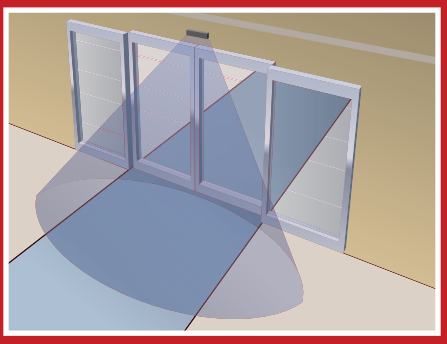
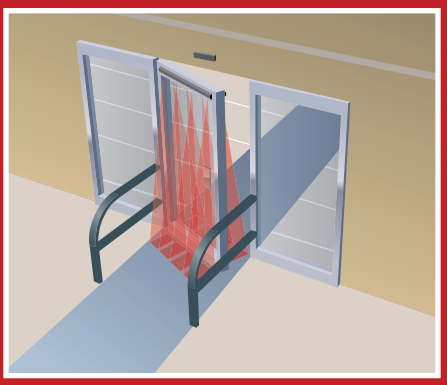
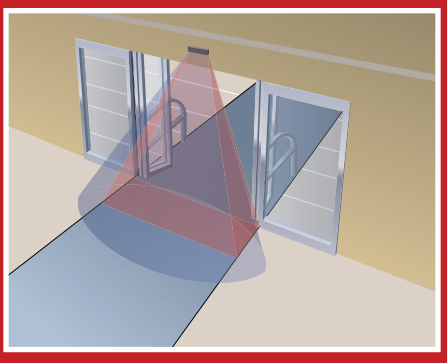
# ABOUT SENSORS



Motion Sensor



Presence Sensor



Hybrid Sensor

## Motion Sensing or Presence Sensing?

**Motion Sensors** utilize microwaves and are used to **activate the door when it detects a moving object**, such as a pedestrian or a shopping cart. Motion sensors can typically distinguish between objects moving toward the door or away from the door. This feature allows motion detectors to ignore departing pedestrians on the egress side of the door. This results in energy savings by allowing the door to close 50% sooner. Motion sensors **cannot detect still objects** such as a person stopped in the opening or closing path of the door.

**Presence Sensors** utilize active infrared and can **detect both moving and non-moving objects in the path of the door and signals the door accordingly**. The NABCO Acusensor M is a presence sensor.

**Motion/Presence Hybrid Sensors** or Sensor Systems provide activation and energy saving capabilities of motion sensors with the pedestrian protection of presence sensors. NABCO Entrances has hybrid sensors that combine both technologies in a single unit to give you the best product for your application and budget. The NABCO Acuzone is a hybrid sensor.

## How Microwave Technology Works

Microwave Sensors utilize the Doppler Effect principle. The sensor emits a very high-frequency microwave signal. The high frequency enables the sensor to better detect slower-moving objects. When the wave encounters a moving object, it bounces back and its frequency is changed proportionately to the speed of the object. This change in frequency triggers the sensor. The Optex Reaction uses this technology, as does the microwave part of the Acuzone sensor.

## How Infrared Technology Works

In general, infrared sensors work by emitting an invisible pulsed light signal. The receiver then looks for the reflected signal back and reacts to changes in the reflection of the signal that indicates a presence in its detection area. There are two types of infrared technology: Diffused and Distance Measuring Infrared.

**Diffused Infrared Sensors** work by flooding pulsed infrared light over a specific area below the sensor down to floor level. It then uses the reflected infrared as its base of reference. Foreign objects entering the detection area after the infrared base reference level and trigger activation. NABCO Sensors using this technology include **Acusensor M** and the infrared part of Acuzone.

**Distance Measuring Infrared Sensors** work by focusing active pulsed infrared into a spot (or series of spots) using optical lenses. The OA-Edge is a **Distance Measuring Sensor**. Using infrared emitting LEDs, it directs a series of infrared beams to points in space within the vicinity of the door. When an object enters one of the beam areas, the beam is bounced off the target and reflected back to a position sensitive infrared receiver. This is an excellent sensor for mounting on swing doors since it is not dependent on the floor as the infrared base of reference.

# Automatic Door Sensor Selection Chart

| | RECOMMENDED APPLICATIONS | NOT RECOMMENDED | FEATURES | BENEFITS |
|---|---|---|---|---|
| **Acusensor M**<br>Motion/Presence Infrared Sensor with Threshold Detection<br>  | Swing, Sliding or Folding Door Systems. | Use the Acuzone (below) if a sensor range of greater than ×78 inches* is required.<br><br>(*When sensor is mounted at a height of 87" and used with an optional angled spacer) | 1. When used as a presence sensor on a sliding door, it scans backward into the threshold to detect objects on the far side of the opening between the leading edge of the panels until the door is closed.<br>2. When used as an activation sensor on a swing door, the infrared learning technology memorizes the door activation cycle and differentiates between the moving door and other present objects.<br>3. Dual-voltage capability. | 1. Continuous presence throughout the opening and closing cycle of Sliding Doors.<br>2. Provides reactivation prevention for Sliding Doors.<br>3. Versatile sensor for all door applications.<br>4. Superior coverage around door.<br>5. Interfaces with NABCO equipment and the equipment of other manufacturers. |
| **Acuzone**<br>Motion/Presence Hybrid Sensor<br>  | Sliding Door Systems.<br><br>Perfect for longer-range detection and fast traffic conditions. | Not for use as a presence sensor on Swing or Folding Doors. | 1. Unique combination of microwave and infrared technology.<br>2. Deeper detection area.<br>3. Bi-directional setting.<br>4. Uni-directional setting.<br>5. Separate microwave and infrared area adjustment.<br>6. 4-mode mutual interference prevention function.<br>7. Separate outputs for infrared and microwave.<br>8. Programmable setting for depth of coverage, width of coverage, sensitivity and memory.<br>9. Dual-voltage capability. | 1. Accommodates varying speeds of pedestrian traffic.<br>2. Can be set to ignore pedestrians or objects moving away from the door, allowing the door to close 50% sooner for energy savings.<br>3. Sensors can be mounted closely to each other without sensor interference.<br>4. Interfaces with NABCO equipment and the equipment of other manufacturers.<br>5. Detects objects in the threshold, dramatically increasing safety level. |
| **i-OneX T**<br>Motion/Presence Infrared Sensor<br>  | Sliding Door Systems. | Not for use on Swing or Folding Doors. | 1. Infrared technology.<br>2. Wide and deeper detection area.<br>3. Built-in Supplemental sidelight safety.<br>4. Programmable settings for depth of coverage, width of coverage, sensitivity and memory.<br>5. Quick adjustment by easily set switches and shutters.<br>6. Dual-voltage capability. | 1. Continuous presence throughout the opening and closing cycle of sliding doors.<br>2. Interfaces with NABCO equipment and the equipment of other manufacturers.<br>3. Detects objects in the threshold as well as sidelight, dramatically increasing safety level. |
| **IXIO-DT1**<br>Motion/Presence Hybrid Sensor<br>  | Sliding Door Systems. | | 1. Ten microwave activation sensitivity setting and three infrared safety immunity setting.<br>2. Ability to distinguish between approaching and departing traffic.<br>3. Two 24-spot, high-density, infrared safety curtains providing precise presence detection.<br>4. Onboard LCD programing screen. | 1. PPM mode for applications frequently used by persons with reduced mobility.<br>2. Four visible red alignment spots are projected on the ground to assist in precise IR curtain adjustment.<br>3. Fully monitored internally, capable of external monitoring. |
| **Reaction 2**<br>Motion-only Microwave Sensor<br>  | Activation Sensor for Swing or Folding Doors. | If sensor is used on Sliding Doors, then doors must be equipped with 4 infrared holding beams per ANSI 156.10. | 1. Microwave technology.<br>2. Deep detection area.<br>3. Bi-directional OR uni-directional setting.<br>4. Adjustable settings for pattern depth or width.<br>5. Adjustable setting for sensitivity.<br>6. Dual-voltage capability.<br>7. Can be surface-mounted on the door header or the ceiling.<br>8. Minute vertical adjustments allow fine tuning of detection area. | 1. Deep detection provides quick, reliable openings.<br>2. Visually appealing compact design with LED.<br>3. Versatile design can be used for wide or narrow openings.<br>4. Can be used with all makes of automatic doors. |
| **OA-Edge 2**<br>Swing Door Presence Sensing System<br>  | Door-mounted Swing Door Sensing System.<br><br>Perfect solution for grocery stores and hospitals. | Not for use on Sliding or Folding Doors. | 1. Door-mounted sensor.<br>2. Compatible with all manufacturers' controls.<br>3. Adjustable pattern depth.<br>4. Dual-voltage capability.<br>5. Mutual interference prevention function. | 1. Continual-presence sensing throughout the door cycle.<br>2. Out of reach of shopping carts or hospital beds.<br>3. Conserves energy.<br>4. Helps bring existing or new swing door installations up to the new ANSI standard.<br>5. Optimizes door performance.<br>6. Interfaces with NABCO equipment and the equipment of other manufacturers.<br>7. External LED display allows user to easily determine detection with the cover on.<br>8. Automatic calibration. |
| **OA-Edge 1**<br>Low-Energy/ADA Swing Door Sensor<br>  | Door-mounted Swing Door Sensing System.<br><br>Perfect solution for low-energy/ADA applications. | Not for use on Sliding or Folding Doors. | 1. Door-mounted sensor<br>2. Functions on all older manufacturers' non-micro-processor-based controls.<br>3. Dual-voltage capability.<br>4. Enhances the performance of low-energy/ADA doors. | 1. Out of reach of shopping carts or hospital beds.<br>2. Interfaces with equipment of most other manufacturers.<br>3. Added pedestrian protection for low-energy/ADA doors.<br>4. External LED display allows user to easily determine detection with the cover on.<br>5. Automatic calibration. |

# Specifications

## Acusensor M

| | |
|---|---|
| Acusensor M | (P/N A-01306) |
| Sensing System | Active reflective infrared |
| Power Source | 12 to 24 VAC or DC |
| Power Consumption | 150mA Max. (at 12VDC), 80mA Max. (at 24VDC), 3VA Max. (at 24VAC) |
| Output Contacts | 30 VAC/50VDC, 0.1A MAX (Resistance Load) Semiconductor Relay, N.O or N.C contacts |
| Mounting Height | 78" to 118" |
| Detection Area | (Mounted at 87" height) Max 114" Width x Max 71" Depth (78" with optional angle spacer) |
| Standstill Learn Time | 15 sec, 30 sec, 60 sec, 300 sec |
| Output Holding Time | 0.5 sec |
| Operating Temp | -4 to 140 (-20 to +60C) |

## Acuzone

| | |
|---|---|
| Acuzone | (P/N V-00745) |
| Sensing System | Active reflective infrared and Doppler Microwave (Motion & Presence) |
| Power Source | 12 to 24 VAC or 12 to 30 VDC |
| Power Consumption | < 2.5 W DC or < 4 VA for AC |
| Output Contacts | Activation output Form C relay, 50V 0.3A Max. (Resistive load) N.O. and N.C. contacts |
| Mounting Height | Max. 138" (11' 6") above detection area |
| Detection Area | (Mounted at 86") Infrared 9' 1" Wide 26" Deep<br>Microwave Wide lens 13' Wide 6'6" Deep  Narrow Lens 6' 6" Wide 8'1" Deep<br>Bluezone detection for extra safety through the threshold |
| Standstill Learn Time | 30 sec, 60sec, 180sec, 600sec |
| Output Holding Time | < 0.5 sec |
| Operating Temp | -31 to 131 (-35 to +55C) |

## i-OneX T

| | |
|---|---|
| i-OneX T | (P/N V-00746) |
| Sensing System | Active infrared reflection |
| Power Source | 12 to 24VAC or 12 to 30VDC |
| Power Consumption | < 2.5W DC or < 4 VA for AC |
| Output Contacts | Form A relay, 50V 0.3A Max. (Resistance load) |
| Mounting Height | 6'7" to 9'10" |
| Detection Area | (Mounted at 87" height) Max 16'9" Width x Max 8'1" Depth<br>Infrared detection through the threshold area for extra safety |
| Standstill Learn Time | 30 sec, 60 sec, 180 sec, 600 sec |
| Output Holding Time | 0.5 to 1.5sec. |
| Operating Temp | -31 to 131 (-35 to +55C) |

## IXIO-DT1

| | |
|---|---|
| Sensing System | (P/N V-00057) |
| Power Source | Active reflective infrared and Doppler Microwave (Motion & Presence) |
| Power Consumption | 12 to 24VAC or 12 to 30VDC |
| Output Contacts | < 2.5W<br>Active Infrared: Solid-state-relay, 42VDC, 400mA Maxx<br>Microwave Doppler: Electro-mechanical-relay, 30VDC 1A Max |
| Mounting Height | 78" to 138" (6.5ft to 11.5ft) |
| Detection Area | (Mounted at 87" height) Max 6'7" Width x Max 9'10" Depth (at 45 degree) |
| Standstill Learn Time | 30 sec |
| Output Holding Time | Active Infrared: 0.3 to 1 sec<br>Microwave Doppler: 0.5 to 9 sec |
| Operating Temp | -13 to 131 (-25 to +55C) |

## Reaction 2

| | |
|---|---|
| Reaction 2 | (P/N V-00173) |
| Sensing System | Doppler Microwave (Motion only) |
| Power Source | 12 to 24VAC or 12 to 30VDC |
| Power Consumption | < 1.5W DC or < 2 VA for AC |
| Output Contacts | Form C relay, 50V 0.3A Max. (Resistance load) N.O. and N.C. contacts |
| Mounting Height | 79" to 137" |
| Detection Area | (Mounted at 85" height) Wide lens 13' 2" Wide 6'7" Deep Narrow lens 6'6" Wide 8'2" Deep |
| Output Holding Time | 2 sec, 4 sec |
| Operating Temp | -4 to 131 (-20 to + 55C) |

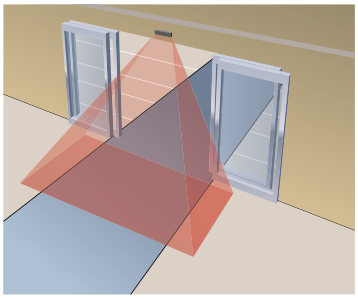
## OA-Edge 1 and 2

| | |
|---|---|
| OA Edge 1 & 2 | (P/N OA Edge 1 V-00224, OA Edge 2 V-00163) |
| Sensing System | Active reflective infrared triangulation (Motion & Presence) |
| Power Source | 12 to 24VAC or 12 to 30VDC |
| Power Consumption | OA Edge 1 < 1.3W DC or < 2 VA for AC<br>OA Edge 2 < 1.7W DC or < 2.3 VA for AC |
| Output Contacts | Form C relay, 42V 0.3 A Max. (Resistive load) N.O. and N.C. contacts |
| Mounting Height | 59" to 118" |
| Detection Area | (Mounted at 85") Wide lens 13' 2" Wide 6'7" Deep Narrow Lens 6'6" Wide 8'2" Deep |
| Output Holding Time | 0.5 sec |
| Operating Temp | -4 to 131 (-20 to +55C) |

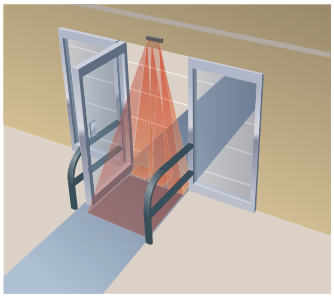
# Sensor Detection Patterns

## Acusensor M – Infrared Sensor

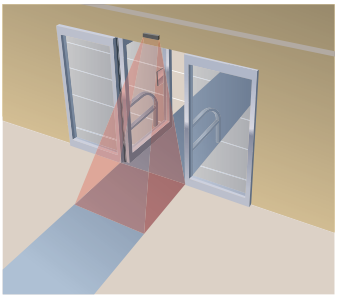
**Microwave pattern shown in blue; infrared pattern shown in red*



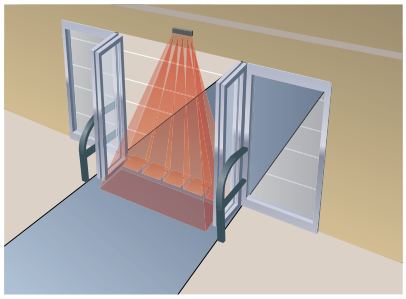
*Sliding Door Application*



*Swing Door Application – on Swing Side*

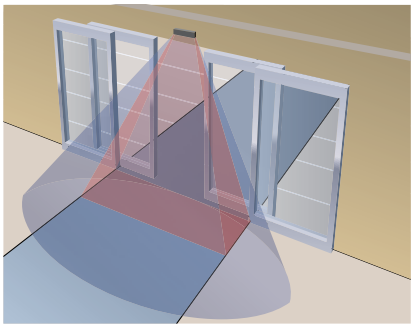


*Swing Door Application – on Approach Side*



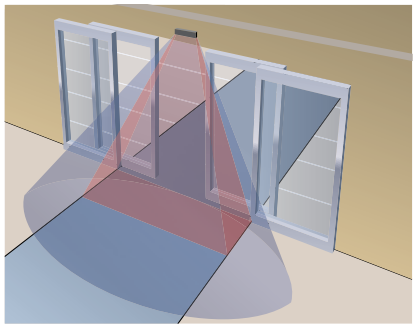
*Folding Door Application*

## Acuzone – Microwave/Infrared Sensor



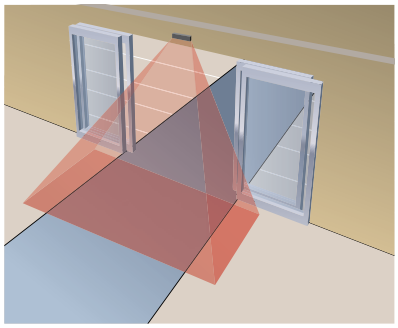
*Sliding Door Application*

## IXIO-DT1 – Microwave/Infrared Sensor



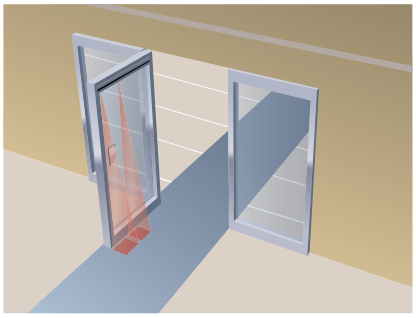
*Sliding Door Application*

## iOneX T – Infrared Sensor

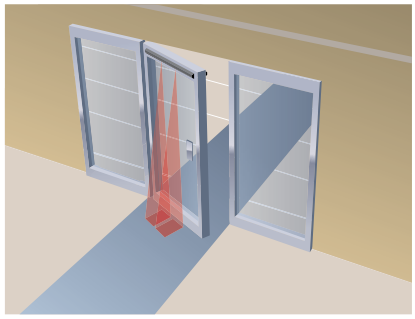


*Sliding Door Application*

## OA-Edge 1 – Swing Door Presence Sensor for Low-energy/ADA Applications

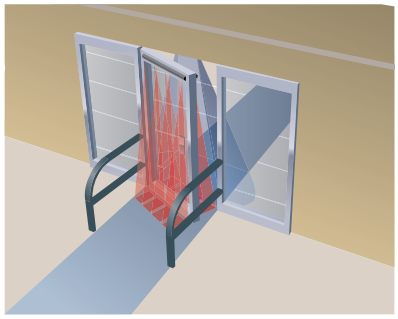


*OA-Edge 1 – on Approach Side*



*OA-Edge 1 – on Swing Side*

## OA-Edge 2 – Swing Door Presence Sensing System



*Standard Swing Door Application*

## NABCO Service and Specifications

**Along with the NABCO factory branches, NABCO has the largest independently owned network of automatic door distributors in North America. Their friendly, qualified installers and technicians always strive to exceed your expectations from install to after-sales service. NABCO's factory branches and independent distributors provide AAADM-certified technicians to ensure your doors meet all ANSI A156.10 standards.**

**Complete three-part specifications and CAD drawings are available on the NABCO website.**

NABCO

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