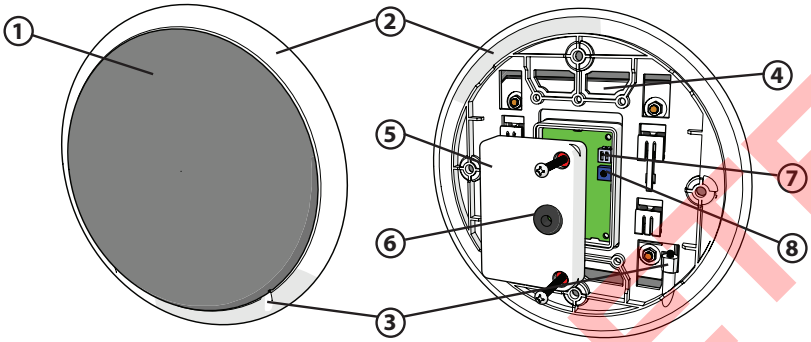
ENGLISH

MAGIC SWITCH: MS21H

Hardwired, Stainless Steel, Touchless, Activation Sensor

Visit website for available languages of this document.

DESCRIPTION



1. faceplate
2. mounting holes
3. set screws
4. backplate
5. NEMA 4 enclosure
6. wire harness
7. DIP-switches
8. potentiometer

PRODUCT FAMILY

6" ROUND STYLES

10MS21HR

text only

10MS21HRLL

logo only

10MS21HR1

text & logo

4.75" SQUARE STYLES

10MS21HS

text only

10MS21HSLL

logo only

10MS21HS1

text & logo

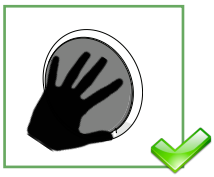
TECHNICAL SPECIFICATIONS

Technology	capacitive sensing	
Detection Mode	proximity	
Supply Voltage	12 – 24 VAC/VDC	
Current Consumption	37 mA (typical)	
Temperature Range	-20 – 120 °F	
Enclosure Rating	NEMA 4	
Sensing Zone	0 – 4"	*Sensing Zone is dependent upon size (area) of object, orientation of object, speed of object, and environmental conditions.*
Relay	1-Form A Solid State Relay 0.4A 60 VAC/VDC (max)	
Dimensions (0verall)	6" Round: 7" (diameter) × 0.5" (D) 4.75" Square: 5.75" (H) × 5.75" (W) × 0.5" (D)	
Wire Harness Length	6 inches (5-conductor)	*A 5-conductor wire is needed between the sensor and the door control.*
Material	stainless steel (faceplate) clear polycarbonate (mounting ring, backplate, enclosure)	

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

PRECAUTIONS

Only trained and qualified personnel are recommended to install and set up the sensor.



Always test the proper operation of the installation before leaving the premises.

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

1 INSTALLATION

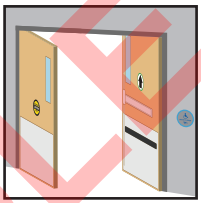
TIPS

- **Single gang or double gang electrical boxes (ideally, non-metallic) may be used.**
- **Single gang electrical boxes are recommended for 4.75" square version.**
- **Set screws are 4/40 × 1/2" Allen head screws, adjusted with 3/32 Allen wrench (supplied).**
- **Mounting screws are #6-32 × 1/2" Phillips head screws.**

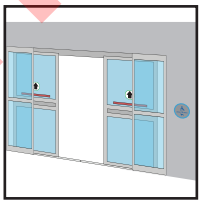
APPLICATIONS

Single Swing Doors

Sim Pair Swing Doors



Dual Egress Swing Doors



Sliding Doors

NOTE: *Do not install the sensor within the swing path of the door.*

1. Install the electrical box.
2. Remove the two (2) set screws.
3. Disassemble (i.e. slide up and pull out) the faceplate assembly from the mounting ring.
4. Temporarily mount the mounting ring to the electrical box. Pay attention to "THIS END UP".
5. Mark four (4) hole locations for installing the mounting ring.
6. Remove the mounting ring from the electrical box.
7. Install four (4) wall anchors.
8. Mount (i.e. hand-tighten) the mounting ring to both the electrical box and the wall.
9. Remove the back of the NEMA 4 enclosure.
10. Sections 2 (WIRING) and 3 (SETTINGS & ADJUSTMENTS) must be completed prior to continuing installation (Section 4).

2 WIRING

IMPORTANT WIRING NOTES:

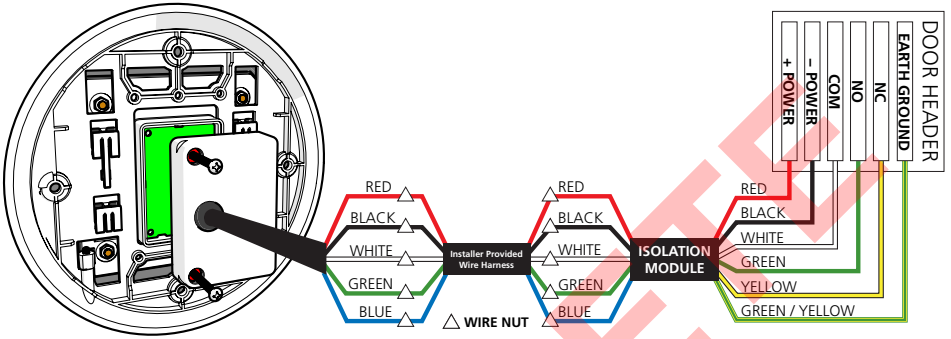
- *Always use a BEA-provided isolation module (polarity-sensitive) for powering each MS21.* ***Red must be connected to power (+) and black connected to power (-).***
- *It is recommended that 300 V, low-voltage cabling, shielded wire be used during installation.*
- *It is recommended that the MS21 cabling have a distance of 6 inches around power lines 120 VAC/VDC or higher.*
- *If using a wire harness with more than 5 conductors, all extra conductors must be wired at both ends to Earth Ground.*

2 WIRING (cont.)

It will take approximately 10 seconds to complete the initialization sequence once powered.

Wire-nut harness wires and isolation module wires together and then connect the isolation module wires to the door control using the chart or visual representation below.

NOTE: *From isolation module to ACT, use either green (NO) OR yellow (NC).*



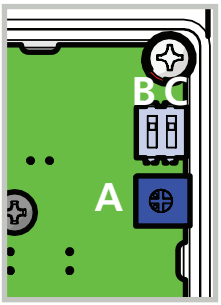
Isolation Module	Signal	Harness Wire	Isolation Module Wire	Door Control Terminal
To Door Control (6-wire side)	AC/DC +	-	Red	AC/DC +
	AC/DC -	-	Black	AC/DC -
	COM	-	White	ACT COM
	NO	-	Green	ACT NO
	NC	-	Yellow	ACT NC
	Earth Ground	-	Green / Yellow	Earth Ground
To MS21 (5-wire side)	COM	White	White	-
	NO	Green	Green	-
	AC/DC	Red	Red	-
	AC/DC	Black	Black	-
	Earth Ground	Blue	Blue	-

3 SETTINGS & ADJUSTMENTS

(A) SENSING ZONE – **potentiometer**
COUNTERCLOCKWISE – decrease (0'' minimum)
CLOCKWISE – increase (4'' maximum)[1]

(B) AUDIBLE ALERT – DIP-switch 1 (left)
ON – audible alert pulsed for 0.5 seconds during detection
OFF – audible alert off

(C) LED – DIP-switch 2 (right)
ON – LED on at rest, pulsed off for 0.5 seconds during detection
OFF – LED off at rest, pulsed on for 0.5 seconds during detection



NOTES:
1. Maximum Sensing Zone will vary depending on size (area), orientation, and speed of object as well as environmental conditions.

4 FINAL INSTALLATION

1. Reinstall the back of the NEMA 4 enclosure.
2. Reassemble (i.e. align, push in, and slide down) the faceplate assembly to the mounting ring.
3. Reinstall the two (2) set screws.
4. Test the installation functionality and performance.

CAUTION:

When installing near unprotected and/or uninsulated circuits, additional electrical isolation may be needed. The shrink tubing over the printed wiring board (provided by BEA) is rated minimum 150V, VW-1, and 80 °C. This information may be taken into account to define whether additional isolation is required.

FUNCTIONALITY

ACTIVATION	Activation signal held until sensing zone is cleared (or relearned). Audible Alert (if enabled) will pulse for 0.5 seconds at initial detection.
REJECTION	An object must be within sensing zone for at least 130 milliseconds for detection to occur (i.e. parallel traffic rejection).
TRACKING	Reduced unwanted detections by allowing small variations in baseline capacitance (e.g. temperature/humidity changes). If stationary object remains within sensing zone for more than 5 seconds, a new capacitive zone will be learned and normal operation will resume (e.g. chewing gum stuck to faceplate).

TROUBLESHOOTING

Sensor erratically detecting or falsely activating	Not properly grounded	Verify continuity between sensor ground and earth ground. See Application Note for details.
	Unstable power supply	Ensure the BEA isolation module (polarity-sensitive) is being used with each MS21.
	Electrical noise within sensing zone	Reduce sensing zone (potentiometer counterclockwise).
	Non-stationary object within detection zone	Clear a 10" zone around detection field.
Sensor not detecting	Sensing zone is set too low	Increase sensing zone (potentiometer clockwise).
	No power	Verify power supply and connection.

Can't find your answer? Visit www.beainc.com or scan QR code for Frequently Asked Questions!

BEA, INC. INSTALLATION/SERVICE COMPLIANCE EXPECTATIONS

BEA, Inc., the sensor manufacturer, cannot be held responsible for incorrect installations or inappropriate adjustments of the sensor/device; therefore, BEA, Inc. does not guarantee any use of the sensor 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 system installation 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 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).

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

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