.
3. Set the target to desired far set point.
4. Using white wire, connect to **(0V DC (-))** or press A1 on optional programming cable.

### One Set Point, N.O.:

1. Place target at desired set point.
2. Using white wire, connect to **(10...30V DC (+))** or press A2 on optional programming cable.
3. Cover sensor head with hand or remove all objects from sensing field.
4. Using the white wire, connect to **(0V DC (-))** or press A1 on the optional programming cable.

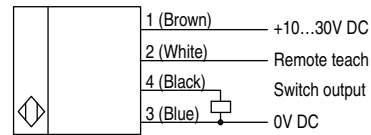
### One Set Point, N.C.:

1. Place target at desired set point.
2. Using the white wire, connect to **(0V DC (-))** or press A1 on the optional programming cable.
3. Cover sensor head with hand or remove all objects from sensing field.
4. Using the white wire, connect to **(10...30V DC (+))** or press A2 on the optional programming cable.

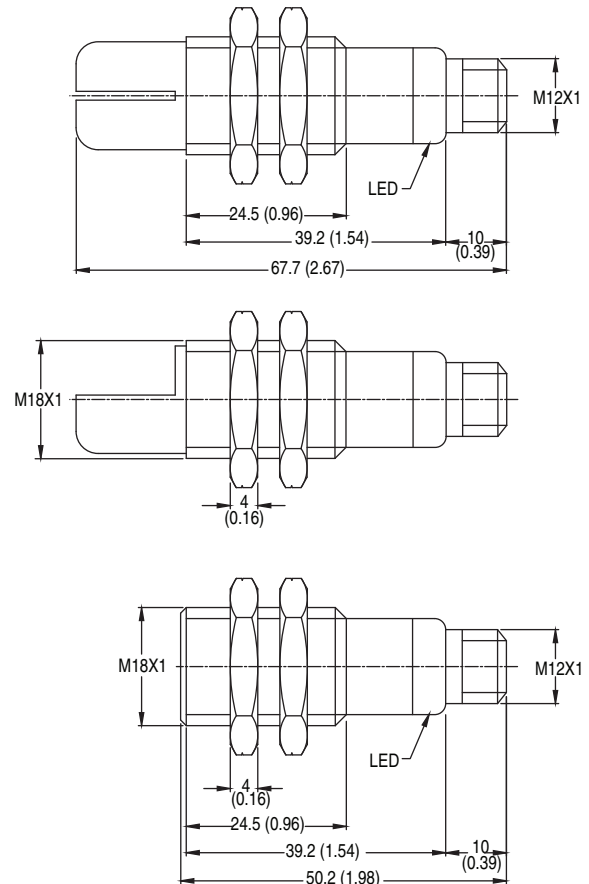
## Object Presence Mode (Factory Default Mode):

1. Cover sensor head with hand or remove all objects from sensing field.
2. Using the white wire, connect to **(0V DC (-))** or press A1 on the optional programming cable.
3. Using the white wire, connect to **(10...30V DC (+))** or press A2 on the optional programming cable.

## Wiring



## Dimensions [mm (in.)]



[www.rockwellautomation.com](http://www.rockwellautomation.com)

### Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

10000229947 Ver 01  
September 2012