## 1 Description



## 2 Specifications

| DESCRIPTION | SPECIFICATION |
| :---: | :---: |
| Supply voltage | 12 to 24 VAC / VDC: $-5 \%$ to +10\% |
| Power frequency | $50 / 60 \mathrm{~Hz}$ |
| Power consumption | < 3 W |
| Mounting height <br> - Standard <br> - High | $\begin{aligned} & 5 \prime 9 " \text { to } 8^{\prime} 2^{\prime \prime} \\ & 8^{\prime 2} 2^{\prime \prime} \text { to } 13^{\prime \prime} \end{aligned}$ |
| SMR data input | 10 to 30 VDC |
| Delay of the output activation after stimulation | Transistor : < 1ms |
| 3-color LED | -RED: presence detection <br> - GREEN: motion detection <br> - ORANGE: monitoring process |
| Temperature range | $-30^{\circ} \mathrm{F}$ to $+131^{\circ} \mathrm{F}$ |
| Degree of protection | NEMA 3S / (IP54) |
| Product conformity | R\&TTE 1999/5/EC \& EMC 89/336/EEC BZT Germany, TÜV |
| Dimensions | 10.4 " $\times 2.2^{\prime \prime} \times 1$. " $^{\prime}$ |
| Weight | . $55 \mathrm{lbs} / 250 \mathrm{~g}$ |
| Housing material | ABS \& LURAN S |
| Color of Housing | Anthracite gray (standard), aluminum or white finish |
| Cable length | 10' of 9-conductor cable |


| DESCRIPTION | MOTION SENSOR | PRESENCE SENSOR |
| :--- | :--- | :--- |
| Technology | Microwave and microprocessor <br> Transmitter frequency: 24.125 GHz <br> Transmitter radiated power: $<20 \mathrm{dBm}$ EIRP <br> Transmitter power density: $<5 \mathrm{~mW} / \mathrm{cm}^{2}$ | Focused active infrared and <br> Self-monitored microprocessor <br> Spot diameter (standard): 4" max <br> Number of spots: 24 or 12 spots by curtain <br> Number of curtains: 2 |
| Detection field (standard) <br> -Wide field <br> •Narrow field | $13^{\prime} 0^{\prime \prime} \mathrm{W} \times 6^{\prime} 6^{\prime \prime} \mathrm{D}$ <br> $6^{\prime} 6^{\prime \prime} \mathrm{W} \times 8^{\prime} 2^{\prime \prime} \mathrm{D}$ | $6^{\prime} 6^{\prime \prime} \mathrm{W} \times 13.75^{\prime \prime} \mathrm{D}$ <br> $3^{\prime \prime} 3^{\prime \prime} \mathrm{W} \times 13.75^{\prime \prime} \mathrm{D}$ |

## 2 Specifications (Continued)

| DESCRIPTION | MOTION SENSOR | PRESENCE SENSOR |
| :---: | :---: | :---: |
| Detection mode: | Minimum detection speed <br> 2 inches / sec. (measured in the sensor axis) | Response time: < 128ms |
| Angle: | From $15^{\circ}$ to $50^{\circ}$ in elevation (adjustable) | From $-4^{\circ}$ to $+4^{\circ}$ (adjustable) |
| Output specification: | Relay (free of potential change-over contact): <br> - Max contact voltage: 42 V AC/DC <br> - Max contact current: 1A (resistive) <br> - Max switching power: 30W (DC)/ 60VA (AC) | Transistor (optocoupled transistor) <br> - Max output current: 100 mA <br> - Max switching power: 48 VDC |
| Output hold-time | 0.5 s to 9s (adjustable) | 1s (fixed) |
| Manual adjustment: | - orientation of sensing field (mechanically) <br> - shape of the sensing field (choice of antenna) <br> - multiple functions (using push buttons) | - orientation of sensing field <br> - shape of the sensing field (choice of front lens) <br> - multiple functions (by push buttons) |
| Remote control adjustments | - Sensitivity <br> - Hold time <br> - Detection mode <br> - Immunity <br> - Output configuration | - Sensitivity <br> - Auto-learn time <br> - Monitoring mode <br> - Number of Curtains <br> - Relay / Transistor configuration <br> - Rain Mode <br> - Snow Mode |

## 3 Precautions



- Shut off all power going to header before attempting any wiring procedures.
- Maintain a clean \& safe environment when working in public areas.
- Constantly be aware of pedestrian traffic around the door area.

CAUTION

- Always stop pedestrian traffic through the doorway when performing tests that may result in unexpected reactions by the door.
E ESD electrostatic discharge: Circuit boards are vulnerable to damage by electrostatic discharge. Before handling any board ensure you dissipate your body's charge.
always check placement of all wiring before powering up to insure that moving door parts will not catch any wires and cause damage to equipment.
- Ensure compliance with all applicable safety standards (i.e. ANSI A156.10) upon completion of installation.
$\square$ DO NOT attempt any internal repair of the sensor. All repairs and/or component replacements must be performed by BEA, Inc. Unauthorized disassembly or repair:

1. May jeopardize personal safety and may expose one to the risk of electrical shock.
2. May adversely affect the safe and reliable performance of the product will result in a voided product warranty.

## 4 Pre Installation Check

1. When preparing to wire multiple devices together for a "system" configuration, it is best to ensure the correct operation of each device independently before starting to help reduce troubleshooting time later in the event of a discrepancy.
2. Prior to installing any equipment, ensure the correct line voltage and stability. When applying equipment on a new installation utilizing new electrical supply circuits, always ensure that correct line voltage exists and is stable. Remember to shut the power back off after this is checked and before performing any wiring to the system.

## 5 Installation

## 1 Remove Sensor Cover

1. Remove cover from unit by gently prying the tab on the backside of the sensor housing or if the sensor is installed on the header insert a screwdriver behind the unit and gently pry off the cover.


## 5 Installation (Continued)

## 2 Mount Sensor

| 1. Attach mounting template to center of door header as shown <br> above. Template should be 0" to 2" above bottom edge of header. <br> Drill hole marked for wire passage and drill pilot holes for screw <br> mounting. | 2. Mount the sensor at a maximum height of 2" from the bottom line of <br> the door operator. |
| :--- | :--- |
| NOTE: Flush mount with bottom of header is necessary for all <br> negative IR angles. | Insert mounting screws approximately halfway in and install the <br> Wizard on the screws. When in place, tighten screws to secure to <br> header. |
| NOTE: Leave cover off until mechanical adjustments are complete. |  |

## 3 Cable Routing

1. With Wizard in place, locate the enclosed cable and feed the stripped end through the wire passage hole in the header.
2. Leave enough slack to allow connection to the Wizard and proper routing of wire around the plastic post.
NOTE: Observe proper routing of the cable as shown. This is to divert rainwater from the Wizard if water should run down the cable. Proper routing of the wire also provides easier installation of the cover.


## 4 Sensor Wiring

1. When connecting to a microprocessed control box, the motion output and presence output wires may be connected to separate inputs or may also be connected to a mutual input. Some controls may only have an activation input, while others may have an activation input, as well as a safety (or presence) input.


## 6 Mechanical Adjustments

## 1 Radar Motion Sensing Field: Width





1. Insert the desired microwave antenna for a wide or narrow field of detection. The optional narrow field antenna is located in the slot behind the mounted antenna as shown. To remove the antenna, carefully remove the protective cover and change the antenna. Once the proper antenna is in place, adjust the angle of antenna as necessary.

## 2 Radar Motion Sensing Field: Depth



1. The position of the sensing field is determined by the vertical angle of the planar antenna. The angle is adjusted by gently rotating the antenna forward or backward. The default angle is $30^{\circ}$.
2. The tilt angle is determined by the position of the sensor with relation to the face of the door. A $15^{\circ}$ angle will result in the pattern being drawn back toward the door. A $45^{\circ}$ angle will place the pattern further away from the door. Be certain to walk test the detection field and ensure compliance with applicable ANSI standards.

## 3 IR Presence Sensing Field: Width



Wide Pattern


Narrow Pattern

1. Install the lens for the desired IR pattern. The wide pattern offers 2 curtains of 24 overlapping spots and the narrow pattern offers 2 curtains of 12 overlapping spots. When installing the lens ensure the smooth part of the lens is installed facing outward.

## 4 IR Presence Sensing Field: Depth




Sensor Plastic Pin Indicator


Sensor Adjustment Screw

1. The IR pattern may be adjusted by moving the pattern nearer or further away from the face of the door by adjusting the tilt angle from $+4^{\circ}$ to $-4^{\circ}$. A counterclockwise rotation of the adjustment screw will move the curtain further away from the door and clockwise rotation will move the curtain toward the door. Precise location of the IR beam may be found by using BEAs Spotfinder P/N 10SPOT.

## 7 Remote Control Adjustments

## 1 Important Remote Control Adjustments

Every programming session begins by unlocking the sensor. Thereafter a program setting may be altered by pressing the desired function key followed by the desired value for that function. When all programming is complete press the lock key twice to retain settings. Use the following as a guide:

| Unlock the sensor to enter into adjustment session (if no access code has been entered) |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| To change the value of a parameter (ex. Maximum duration of presence detection) | Select Parameter to Change |  | Enter New Value |  |  |
| ... to change any other parameters (ex. Output Configuration) | Select Parameter to Change |  |  |  |  |
| To check the value of a parameter (ex. maximum duration of presence detection) | Select Parameter to Check |  |  | The Number of Green Flashes Indicate the Value of This Parameter |  |
| Lock the adjustment session and go back to normal function | Press Lock |  | $\text { OR } \quad 8+\mathrm{L}$ | k Code |  |

Safety Output
Redirection

## 7 Remote Control Adjustments (Continued)

## 2 Important Remote Control Adjustments

Rain Mode and Snow Mode: The Rain Mode or Snow Mode is designed to minimize the effect of heavy rain or snow on the Wizard's auto learn requirements. When programmed for these modes, the mode will be enabled after the Wizard goes through two auto learn cycles with in six detections of the sensor. To exit the special mode, simply launch a setup or power the sensor off and back on.
Important Notes

- Defaults are Shown in Bold Print
- Restore Factory Defaults Magic Wand + 9
Sensor will Self Launch Set Up
- Quick Set Up has Two Second Duration
- Assisted Set Up is recommended for first time set up. Duration is 16 seconds and will automatically trigger door to open position during set up routine.

Microwave Immunity: Immunity levels above 3 are intended for applications where excessive interference may be causing unintended detection. When applying a value of 4 or higher increment the value one step at a time followed by a walk test. When complete, ensure compliance with all applicable safety and performance standards.

Snow Mode: Snow Mode is intended for applications where excessive interference may be causing unintended detection. When applying Snow Mode, walk test the door and ensure compliance with all applicable safety and performance standards.

Installation Configuration: To prevent crosstalk when installing overlapping units set one unit to 5 and one unit to 7 for Low mount or one unit to 6 and one unit to 8 for High mount.

A Infrared Immunity A
1: Normal
2: Rain Mode
3: Snow Mode
See Important Notes


## 3 Launch Set Up of Infrared Curtains

| Unlock the sensor to enter into adjustment session | $\stackrel{\partial}{\text { Press }}$ |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| To Launch an Assisted Set Up <br> $\rightarrow$ Required after mechanical adjustments of <br> the IR sensor module <br> $\rightarrow$ Required once after first installation | $\dot{\text { pressenvp }}^{2}$ | $\stackrel{\square}{\text { PRess }}$ |  | The sensor performs a door opening and Closing cycle to check the influence of the door leaves to the safety curtains. See Troubleshooting if RED LED flashes quickly after set up. |

## 8 Manual Set Up Without Remote

## 1 Manual Set Up

Set up of the Wizard may be accomplished by the use of two Wizard mounted programming buttons. The procedures below indicate how to program using these buttons.

| To begin programming: |  | Briefly press the right button and move away from the sensing patterns. |  |
| :---: | :---: | :---: | :---: |
| To reset the unit to factory defaults including access code: |  | Press and hold both buttons simultaneously until both Red and Green LEDs flash alternately. |  |
| To customize the settings from factory defaults: |  | To enter the customizing mode: Press the right button until the LED flashes and then release. <br> To return to standard mode: Press the right button again until the LED stops flashing and then release. |  |
| Customizing Mode: |  | - The Red LED light indicates the number for the parameter being altered (1 flash = parameter \#1). <br> - The Green LED light indicates the value for the parameter being altered (1 flash means value $=1$ ). <br> - The Right Button enables selection of the parameter number being altered (+1 for each press). <br> - The Left Button enables alteration of the parameter (+1 for each press). |  |
| Helpful Hint: |  | When the sensor is wired correctly pressing and holding the left button will result in disconnecting all outputs from that sensor, allowing the door to close, if no other devices are being activated. |  |
| PARAMETER NUMBER <br> (Altered by the right button and confirmed by RED LED) | PARAMETER | VALUES <br> (Altered by the left button and confirmed by GREEN LED) | DEFAULT VALUE |
| 1 | Radar Sensitivity | 0-9 | 7 |
| 2 | Relay hold time | 0-9 | 0 |
| 3 | Output configuration | 1-4 | 4 |
| 4 | Auto-learn presence sensing | 0-9 | 0 |
| 5 | Detection mode | 1-4 | 3 |
| 6 | Microwave Immunity | 1-9 | 3 |
| 7 | IR Immunity | 1-3 | 2 |
| 8 | Not Used | Displays 8 Orange Flashes | Displays 8 Orange Flashes |
| 9 | SMR mode | 0-1 | 0 |
| 10 | IR curtain | 1-3 | 3 |
| 11 | Secondary Sensitivity | 0-9 | 0 |
| 12 | Height \& Frequency | 1-4 | 1 |
| 13 | Output Re-Direction | 0-2 | 0 |
| 14 | Door Control Function | 1-3 | 1 |
| EXAMPLE: Change radar sensitivity 4 seconds: <br> NOTE: When the highest value for the value will "roll over" to mode: $1,2,3$, then 1,2, . The sensor automatically button has been pressed f <br> REQUIRED: If the IR frequency ha prevent the sensors momentarily depress an assisted setup. | from 7 to 9 and set hold time to <br> e parameter has been reached, lowest value (e.g. for radar <br> urns to standard mode if neither one minute. <br> been manually changed, to $m$ being in permanent detection, e right program button to launch | Press the right button for 2 seconds, you will enter the customizing mode: <br> - The green LED flashes once (parameter 1) <br> - The red LED flashes 7 times (sensitivity = 7) <br> - Press the left button twice to move from sensitivity $=7$ to sensitivity $=9$ <br> Press the right button once to move to Parameter 2 (relay hold time): <br> - The green LED flashes twice (parameter 2) <br> - The red LED does not flash (hold time $=0$ seconds) <br> - Press the left button four times to move from hold time $=0$ to hold time $=4$ seconds |  |

## 9 Power Up

## 1 Power Up Procedures

| STEP | USER'S ACTION | RESULT |
| :---: | :---: | :---: |
| Step 1 | With all wiring in place, apply power to door control and 12 to 24 VAC / VDC: $-5 \%$ to $+10 \%$ to Wizard. Once powered, observe LED status on the Wizard. Stop all traffic through the doorway while performing this step, and remain clear of the Wizard's detection zones. | The Wizard will show a steady red LED during the set-up procedure. Once the Wizard completes setup, the door will close and begin normal operation thereafter. Setup process takes approximately 6 seconds, if uninterrupted. |
| Step 2 | If the sensor is being powered for the first time, because of new installation or sensor is being replaced, unlock the Wizard and Press the Magic Wand Key, followed by a number 0. Observe the LED status during setup. <br> Once set-up is complete, the LED indication will reflect the status of the set-up. Observe the LED while standing outside of the detection zones. | - NO LED UPON COMPLETION = Successful setup <br> - RED LED ON = Presence being detected -Wizard is seeing an object. <br> - GREEN LED MOMENTARILY ON = MOTION DETECTION (Wizard sees movement). Adjust microwave functions: angle, sensitivity, immunity. <br> - ORANGE LED ON = Possible fault. If LED stays on, reset power and observe LED. If it comes back on steady, replace Wizard. |
| Step 3 | Proceed with fine tuning the mechanical , as well as the program adjustments of the Wizard. Refer to the applicable sections of this manual for altering any settings. Be sure to check: <br> - Motion width \& depth <br> - Presence width \& depth <br> - Position of infrared curtain <br> - Sensitivity of motion field | Sensor must always be adjusted to be in compliance with the current version of ANSI A156.10. |

## 10 Troubleshooting

## 1 Troubleshooting Procedures

| PROBLEM | PROBABLE CAUSE | CORRECTIVE ACTION |
| :--- | :--- | :--- |
| Orange LED is illuminated on Wizard. | 1. Wizard IR is in saturation <br> 2. Internal fault within the Wizard <br> 3. Faulty Power Input | 1. Launch a new setup and remain all clear <br> from the detection area. <br> 2. Remove power, then re-apply. Input power <br> may have fluctuated beyond tolerances. |
| Red LED on at Wizard. | 1. Wizard in detection. | 1. If red LED is on at Wizard: <br> a. Adjust infrared pattern away from the <br> door and launch a new set-up. Refer <br> to page 5 for infrared adjustments. Use <br> BEA Spotfinder to accurately adjust the <br> position of the pattern. |
| b. If hi- intensity lights or high gloss floors |  |  |
| are saturating the area of detection, |  |  |
| change the Infrared Sensitivity setting |  |  |
| to reduced sensitivity - see page 5, |  |  |
| and launch a new set-up to re-learn the |  |  |
| environment. |  |  |$|$

## 10 Troubleshooting (Continued)

## 1 Troubleshooting Procedures

| PROBLEM | PROBABLE CAUSE | CORRECTIVE ACTION |
| :---: | :---: | :---: |
| Door will not open (Continued). | 2. Wizard not detecting traffic. <br> 3. Faulty wiring between sensor and door control. <br> 4. Faulty door control. | 2. Walk in and out of Wizard detection area, if red LED does not illuminate check: <br> a. Power supply for Wizard: 12 to 24 VAC / VDC: - $5 \%$ to $+10 \%$ <br> b. Check SMR setting on each Wizard. The SMR should be disabled unless system is being used with BEA's Door Control Unit (DCU). <br> c. Check Relay Configuration for each Wizard. <br> 3. Remove all sensor inputs from the door control. Jumper the common and activate terminals of the door control. If door does not open, fault lies within door control or motor. Refer to manufacturer's manual for further troubleshooting. If door opens, fault lies with sensors or related wiring. <br> 4. Refer to Step 3. |
| Door keeps recycling open. | 1. Wizard is seeing door. <br> 2. Wizard is seeing movement from unwanted objects. <br> 3. Vibration is triggering the Wizard. | 1. Observe LED status on each Wizard. Green LED indicates motion detection, red LED indicates presence. If LED's are on, make sensor adjustments as necessary to eliminate unwanted detection. Check angle, sensitivity, and immunity for presence and motion. <br> 2. Check for moving objects in the path of detection, such as posters, banners, etc. <br> 3. Locate source of vibration and correct as necessary. |
| Wizard will not respond to remote control. | 1. Batteries in remote are dead or are installed improperly. | 1. Ensure batteries are installed correctly. Replace batteries: AAA 1.5 volt. |
| Wizard will not unlock when access code is entered. | 1. Improper code being entered. | 1. Reset code to the default value of 0000 by performing the following: <br> a. Cut and restore power supply. No code is required to unlock during the first minute after powering. Reset code prior to locking. |
| Red LED is flashing rapidly after attempting setup. | 1. Detection field was violated during setup of the Wizard. | 1. Launch a new setup and insure that the detection field remains all clear until setup is complete. <br> 2. Wizard may be seeing the door as it is closing. Adjust infrared curtain and launch a new setup. |
| Wizard will not detect - door stays open. | 1. Improper SMR setting. | 1. If the Wizard is NOT being used with a BEA DCU, set SMR to a value of 0 . |

## 11 Accessories



## 12 Company Contact



Do not leave problems unresolved. If a satisfactory solution cannot be achieved after troubleshooting a problem, please call BEA, Inc. If you must wait for the following workday to call B.E.A., leave the door inoperable until satisfactory repairs can be made. Never sacrifice the safe operation of the automatic door or gate for an incomplete solution.

## Addendum 1



## Addendum 2



## Addendum 3



## Addendum 4



