ULTIMO

ACTIVATION AND SAFETY SENSOR FOR
AUTOMATIC, SLIDING DOORS

*Visit website for
available languages
of this document.*

DESCRIPTION
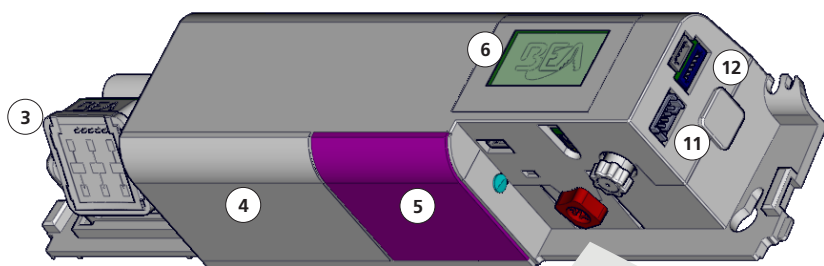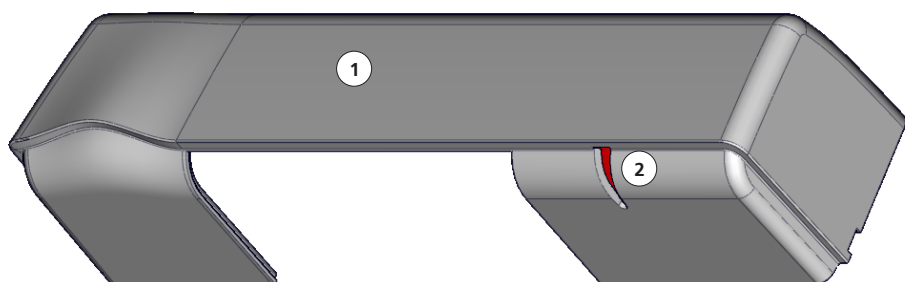
1. cover
2. light pipe
3. radar antenna
4. AIR receiver
5. AIR emitter
6. LCD
7. [for internal use only]
8. LED
9. AIR curtain angle adjustment knob
10. main adjustment knob
11. main connector
12. [for future development]
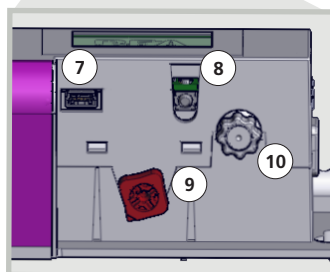
TECHNICAL SPECIFICATIONS

Mounting height	6'6" – 11'6"
Detection mode	motion and presence
Technology	microwave doppler radar and active infrared (AIR) with background analysis
Radar detection speed (min)	2 in/s
AIR response time (typ.)	< 200 ms (max. 500 ms)
Radar transmitter frequency radiated power power density lobe angles	24.150 GHz < 20 dBm EIRP < 5 mW/cm^2 0 – 45° (typical adjustment), default 25°
AIR spots size number of spots number of curtains curtain angles	2" × 2" (typ.) max. 32 per curtain 3 -3 – 11°, default 0°
Relay output 1 max. contact current max. contact voltage adjustable hold time	electromechanical relay (potential- and polarity-free) 1 A 30 VDC 0.5 – 9 seconds
Optofet output 2 max. contact current max. contact voltage hold time	solid-state relay (potential- and polarity-free) 400 mA 42 VAC/VDC 0.3 – 1 second
Test/Monitoring input sensitivity response time on request	 low: < 1 V high: > 10 V (max. 30V) <5 ms (typ.)
Supply voltage	12 – 24 VAC ±10% 12 – 30 VDC ±10%
Power consumption	< 3.2 W
Temperature range	-13 – 131 °F * 0 – 95% relative humidity, non-condensing *LCD screen is operational from 14 – 131 °F. The sensor may still be programmed in colder temperatures, but with the remote control.*
Cable length/gauge	10' / 26 AWG
Degree of protection	IP54
Compliance	R&TTE 1999/5/EC; MD 2006/42/EC; LVD 2006/95/EC; ROHS 2 2011/65/EU

Specifications are subject to change without prior notice.
All values measured in specific conditions.

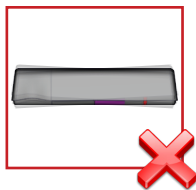# READ BEFORE BEGINNING INSTALLATION/PROGRAMMING/SETUP

LED SIGNALS

COLORS

- (green) Motion detection
- (red) Presence detection
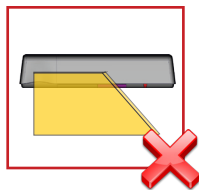- (white) IR synchronization

BEHAVIORS

- LED flashes
- LED flashes quickly
- LED flashes x times
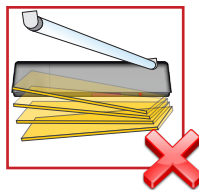- LED flashes red-green
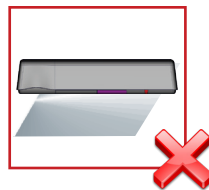- LED is off

INSTALLATION

The sensor should be mounted securely to avoid extreme vibrations.

Do not cover the sensor.

Avoid moving objects and light sources in the detection field.

Avoid highly reflective objects in the infrared field.

This device can be expected to comply with Part 15 of the FCC Rules, provided it is assembled in exact accordance with the instructions provided with this kit. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

MAINTENANCE
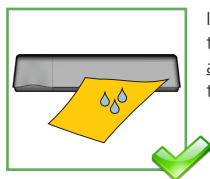
It is recommended to clean the optical parts <u>at least once a year</u> or more if required due to environmental conditions.
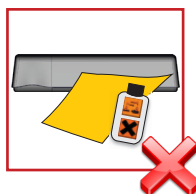
Do not use aggressive products to clean the optical parts.

SAFETY
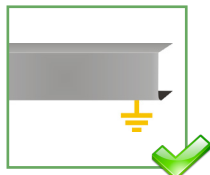
The door control unit and the header cover profile must be correctly grounded.

Only trained and qualified personnel are recommended for installation and setup of the sensor.

Following installation, always test for proper operation (according to ANSI 156.10) before leaving the premises.

The warranty is invalid if unauthorized repairs are made or attempted by unauthorized personnel.

MOUNTING

Using the provided mounting template, mount the sensor center over the clear opening, ensuring that the bottom of the sensor is no higher than 5 inches from the bottom of the door header.

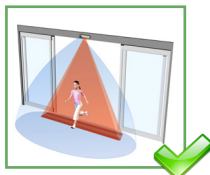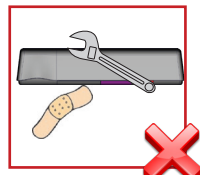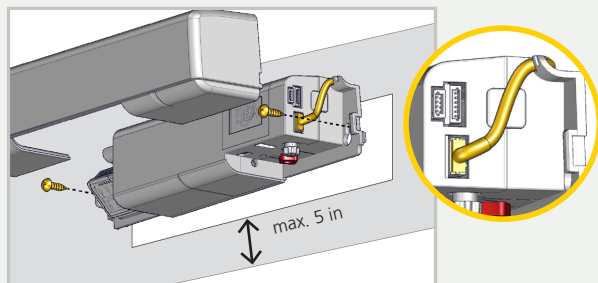Route the harness (20.5349) using the wire stay as shown in the exploded view of the mounting illustration.

Sensor connectivity (power and relays) must utilize only the supplied harness.

Sensor is intended to be monitored for proper operation by the door operator or system.

Harness shall be routed separated from any Mains or non-Class 2 voltage cable for correct operation or shall be rated for the Mains voltage, and suitable protection and routing means shall be used according to National and Local Codes to prevent damage to the harness and/or sensor.

WIRING

SENSOR		DOOR CONTROL
RED	POWER SUPPLY[1]	
BLACK	POWER SUPPLY[1]	
BROWN	SAFETY INPUT	
BLUE	SAFETY INPUT	
WHITE (COM)	OPENING INPUT	
YELLOW (N.C.)	OPENING INPUT[2]	
GREEN (N.O.)	OPENING INPUT[2]	
PURPLE	TEST OUTPUT[3,4]	
PURPLE	TEST OUTPUT[3,4]	

1. Voltage: 12 – 24 VAC, 50/60 Hz; 12 – 30 VDC; < 3.2 W (max)

2. Use either yellow or green, not both.

3. Test monitoring input: low = < 1 V, high = > 10 V (30 V max.); response time: typ. < 5 ms

4. The sensor LED will briefly flash RED and the LCD will display a monitoring notification during monitoring communication with the door control. This indicates that external monitoring is functional. Monitoring functionality must be active on the sensor, door control, and monitoring wires must be properly connected to the door control. To enable monitoring functionality, navigate to menu 3 on the LCD and ensure InTestMode is set to ON. Monitoring logic is defaulted to ActiveLow. ActiveHigh monitoring logic is selectable via InTestLogic on menu 3.

HOW TO USE THE LCD

DISPLAY DURING NORMAL FUNCTION

motion   AIR
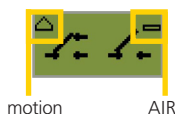
negative display = active output
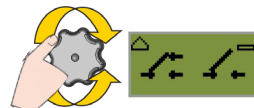
To adjust contrast, push and turn the gray button simultaneously.
During normal function only.

FACTORY VALUE VS. SAVED VALUE

IR: Immunity
3

displayed value
=
<u>factory</u> value

IR: Immunity
2

displayed value
=
<u>saved</u> value

NAVIGATING IN MENUS

1) Push to enter the LCD menu. 2) Enter password, if necessary. 3) Select language before entering the first LCD menu.

Password
X X X X

Not during the first minute after power-on of the sensor.
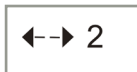
English
Deutsch

= scroll

= select

Select **Back** to return to previous menu or display.

Select **More** to go to next level:
- IR menu
- Radar menu
- Outputs & Diagnostics menu

VALUE CHECK WITH REMOTE CONTROL

←→ 2

Pressing a parameter symbol on your remote control displays the saved value directly on the LCD screen. Do not unlock first.

HOW TO USE THE REMOTE CONTROL

UNDERSTANDING LED ACTIVITY

After unlocking, the red LED flashes and the sensor can be adjusted by remote control.

If the red LED flashes quickly after unlocking, you need to enter an access code from 1 to 4 digits.
If you do not know the access code, **cycle the power**. During 1 minute, you can access the sensor without introducing any access code.

To end an adjustment session, always lock the sensor.

ACCESS CODES

⚠ It is recommended to use a different access code for each sensor in order to avoid changing settings on both sensors at the same time.

SAVING AN ACCESS CODE

The access code is recommended for sensors installed close to each other.

DELETING AN ACCESS CODE

Enter the existing code

DELETING AN UNKNOWN ACCESS CODE

CYCLE POWER

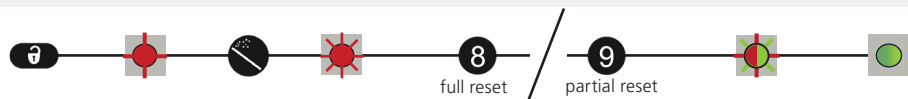#### ADJUSTING ONE OR MORE PARAMETERS

CHECKING A VALUE

x = number of flashes = corresponds to the remote control button assignment for the current setting (see page 12 for parameter assignments)

Example: For a sensor still programmed to factory default, the value check for AIR Presence Time will result in 2 green LED blinks.

RESTORING TO FACTORY VALUES

8 full reset

9 partial reset

full reset = restores to factory defaults
partial reset = restores all settings except monitoring and outputs

2 RADAR FIELD

The size of the detection field varies according to the mounting height and parameter settings of the sensor.

Tilt the radar antenna up to increase the depth and down to decrease.

The following graphics are representations – not default settings.
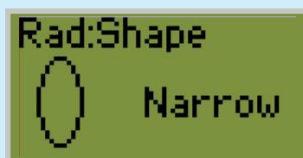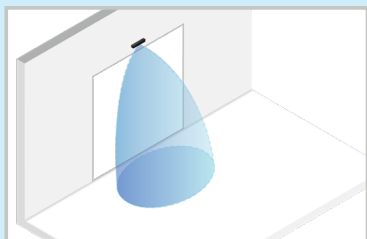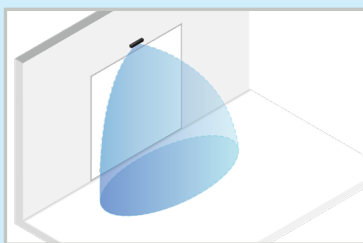
ANGLE

Tilt the antenna up to adjust the depth outward and down to adjust inward from the doorway.
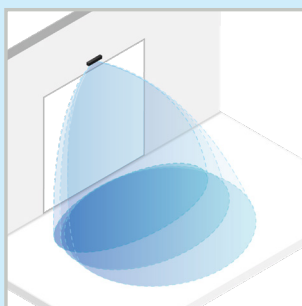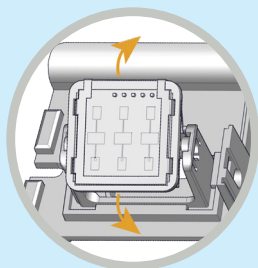
WIDTH

Navigate to menu 2 of the LCD to choose the desired width shape – wide lobe or narrow lobe.

3   ACTIVE INFRARED SAFETY FIELD

NUMBER OF CURTAINS / POSITION OF CURTAINS (IR:CURTAINS, MENU 1)

Choose the number and position of the AIR curtains based on your application.

The sensor is defaulted to Non-Threshold setting (3). If threshold is desired, you may choose Threshold setting 1, 2, 4, or 5; be sure that the curtain placement matches the LCD screen.

If necessary, use visible spots and red adjustment knob to position properly (see page 10).

#### UNDERSTANDING THE LCD "CURTAINS" GRAPHICS

GENERAL

- ■ the number of squares on a line indicates the curtain number (i.e. C1, C2, or C3)
- ▭ the rectangles on each side of the setting number represent sliding door panels

THRESHOLD SETTINGS

- ▬ ▬ a dotted line indicates that the given curtain is active at full open, and inactive during door closing cycle (settings 2 and 5)
- ▬ a solid line indicates that the given curtain is active at full open and partially active during door closing cycle (settings 1 and 4)

NON-THRESHOLD SETTINGS

- ▬ a solid line indicates that the given curtain is always active (settings 3, 6, and 7)

0	1	2	3 (default)
Service			

4	5	6	7
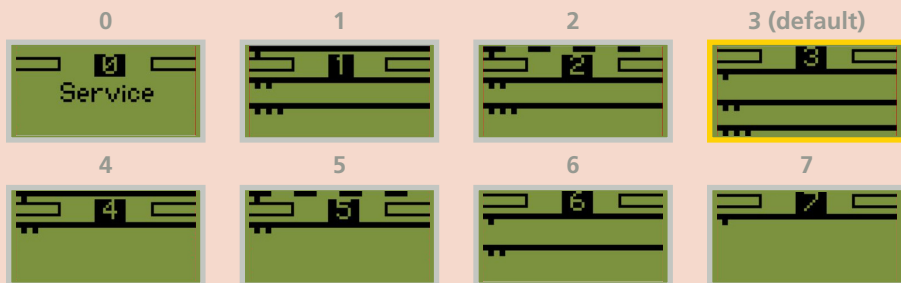
* When IR:Curtains is set to 0, the AIR will not trigger the output for a period of 5 minutes. After 5 minutes expires, IR:Curtains will revert back to the previously chosen setting.
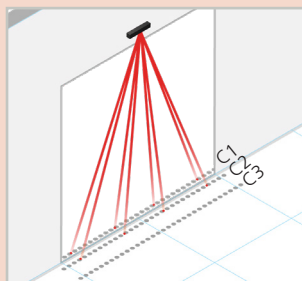
ANGLE

1. Activate the four visible spots (press gray knob twice) to verify the position of the AIR curtains.
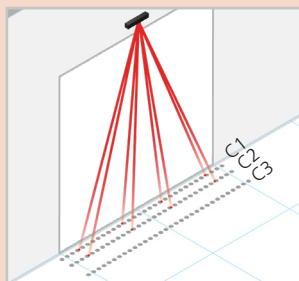
   Visibility depends on external conditions. When spots are not visible, use the Spotfinder to locate the curtains.
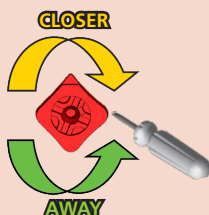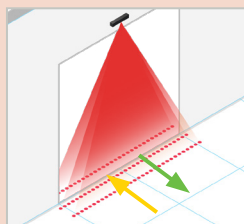

THRESHOLD	NON-THRESHOLD

ANGLE (cont.)

2. If necessary, adjust the AIR curtain angles using the red adjustment knob. Ensure AIR curtain positioning reflects IR:Curtains on the LCD screen.

THRESHOLD

CLOSER

AWAY

NON-THRESHOLD

default

3. When in Threshold mode, verify correct positioning of the threshold curtain:

First, turn on the red spots, and then verify that either C1 is at least in line with the moving door panel (see image below, left) or ***preferred*** through the door opening (see image below, right).

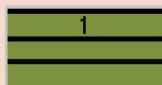Next, ensure that C2 is within 3 inches of face of door.

C1
C2
C3

C1
C2
C3
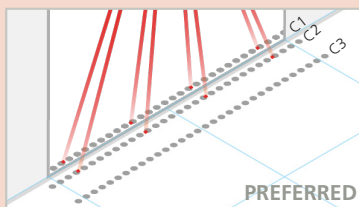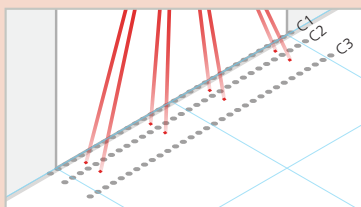
PREFERRED

WIDTH

1. If desired, adjust the field width using the LCD menu or remote control buttons (see page 10, IR:Width menu).

112" WIDE
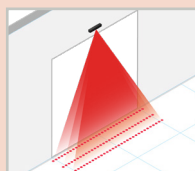
82" WIDE
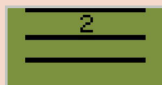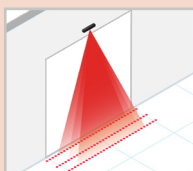
54" WIDE
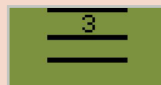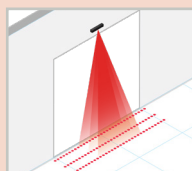
The size of the detection field varies according to the mounting height and the settings of the sensor. Widths specified above correlate to standard mounting height.

2. Always verify the actual AIR detection field by walk-testing according to ANSI 156.10. **Do not use a SPOTFINDER to verify the AIR detection field.**

Additional adjustments are possible by LCD or remote control (see OVERVIEW OF SETTINGS).

3   ACTIVE INFRARED SAFETY FIELD

ULTI-SYNC: AUTOMATIC SAFETY FIELD SYNCHRONIZATION

ULTI-SYNC is used to eliminate AIR crosstalk when safety fields are overlapping in the threshold of the door or when safety fields are overlapping side-to-side.

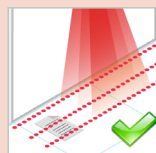ULTIMO will automatically synchronize its safety field when an overlapping safety field is detected.

The LED will flash white, confirming the synchronization is detected. If an overlapping safety field is found in the threshold of the door, ULTIMO will remain synchronized for 2 minutes while the door is closed. If activation does not occur for 2 minutes, the white LED will flash, confirming synchronization is lost. The fields will be synchronized again upon the next activation and will be confirmed by a flash of the white LED.

To check the synchronization status, navigate to menu 3, IR:Synch.
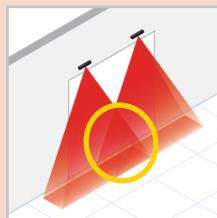
4   SETUP

The sensor can be set up using either the push button or the remote control:

PUSH BUTTON:
Press the gray knob twice.

REMOTE CONTROL:
Use the following remote control button sequence:

⚠ ***Ensure that the infrared field is clear of any obstructions.***

During setup, the LCD will display the camera icon and the LED will slowly flash red/green and then turn off.

slow flash

⚠ ***Test the proper operation of the system installation before leaving the premises!***

SETTINGS

Use the following tables to aid in understanding settings set by either LCD menu or remote control.

default = *shaded*

INFRARED SETTINGS ■ □ □

	0	1	2	3	4	5	6	7	8	9
IR:Width		wide	<	narrow						
IR:Curtains	0	1	2	3	4	5	6	7		
IR:Immunity			normal	outdoor	enhanced					
IR:PresTime			30 sec	1 min	2 min	5 min	10 min	20 min	60 min	infinite
IR:Startup	yes	no								

RADAR SETTINGS □ ■ □

	0	1	2	3	4	5	6	7	8	9
Rad:Fieldsize	small	^	^	^	^	^	^	^	^	large
Rad:Direction	OFF	BI <>|	UNI >|	MTF <|						
Rad:Shape	narrow	wide								
Rad:Immunity		low	^	^	^	^	^	^	^	high
Rad:Reentry	small	^	^	^	^	^	^	^	^	large

SETTINGS (cont.)

OUTPUTS & DIAGNOSTICS SETTINGS	0	1	2	3	4	5	6	7	8	9
Out1Funct 〖F1〗	off	RAD or IR					RAD			
Out1Logic 🎵		N.O.	N.C.							
Out1HoldTime 🕐	0.5 sec	1 sec	2 sec	3 sec	4 sec	5 sec	6 sec	7 sec	8 sec	9 sec
Out2Logic		N.O.	N.C.							
Out2HoldTime	0.5 sec	1 sec	2 sec	3 sec	4 sec	5 sec	6 sec	7 sec	8 sec	9 sec
InTestLogic	Active High	Active Low								
InTestMode [1] 〖AE〗	off	on								
Admin menu	see next page									
Error log	last 10 errors + day indication									
IR:Synch	status of IR synchronization									
IR:Spotview	view of spot(s) that trigger detection									
IR:C1 Energ.	signal amplitude received on curtain 1									
IR:C2 Energ.	signal amplitude received on curtain 2									
IR:C3 Energ.	signal amplitude received on curtain 3									
IR:ReactTime	reactivity speed of infrared in relation to immunity and environment									
PowerSupply	supply voltage at power connector									
Reset log	no	yes								
FactoryRst [2] ⬳									full	partial

NOTES:

1. The sensor LED will briefly flash RED during monitoring communication with the door control. This indicates that external monitoring is functional. Monitoring functionality must be active on the sensor and door control, and monitoring wires must be properly connected to the door control.

2. Partial reset is only available via remote control. Partial restores all adjustable settings except Out1Logic and Out2Logic.

SETTINGS (cont.)

ADMIN SETTINGS
☐ ☐ ☐ ■

password: 1234

Config P/N	configuration file identifier
Soft P/N	software version identifier
Operating Time	power duration since first startup
TempSensor	degrees in Celsius
Password	LCD and remote control password (0000 = no password)

TROUBLESHOOTING

E1 🔶1	ORANGE LED flashes 1x	The sensor signals an internal fault.	Replace sensor.
E2 🔶2	ORANGE LED flashes 2x	The power supply voltage is too low/high.	Check power supply voltage in Diagnostics menu (menu 3) of the LCD.
			Check wiring.
E3 🔶3	ORANGE LED flashes 3x	Radar communication error	Check the connection at the radar.
E4 🔶4	ORANGE LED flashes 4x	The sensor does not receive enough AIR energy.	Ensure proper mounting height.
			Turn on the visible red spots and adjust the angle of the AIR curtains.
			Deactivate curtain #3 (C3, outer curtain).
E5 🔶5	ORANGE LED flashes 5x	The sensor receives too much AIR energy.	Ensure proper mounting height.
			Turn on the visible red spots and adjust the angle of the AIR curtains.
		The sensor is disturbed by external elements.	Eliminate the cause of disturbance (lamps, rain cover, etc).
E8 🔶8	ORANGE LED flashes 8x	AIR power emitter is faulty.	Replace sensor.
🟡	ORANGE LED is on	The sensor encounters a memory problem.	Cut and restore power supply. If ORANGE LED illuminates again, replace the sensor.
🔴	RED LED flashes quickly after a setup	The sensor sees the door during setup.	Move the AIR curtains away from the door.
			Ensure that the bottom of the sensor is mounted within 5" of the bottom of the door header.
			Launch a new assisted setup.
🔴	RED LED illuminates sporadically	The sensor vibrates.	Check if the sensor is secure. Ensure that the header cover screws and mounting screws are tight.
			Check position of cable and sensor cover.
		The sensor sees the door in a non-threshold application.	Turn on the visible red spots and adjust the angle of the AIR curtains.
		The sensor is disturbed by external conditions.	Change the AIR immunity filter and AIR frequency.
🟢	GREEN LED illuminates sporadically	The sensor is disturbed by rain and/or leaves.	Increase radar immunity filter and adjust the radar field angle.
		Ghosting created by door movement.	Change radar field angle.
		The sensor vibrates.	Check if the sensor and door header is secure.
			Check position of cable and sensor cover.
		The sensor sees the door or other unwanted moving objects.	Remove the objects if possible.
			Change radar field size, angle, or immunity.

	Symptom	Cause	Solution
⬤	The LED and the LCD displays are off	No power to sensor.	Check wiring.
			Check for correct power supply.
🖐	The reaction of the door does not correspond with the LED signal	Incorrect output configuration / wiring.	Ensure that the sensor output configuration matches what the door control is expecting.
			Check sensor wiring.
	The LCD or remote control does not react	Batteries dead.	Replace batteries.
✳	RED LED flashes quickly when unlocking	The sensor is protected by a password.	Enter the correct password. If you forgot the code, cut and restore the power supply to access the sensor without entering a password during 1 minute.
✖	RED Visible External Monitoring (Test Indication LED) does not flash	Monitoring installation/setup error.	Verify door control is capable of monitoring and the sensor monitoring wires are properly connected to the door control.
			Verify monitoring (TEST) is ON in the sensor settings.
		Sensor malfunction.	Replace the sensor.
✳	RED Visible External Monitoring (Test Indication LED) flashes continuously	Wiring issue.	Verify wiring.
		Door control not set correctly.	Verify door control monitoring set to correct test logic according to the door control.
	Door cycles open and remains open	Door control monitoring set to Active High.	Set test logic to Active High.
		Safety output is set incorrectly.	Set the safety output required for the door control.

BEA, INC. INSTALLATION/SERVICE COMPLIANCE EXPECTATIONS

BEA, Inc., the sensor manufacturer, cannot be held responsible for incorrect installations or incorrect adjustments of the sensor/device; therefore, BEA, Inc. does not guarantee any use of the sensor/device outside of its intended purpose.

BEA, Inc. strongly recommends that installation and service technicians be AAADM-certified for pedestrian doors, IDA-certified for doors/gates, and factory-trained for the type of door/gate system.

Installers and service personnel are responsible for executing a risk assessment following each installation/service performed, ensuring that the sensor/device system performance is compliant with local, national, and international regulations, codes, and standards.

Once installation or service work is complete, a safety inspection of the door/gate shall be performed per the door/gate manufacturer's recommendations and/or per AAADM/ANSI/DASMA guidelines (where applicable) for best industry practices. Safety inspections must be performed during each service call – examples of these safety inspections can be found on an AAADM safety information label (e.g. ANSI/DASMA 102, ANSI/DASMA 107, UL294, UL325, and International Building Code).

Verify that all appropriate industry signage, warning labels, and placards are in place.

A **Halma** company

Tech Support & Customer Service: 1-800-523-2462
General Tech Questions: techservices-us@BEAsensors.com | Tech Docs: www.BEAsensors.com

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