

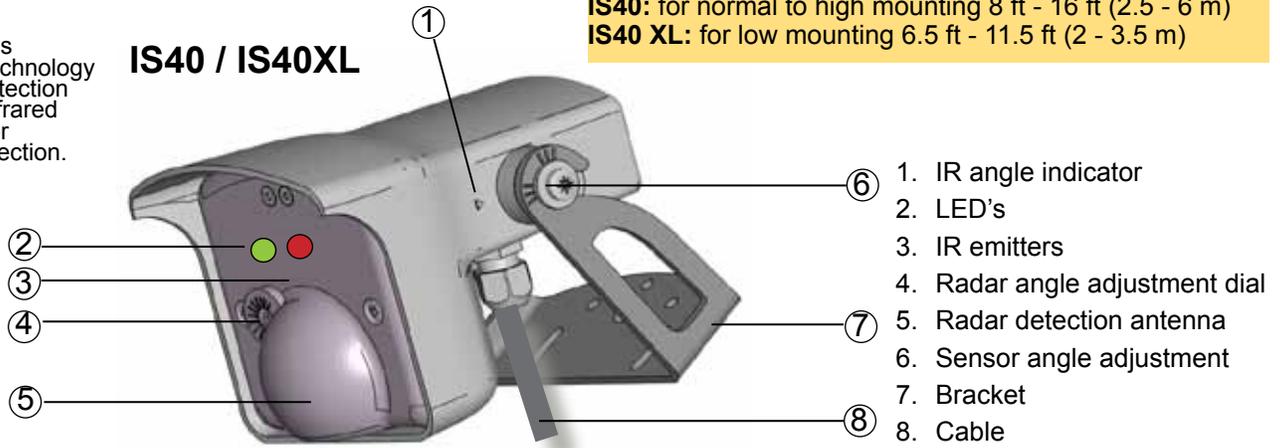
## COMBINED ACTIVE INFRARED (IR) AND MICROWAVE SENSOR

### 1 DESCRIPTION

- The IS40 uses Microwave technology for motion detection and Active Infrared technology for presence detection.

#### IS40 / IS40XL

**IS40:** for normal to high mounting 8 ft - 16 ft (2.5 - 6 m)  
**IS40 XL:** for low mounting 6.5 ft - 11.5 ft (2 - 3.5 m)



### 2 SPECIFICATIONS

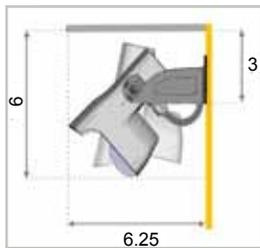
DESCRIPTION	SPECIFICATION	
SENSOR TILT ANGLE	15° to 45°	
SUPPLY VOLTAGE	12 to 24VAC ±10% 12 to 24VDC +30% / -5%	
MAIN FREQUENCY	50 to 60Hz	
POWER CONSUMPTION	< 3.5W	
RELAY OUTPUT - Max. Voltage - Max. Current - Max Switching Power	2 Relays with switch-over contact (voltage free) 60 VDC / 125 VAC 1A (resistive) 30W (DC) / 60VA (AC)	
INSTALLATION HEIGHT	IS40: 8 ft - 16 ft (2.5 - 6 m) IS40XL: 6.5 ft - 11.5 ft (2 - 3.5 m)	
TEMPERATURE RANGE	-22°F ( -30°C) to + 140°F (60°C)	
PROTECTION DEGREE	IP65 / NEMA 4	
NORM CONFORMITY	Electromagnetic compatibility (EMC) according to 2004/108/EEC, R&TTE: 1999/5/EC	
DIMENSIONS (D X W X H)	5 in. X 4 in. X 3.75 in. (127mm x 102mm x 96mm)	
MATERIAL - Housing - Face	ABS Polycarbonate	
COLOR - Housing - Face	Black Transparent Purple	
CABLE LENGTH	32 feet (10m)	
TECHNOLOGY	MICROWAVE DOPPLER RADAR	INFRARED
RADIATED FREQUENCY	24.175 GHz	875 nm
RADIATED POWER DENSITY	< 5 mW/cm <sup>2</sup>	< 250mW/m <sup>2</sup>
DETECTION MODE	Motion	Presence
MAXIMUM DETECTION FIELD	IS40: 13 ft x 16 ft (4m x 5m) IS40XL: 13 ft x 6.5 ft (4m x 2m)	IS40: 10 ft x 10 ft (3m x 3m) IS40XL: 7.5 ft x 7.5 ft (2.3m x 2.3m)
OUTPUT HOLD TIME	0.5 sec. to 9 sec.	0.5 sec.
REACTION TIME	100ms	250ms
MINIMUM TARGET SPEED	2 in/sec (5cm/sec) in sensor axis	0 in/sec (0cm/sec)
LED SIGNAL	Green = Activation Relay	Red = Presence Relay
RADAR ANGLE / SENSOR ANGLE	-8° to 22° (relative to sensor front face)	15°, 30°, 45°

### 3 PRECAUTIONS

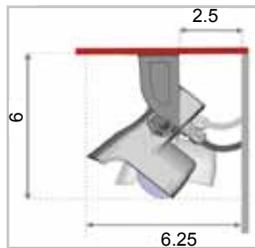


- ❑ This device IS NOT intended for use as a safety sensor.
- ❑ Not recommended for dynamic environments. (snow, rain, fog, etc.)
- ❑ Shut off all power before attempting any wiring procedures.
- ❑ Maintain a clean & safe environment when working in public areas.
- ❑ Constantly be aware of pedestrian/vehicle traffic around the area.
- ❑ Always stop pedestrian/vehicle traffic through the doorway when performing tests that may result in unexpected reactions by the door.
- ❑ 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 parts will not catch any wires and cause damage to equipment.
- ❑ Ensure compliance with all applicable safety standards upon completion of installation.
- ❑ 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 and will result in a voided product warranty.

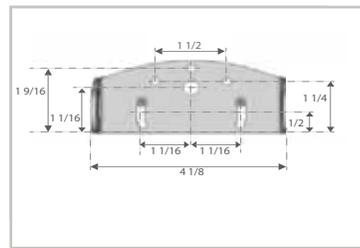
### 4 DIMENSIONS



Wall mounting



Ceiling mounting



Bracket dimensions

### 5 INSTALLATION TIPS



The sensor must be firmly fastened to prevent vibration.



DO NOT cover the sensor.



Avoid exposing the sensor to sudden temperature changes

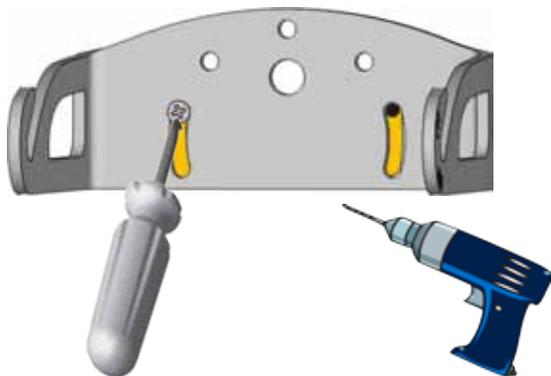


Avoid proximity to neon lamps, fluorescent lights or moving objects

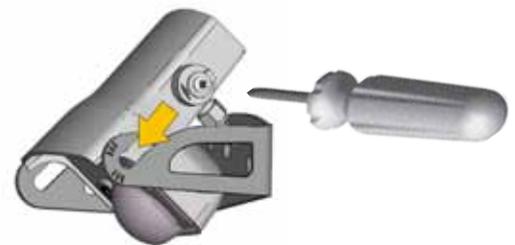


The sensor must not have any object likely to move or vibrate in its sensing field.

### 6 MOUNTING



Remove the bracket from the sensor. Drill 2 holes accordingly. If necessary, drill an additional hole to facilitate wire routing. Fix the bracket firmly.



Position the sensor on the bracket and fasten the angle adjustment screws.

## 7 WIRING AND RELAY CONFIGURATION

WIRING	POWER	RED BLACK	12-24 V AC-DC		Green LED Motion
	ACTIVATION RELAY	WHITE GREEN YELLOW	COM NO NC		Red LED Presence
	PRESENCE RELAY	WHITE/BLACK GREEN/BLACK YELLOW/BLACK	COM NO NC		

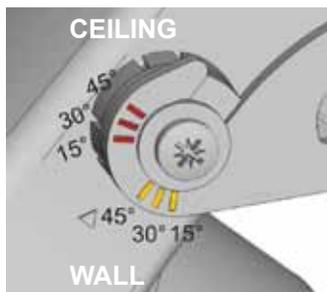
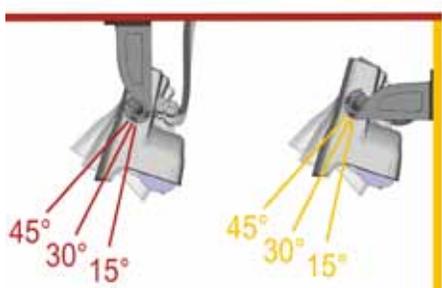
  

RELAY CONFIGURATION	Activation Relay	Presence Relay
1	Active	Passive
2	Passive	Active
3	Passive	Passive
4	Active	Active

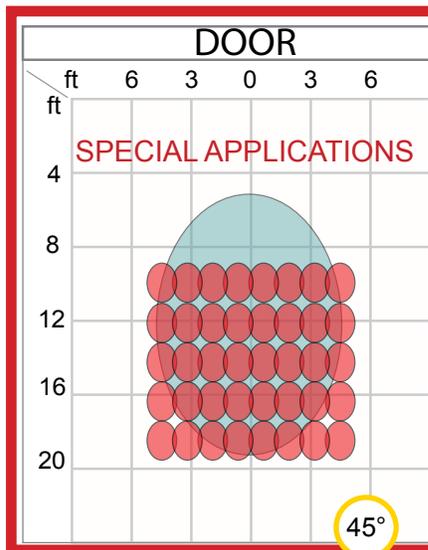
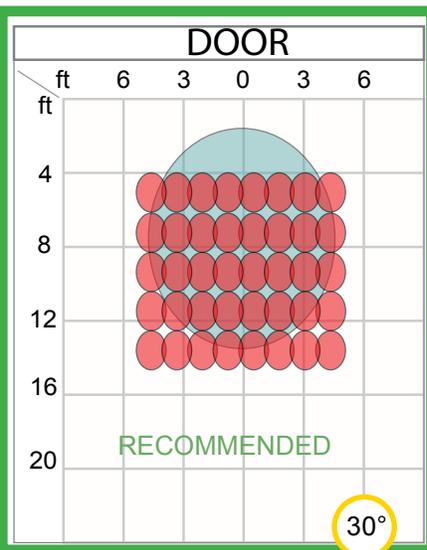
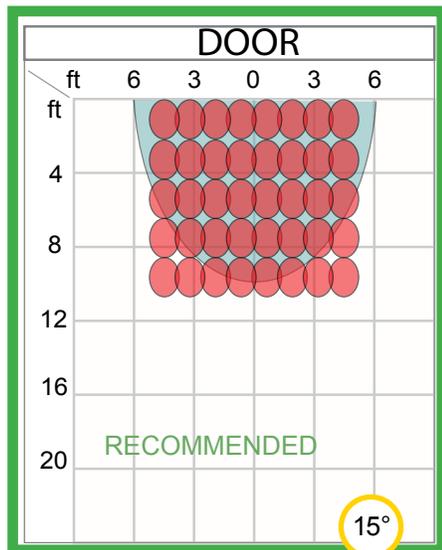
Description	Active	Passive
Detection	COM ● NO ● NC	COM ● NO ● NC
No Detection	COM ● NO ● NC	COM ● NO ● NC

## 8 SENSOR ANGLE



Adjust the angle of the sensor to position the detection fields.

Tighten the screws firmly.



### Notes:

1. It is important to adjust sensor angle first to position IR field correctly. Next adapt angle of radar field as shown in step 10 by using tilt angle adjustment screw.
2. To obtain an IR pattern that's straight down (closest to the door threshold); wall mounted sensors need to be set at 20°; sensors mounted on an extension bracket or out from the wall should be set to approximately 15°.
3. The graphics above are not to scale and for illustration purposes and represent an approximate IR detection field when at 16 ft. The point of emphasis is to show the IR detection area with respect to the sensor angles.

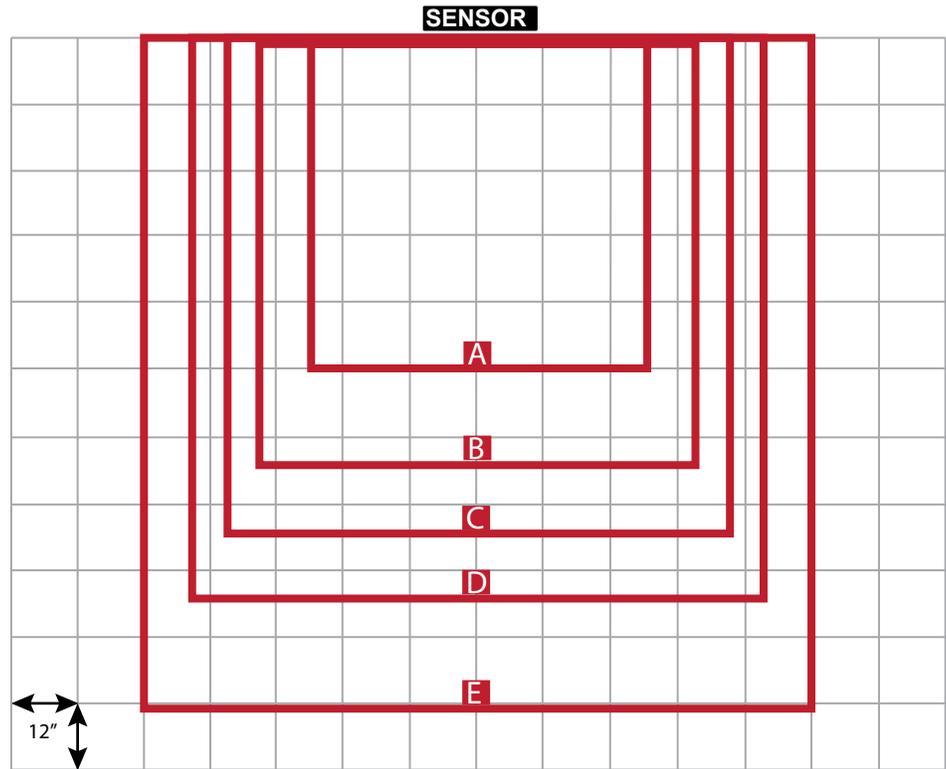
## 9 IR PATTERN SIZE AT 15° SENSOR ANGLE

Approximate default IR pattern size using a 15° sensor tilt angle.  
The higher the mounting height the larger the IR pattern.

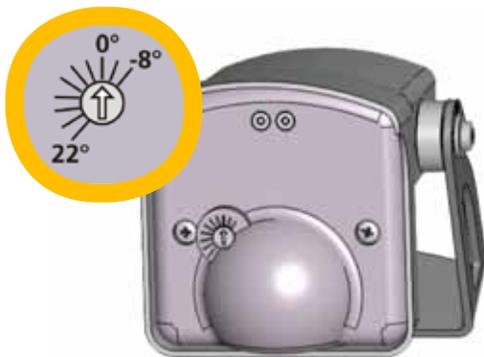
Mounting Height	Width *	Depth *
A = 8 ft	5 ft	5 ft
B = 10 ft	7 ft	7 ft
C = 11.5 ft	7.5 ft	7.5 ft
D = 13 ft	8.5 ft	8.5 ft
E = 16 ft	10 ft	10 ft
Maximum Mounting Height		
IS40XL	11.5 ft	
IS40	16 ft	

\* Dimensions are approximate.

Use of BEA Spotfinder may be utilized to locate IR field.

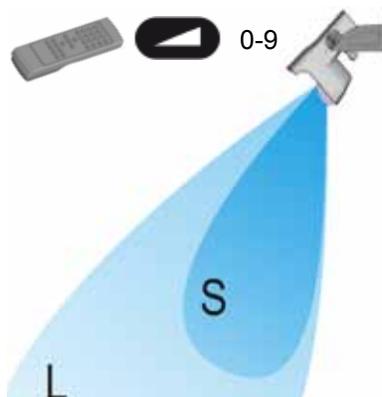


## 10 MICROWAVE FIELD ADJUSTMENTS



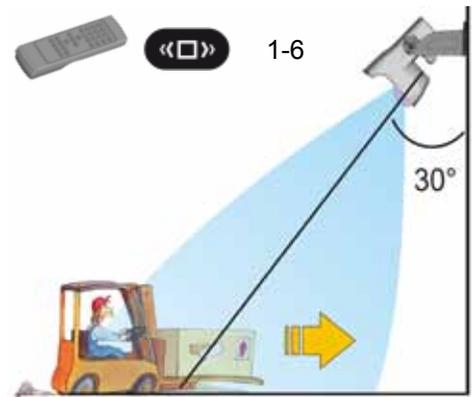
By turning this dial, the radar field angle is reduced or increased (from -8° to +22°).

Refer to page 5.



Adjust the Microwave field size.

Refer to page 5.



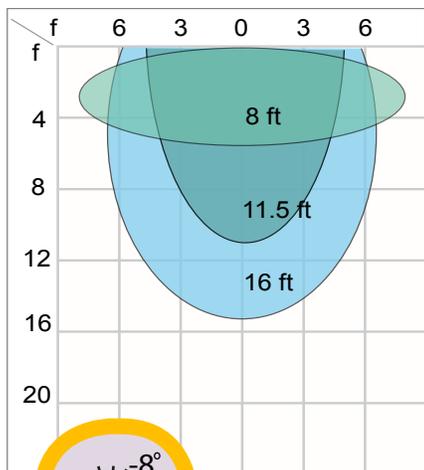
Choose the correct rejection mode for your application.

Refer to page 6.

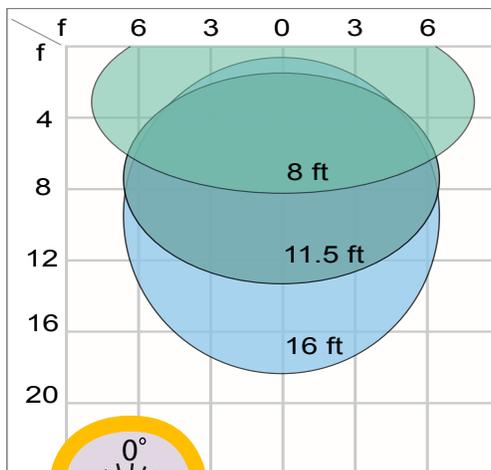
# 11 MICROWAVE FIELD TILT ANGLE

The total angle is the sum of the sensor angle and the radar field angle. All detection field dimensions were measured in optimal conditions and a sensitivity value of 7.

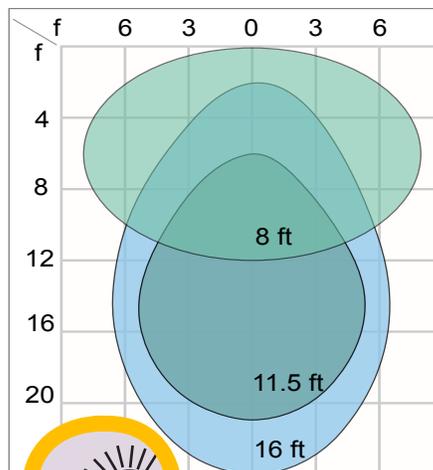
## IS40



Sensor angle:  $30^\circ$   
 Radar field angle:  $-8^\circ$   
 Total angle:  $22^\circ$

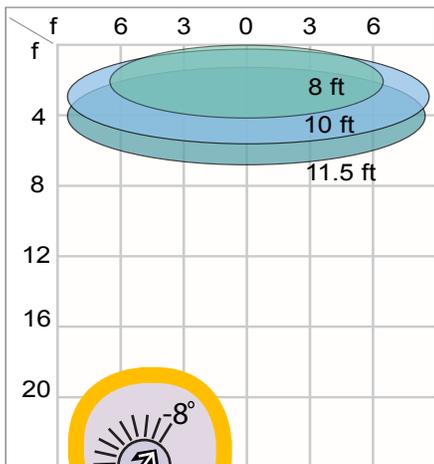


Sensor angle:  $30^\circ$   
 Radar field angle:  $0^\circ$   
 Total angle:  $30^\circ$

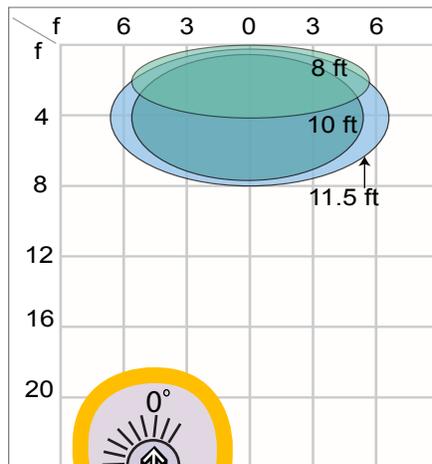


Sensor angle:  $30^\circ$   
 Radar field angle:  $+11^\circ$   
 Total angle:  $41^\circ$

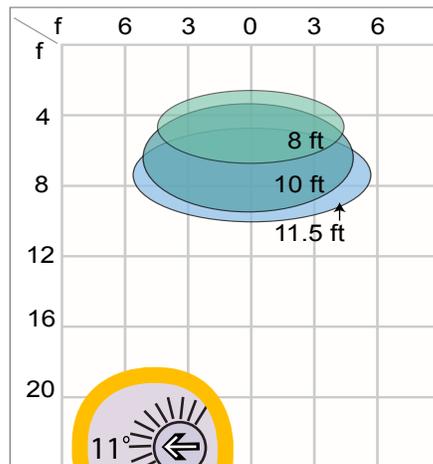
## IS40XL



Sensor angle:  $30^\circ$   
 Radar field angle:  $-8^\circ$   
 Total angle:  $22^\circ$



Sensor angle:  $30^\circ$   
 Radar field angle:  $0^\circ$   
 Total angle:  $30^\circ$



Sensor angle:  $30^\circ$   
 Radar field angle:  $+11^\circ$   
 Total angle:  $41^\circ$

## 12 REMOTE CONTROL PARAMETERS

### Motion Detection Settings



 →  → **0** **1** **2** **3** **4** **5** **6** **7** **8** **9** →  

SENSITIVITY		XXS	XS	S	>	>	>	>	<input type="checkbox"/>	XL	XXL
DETECTION MODE		bi	<b>uni</b>	uni depart	bi = two-way detection uni = one-way detection towards sensor uni depart = one-way detection away from sensor						
ACTIVATION RELAY HOLD TIME		.5 s	1 s	2 s	3 s	4 s	5 s	6 s	7 s	8 s	9 s
REJECTION MODE			<b>1</b>	2	3	4	5	6			See FUNCTION DESCRIPTIONS below

REJECTION MODE	FUNCTION DESCRIPTION	
	<b>1: Detection of all kind of Targets in Motion</b> 2: Detection of all kind of Targets in Motion + Interference Immunity 3: Low 'Pedestrian/Parallel traffic' Rejection + Interference Immunity	4: Medium 'Pedestrian/Parallel traffic' Rejection + Interference Immunity 5: High 'Pedestrian/Parallel traffic' Rejection + Interference Immunity 6: Extra High 'Pedestrian/Parallel traffic' Rejection + Interference Immunity

### OUTPUT CONFIGURATION

OUTPUT CONFIGURATION	PRESENCE RELAY	IS40 / IS40XL	LED					
	<b>F1</b>  DOOR EXAMPLE <table border="1" style="width: 100px; height: 100px;"> <tr><td>LAST LINE</td></tr> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td>FIRST LINE</td></tr> </table>	LAST LINE				FIRST LINE	<b>0 - 6: ALL MODES</b>	Activates when object is in presence zone.
LAST LINE								
FIRST LINE								
ACTIVATION RELAY		IS40 / IS40XL	LED					
<b>0: STANDARD MODE</b>		Activates when motion detected.	 Green					
1: PULSE ON ENTRY	Activates if object motion is detected and then object enters presence zone.							
2: PULSE ON EXIT	Activates if object motion is detected and then object exits presence zone.							
3: PULSE ON ENTRY FIRST / LAST LINE (See Example to the Left)	Activates if object motion is detected and then object enters presence zone (first or last line).							
4: PULSE ON EXIT FIRST / LAST LINE (See Example to the Left)	Activates if object motion is detected and then object exits presence zone (first or last line).							
5: REMAINS ACTIVE UNTIL PRESENCE ZONE IS CLEARED (Regardless of Motion)	Activates when motion is detected and remains active until the presence zone is cleared.							
6: REMAINS ACTIVE UNTIL PRESENCE ZONE IS CLEARED (Regardless of Motion)	Activates when motion is detected and IR is detected and remains active until the presence zone is cleared.							

### IR / Presence Settings



 →  → **0** **1** **2** **3** **4** **5** **6** **7** **8** **9** →  

FREQUENCY			<b>low</b>	high							
IR IMMUNITY			<b>low</b>	medium	high						
AUTOMATIC LEARN TIME		30 s	1 min	2 min	5 min	10 min	20 min	1 h	1.5 h	2 h	<b>∞</b>

= FACTORY VALUES

Note: The automatic learn time is the amount of time a static object needs to be in the IR field before the sensor will learn it

IR / Presence Settings (Continued)



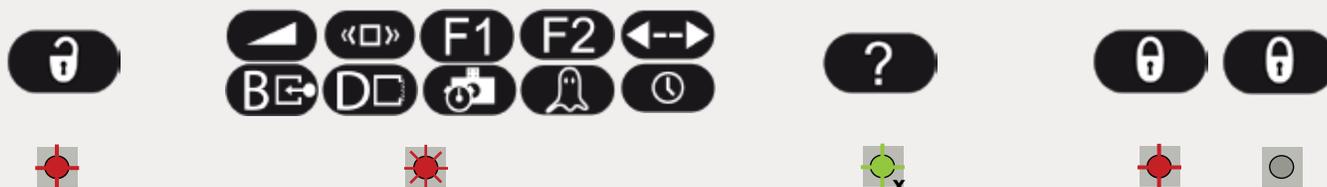
IR PATTERN SIZE BE	AVAILABLE TARGET SIZE F2

The target (Target Size) can vary location within the field (IR Pattern Size)

= FACTORY VALUES

## 12 REMOTE CONTROL PARAMETERS (CONTINUED)

### Check parameter values

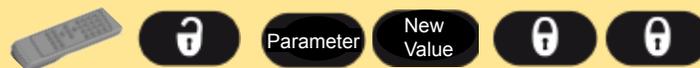


QUESTION A VALUE

The number of green flashes indicates the value of the chosen parameter.

## 13 SENSOR SETUP SEQUENCE / FACTORY VALUES / ACCESS CODE

IMPORTANT: ENSURE TO SAVE ANY CHANGES DURING THE ADJUSTMENT SESSION VIA PRESSING LOCK LOCK.



IMPORTANT: ALWAYS FINISH AN ADJUSTMENT SESSION BY LAUNCHING A SETUP.



RESETTING TO FACTORY VALUES



SETTING AN ACCESS CODE



DELETING AN ACCESS CODE



If you do not know the access code, cycle the power supply.

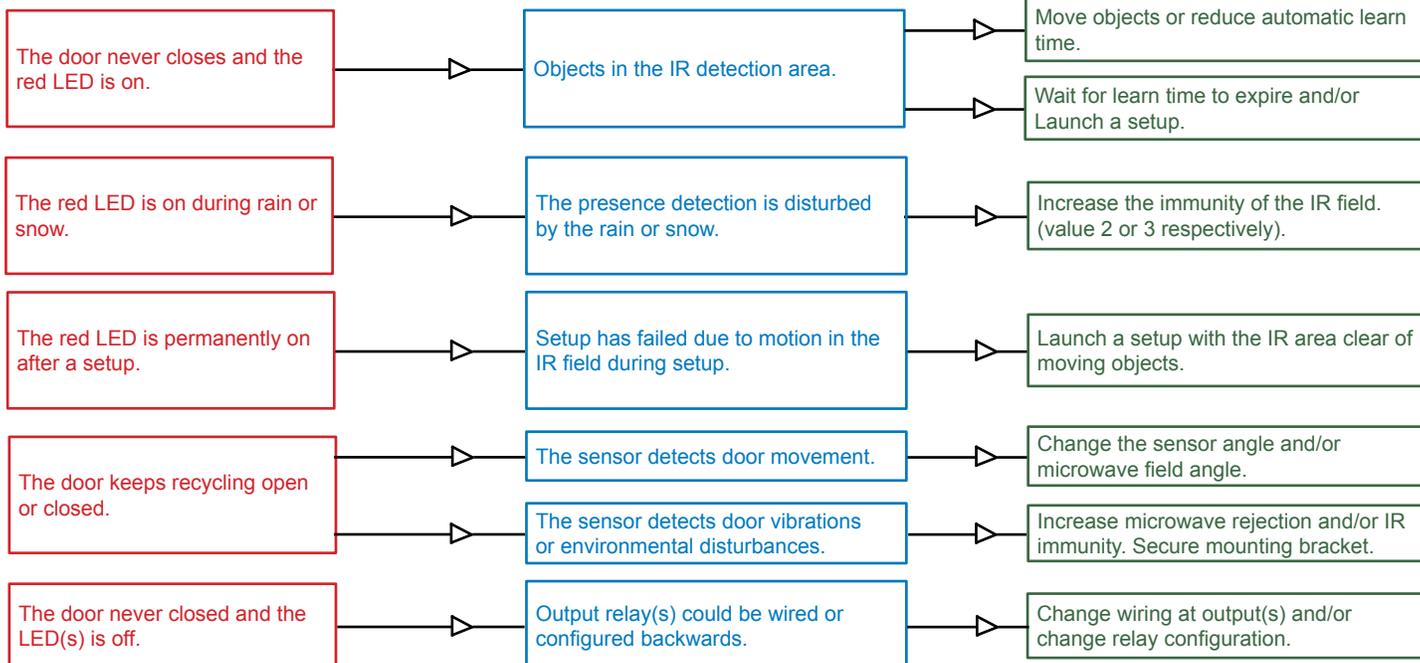
Within 1 minute, you can access the sensor without introducing any access code or delete the existing access code per the instructions above.

## 14 TROUBLESHOOTING

### SYMPTOMS

### POSSIBLE CAUSES

### CORRECTIVE ACTION



## 14 TROUBLESHOOTING (CONTINUED)

SYMPTOMS	POSSIBLE CAUSES	CORRECTIVE ACTION
Application requires an access code or sensor will not unlock after entering an access code.	You must enter a code or the wrong code was entered.	Cycle the power. No code is required to unlock during the first minute after powering on. Unlock, then lock and enter a new access code or "0000" to delete the current access code.
The green LED is on during rain or snow.	The microwave detection is disturbed by the rain or snow.	Increase the microwave rejection. Consider using the unidirectional mode under the Detection Mode.
The sensor detects objects outside of its detection field.	Too much reflection due to a metallic environment.	Increase the microwave rejection.
The sensor does not respond to the remote control.	The batteries in the remote control are not installed properly, dead or the remote is poorly aimed.	Verify or replace batteries or aim remote towards sensor.
	The sensor is not powered.	Check the power supply of the sensor.

## 15 ACCESSORIES



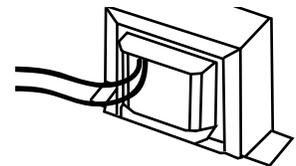
Telescoping HD Bracket  
P/N: 10HDBRACKET



Remote control  
P/N: 10REMOTE



Spotfinder  
P/N: 10SPOTFINDER



Transformer  
P/N: 1024VAC

## 16 COMPANY CONTACT



OPEN UP NEW HORIZONS

A HALMA COMPANY

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 BEA, 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.

Our Service Technicians can be called 24 hours a day, 7 days a week. For more information visit [www.beasensors.com](http://www.beasensors.com).

For email support contact us at: [Tech\\_Services@beainc.com](mailto:Tech_Services@beainc.com)

Phone: 1-800-523-2462

Fax: 1-888-523-2462

After Normal Business Hours

West / Mexico  
1-888-419-2564

Central  
1-800-407-4545

AK, MI, WI, TX, Canada  
1-866-836-1863

East  
1-866-249-7937