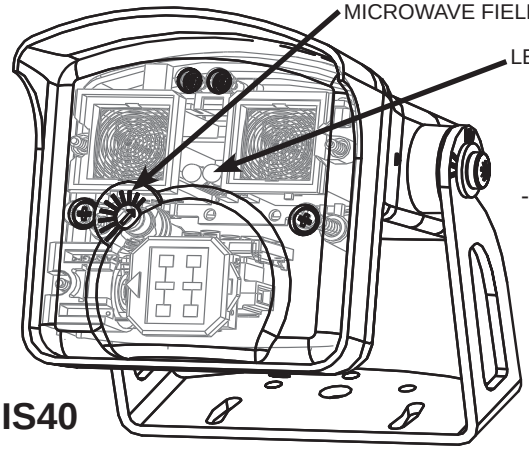
IS40 / IS40P
USER'S GUIDE

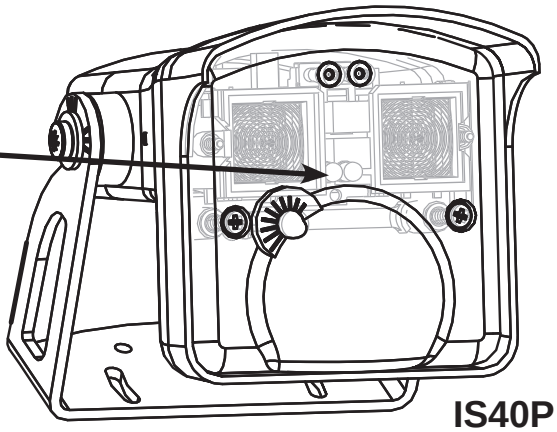
COMBINED ACTIVE INFRARED / MICROWAVE AND ACTIVE INFRARED ONLY SENSOR

1 Description



IS40

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



IS40P

- The IS40P uses Active Infrared (IR) technology for presence detection only and the activation relay can be triggered by entering or exiting the IR field.

2 Specifications

DESCRIPTION	SPECIFICATION	
TECHNOLOGY	MICROWAVE (IS40 Only)	INFRARED
RADIATED FREQUENCY	24.175 GHz	875nm
RADIATED POWER DENSITY	< 5 mW/cm²	< 250mW/m²
DETECTION MODE	Motion	Motion & Presence
MAXIMUM DETECTION FIELD	13' x 16' (4m x 5m)	(10' x 10') 3m x 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	Red
ANTENNA TILT ANGLE	-8° to 22° (relative to sensor front face)	N/A
SENSOR TILT ANGLE	15° to 45°	
SUPPLY VOLTAGE	12 to 24VAC ± 10% 12 to 24VDC +30% / -5%	
MAIN FREQUENCY	50 to 60Hz	
POWER CONSUMPTION	< 2W	
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	8' to 16' (2.5m to 5m)	
TEMPERATURE RANGE	-22°F (-30°C) to + 140°F (60°C)	
PROTECTION DEGREE	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)	

3 Precautions

- ❑ This device IS NOT intended for use as a safety sensor.
- ❑ 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 (i.e. ANSI A156.10 / 19) 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 will result in a voided product warranty.

4 Installation Tips

The sensor must be firmly fastened to prevent vibration.

DO NOT cover the sensor.

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

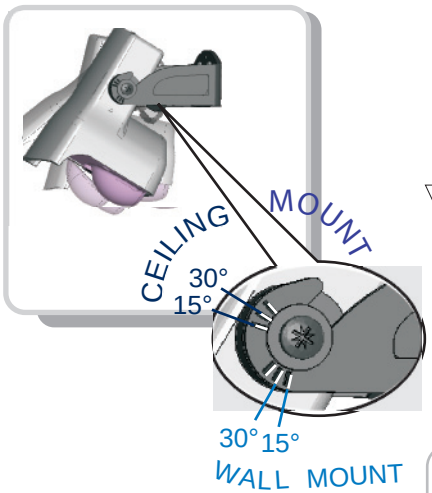
5 Wiring

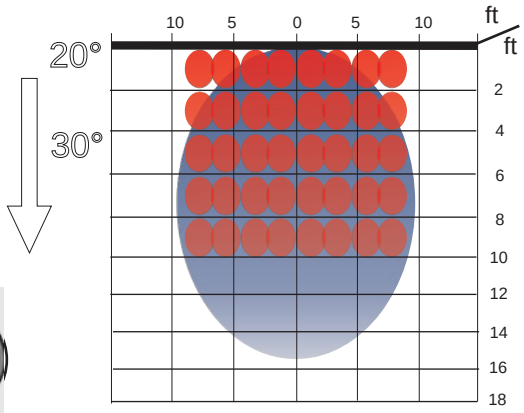
LABEL	POWER (VAC / DC)		ACTIVATION RELAY			PRESENCE RELAY		
	12-24	12-24	COM	NO	NC	COM	NO	NC
COLOR	RED	BLACK	WHITE	GREEN	YELLOW	WHITE W/BLACK STRIPE	GREEN W/BLACK STRIPE	YELLOW W/BLACK STRIPE

6 Installation

1 Sensor Tilt Angle

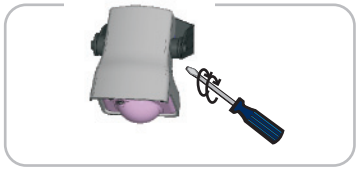
It is important to adjust sensor angle first to position IR field correctly. Then adapt angle of radar field by using tilt angle adjustment screw.





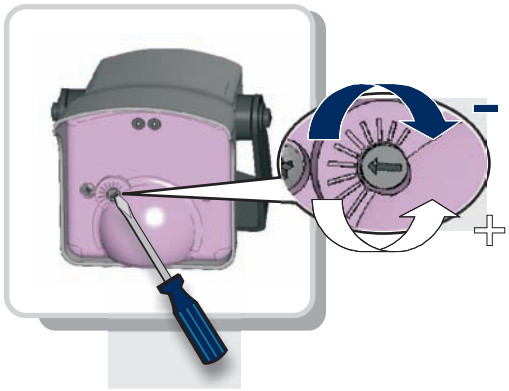
NOTE: To obtain an IR pattern that's straight down (closest to the door thershold); wall mounted sensors need to be set at 20º, while sensors that are extended out from the wall should be set at around 15º.

Mounting height: 16 ft.
Sensitivity: 9
Microwave field angle: 30°



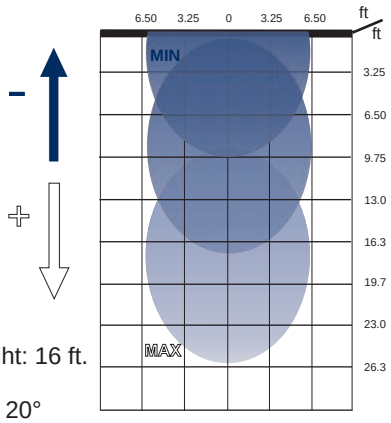
When the angle of the sensor is chosen, tighten the screws firmly.

2 Microwave Field Tilt Angle



By turning the tilt angle adjustment screw clockwise, the radar field angle is reduced.

By turning the tilt angle adjustment screw counter clockwise, the radar field angle is increased.



Mounting height: 16 ft.
Sensitivity: 9
Sensor angle: 20°

7 Remote Control Functions

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)	Press Unlock Key → RED LED Flashes Slowly
To change the value of a parameter (ex. Automatic Learn Time)	Select Parameter to Change → RED LED Flashes Quickly → Enter New Value (0-9) → RED LED Flashes Slowly
… to change any other parameters (ex. Relay Configuration)	Select Parameter to Change → RED LED Flashes Quickly → Enter New Value (0-9) → RED LED Flashes Slowly
To check the value of a parameter (ex. Automatic Learn Time)	Select Parameter to Check → RED LED Flashes Quickly → Press Question Mark (?) → The Number of Green Flashes Indicate the Value of This Parameter → RED LED Flashes Slowly
Lock the adjustment session and go back to normal function	Press Lock Key Twice OR + Lock Code

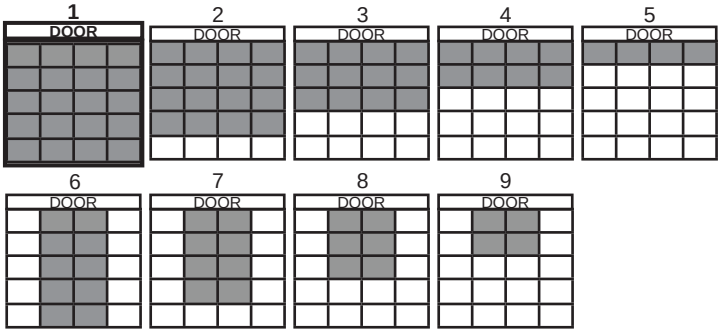
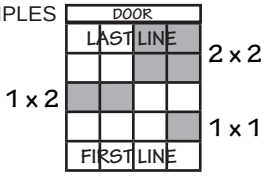
8 Setup & Startup

1 Setup Sequence

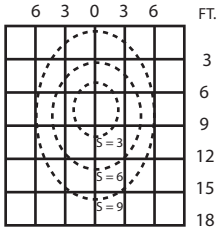
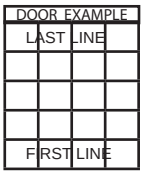
1. Power on the sensor. Sensor automatically performs a Setup on power up and Setup is complete when Red/Green flashing stops.
2. If the Detection Zone (Background) permanently changes and a new Setup is required, perform a new Setup by pressing  . Red & Green LEDs will blink rapidly until setup is complete.

NOTE: Avoid movement in the IR zone during setup.

2 Remote Control Parameters

FUNCTION	AFFECTS INFRARED OR MICROWAVE	REMOTE CONTROL BUTTON	FUNCTION DESCRIPTION
AUTOMATIC LEARN TIME	INFRARED		0: 30 seconds 1: 1 minute 2: 2 minutes 3: 5 minutes 4: 10 minutes 5: 20 minutes **6: 60 minutes** 9: ∞ (Infinity)
IMMUNITY	INFRARED		1: Low (Normal) 2: Medium (Rain) 3: High (Snow)
PATTERN	INFRARED		
FREQUENCY	INFRARED		**1: L - L' Pulse Frequency** 2: H - H' Pulse Frequency
TARGET SIZE	INFRARED	F2	Define the Minimum Size of Target **1: 1 X 1** 2: 2 X 2 3: 3 X 3 4: 4 X 4 5: 1 X 2 6: 2 X 3 7: 3 X 2 EXAMPLES 

2 Remote Control Parameters (Continued)

<table>
<tr><th>FUNCTION</th><th>AFFECTS INFRARED OR MICROWAVE</th><th>REMOTE CONTROL BUTTON</th><th>FUNCTION DESCRIPTION</th></tr>
<tr><td>SENSITIVITY</td><td>MICROWAVE</td><td></td><td>0 - 9: (7 - Default)
Height = 16 ft.
Sensitivity 9, 6, 3
  </td></tr>
<tr><td>DETECTION MODE</td><td>MICROWAVE</td><td></td><td>1: Bidirectional (Towards or Away from Sensors)
2: Unidirectional Approach (Towards Sensor)
3: Unidirectional Depart (Away from Sensor)</td></tr>
<tr><td>REJECTION MODE</td><td>MICROWAVE</td><td></td><td>1: Normal
2: Enhanced Immunity
3: Low Rejection Mode
4: Medium Rejection Mode
5: High Rejection Mode</td></tr>
<tr><td>ACTIVATION RELAY HOLD TIME</td><td>MICROWAVE</td><td></td><td>0: 0.5 second
1: 1.0 second
2: 2.0 seconds
3: 3.0 seconds
4: 4.0 seconds
5: 5.0 seconds
6: 6.0 seconds
7: 7.0 seconds
8: 8.0 seconds
9: 9.0 seconds</td></tr>
<tr><td>RELAY CONFIGURATION</td><td>INFRARED
MICROWAVE</td><td></td><td>
<table>
<tr><th></th><th>Activation Relay</th><th>Presence Relay</th></tr>
<tr><td>1</td><td>Active</td><td>Passive</td></tr>
<tr><td>2</td><td>Passive</td><td>Active</td></tr>
<tr><td>3</td><td>Passive</td><td>Passive</td></tr>
<tr><td>4</td><td>Active</td><td>Active</td></tr>
</table>
<table>
<tr><th>Description</th><th>Active</th><th>Passive</th></tr>
<tr><td>Detection</td><td>COM NO NC</td><td>COM NO NC</td></tr>
<tr><td>No Detection</td><td>COM NO NC</td><td>COM NO NC</td></tr>
</table>
</td></tr>
<tr><td>OUTPUT CONFIGURATION
  </td><td>INFRARED
MICROWAVE</td><td>F1</td><td>
<table>
<tr><th>PRESENCE RELAY</th><th>IS40</th><th>IS40P</th></tr>
<tr><td>0 - 4: ALL MODES</td><td>Activates when object is in presence zone.</td><td>Activates when object is in presence zone.</td></tr>
<tr><th>ACTIVATION RELAY</th><th>IS40</th><th>IS40P</th></tr>
<tr><td>0: STANDARD MODE</td><td>Activates when motion detected.</td><td>Activates when object is in presence zone.</td></tr>
<tr><td>1: PULSE ON ENTRY</td><td>Activates if object motion is detected and then object enters presence zone.</td><td>Activates when object enters presence zone.</td></tr>
<tr><td>2: PULSE ON EXIT</td><td>Activates if object motion is detected and then object exits presence zone.</td><td>Activaties when object exits presence zone.</td></tr>
<tr><td>3: PULSE ON ENTRY FIRST / LAST LINE (See Example to the Left)</td><td>Activates if object motion is detected and then object enters presence zone (first or last line).</td><td>Activates when object enters presence zone (first or last line).</td></tr>
<tr><td>4: PULSE ON EXIT FIRST / LAST LINE (See Example to the Left)</td><td>Activates if object motion is detected and then object exits presence zone (first or last line).</td><td>Activates when object exits presence zone (first or last line).</td></tr>
</table>
</td></tr>
<tr><td>SETUP</td><td>INFRARED
MICROWAVE</td><td></td><td>Initiate Setup, press 0</td></tr>
<tr><td>DEFAULT VALUES</td><td>INFRARED
MICROWAVE</td><td></td><td>To set Factory Defaults, press 9</td></tr>
</table>

9 Troubleshooting

SYMPTOMS	POSSIBLE CAUSES	CORRECTIVE ACTION
The red LED stays on.	The sensor detects a presence.	Wait for learn time setting to expire.
		Launch a setup.
The red LED is on during rain or snow.	The presence detection is disturbed by the rain or snow.	Increase the immunity of the IR field (value 2 or 3, respectively).
The green LED is on during rain or snow.	The microwave detection is disturbed by the rain or snow.	Increase the mircowave rejection.
		Consider using unidirectional mode under the Detection Parameters.
The red LED is permanently on after a setup.	Setup has failed due to motion in the IR field.	Launch a new setup with the IR area clear of moving objects.
The door keeps recycling open-closed.	Sensor detects door movement.	Change the sensor angle and/or mircowave field angle.
	Sensor detects door vibrations.	Increase mircrowave rejection.
The sensor detects objects outside of its detection field.	Too much reflection due to a metallic environment.	Increase the mircowave rejection.
The sensor does not respond to the remote control.	The batteries in the remote control are not installed properly or dead.	Verify or replace the batteries.
	The remote control is poorly aimed.	Point the remote control directly towards the sensor.
	The sensor is not powered.	Check the power supply of the sensor.
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.	Cut and restore power supply. 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.

10 Company Contact

BEA
OPEN UP NEW HORIZONS
A HALMA COMPANY

CAUTION

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. The following numbers can be called 24 hours a day, 7 days a week. For more information, visit www.beasensors.com.

US and Canada: 1-866-249-7937
Canada: 1-866-836-1863
Northeast: 1-866-836-1863
Southeast: 1-800-407-4545
Midwest: 1-888-308-8843
West: 1-888-419-2564