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SUPERSCAN INFRARED PRESENCE BEAM

INSTRUCTION MANUAL FOR INDUSTRIAL APPLICATIONS

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**This manual may be downloaded from our web site in PDF format: www.beainc.com
Requires Adobe Acrobat Reader.**

SUPERSCAN ACTIVE INFRARED PRESENCE BEAM

The SuperScan safety detector is a presence detection system that is primarily utilized on automatic pedestrian swing doors. B.E.A., Inc. has found ways that the SuperScan can be utilized on industrial doors.

The electronic components come housed in a narrow aluminum extrusion that measures 34.5" and can be altered to accommodate different door widths. The system comes complete for mounting to the door and includes a door loop, which encases the wiring from the door to the door jamb.

Detection zones can be varied in range by a potentiometer adjustment, and in width by adding or taking away slave modules from the master. These slave modules are simply added by inserting them into the aluminum extrusion then connecting them with the attached flat ribbon cable to the next module. This can be done without interrupting other modules in the same extrusion. Once installed, the zone (in addition to being adjustable for distance) can be angled independently from the other modules. This means that the zone can be directed closer or farther away from the face of the door.

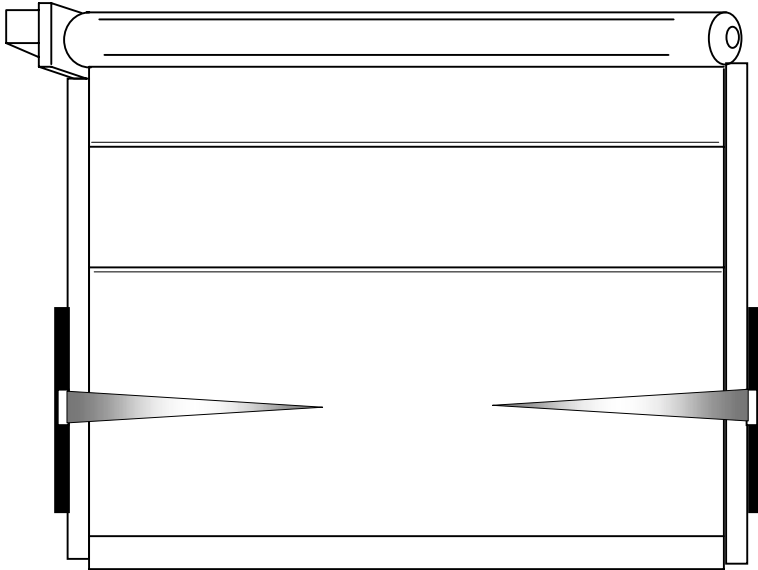
Each SuperScan module consists of two optics, a transmitter (TX) and a receiver (RX), and functions independently of the other modules. The transmitter emits an extremely precise beam, which measures approximately 4" in diameter at a distance of 8'. The receiver in turn receives the infrared beam reflected off of the floor or other reflecting surface. This transmission and reception forms a detection angle, which is the basic premise of detection (called triangulation). Should this angle be interrupted, detection will occur. Detection is NOT based upon the intensity of the beam, and in principle **will not be affected by the color of the object that interrupts the angle**. Background color will not alter the performance of detection.

PLEASE NOTE: The SuperScan is water-resistant but not water-proof. Direct water spray is not recommended. Any units sent back to B.E.A. with water damage would be 100% out of warranty.

TECHNICAL SPECIFICATIONS

Power Supply	Output Relay: 12-24 V AC/DC \pm 10%
Current Consumption:	Master: On = 60 mA max. Master: Off = 30 mA max. Slave: On = 40 mA max. Slave: Off = 30 mA max.
Input Inhibit	12-24 V AC/DC \pm 10%: Active when voltage is applied
Input Monitoring	12-18 V DC: Active when voltage is removed
Output Interface; relay	Relay; max. contact rating is 1A @ 30V (resistive)
Detection Range	0' to 8'2" (2.5 m)
Distance Adjustment	2 ft. up to 8 ft. (.61m up to 2.44m) rotating cam with linear adjustment
Detection Time	< 50 ms
Detection Signal Duration	Infinite Presence Detection
Output Hold Time	Potentiometer Range: 0.1 sec. to 4.5 secs.
LED Indications	Master: Red LED = Detection Green LED = Active Output Slave: Red LED = Detection
Operating Temperature Range	-30° F to 140° F
PCB Dimensions	Master: 10.91" x 1.5" (277mm x 38mm) Slave: 8.75" x 1.5" (222mm x 38mm)
Connection to Door Controller	8 Position Screw Terminal on Master PCB
Connection: Master to Slave	Flat Ribbon Cable With Connectors and Key Lock
Max. Number of Slaves	Standard = 9 / With Monitoring = 8 max.
Functions Selection	Detection Mode - NO or NC Standard Mode or With Protection Against Masking

COMMON INDUSTRIAL APPLICATIONS:

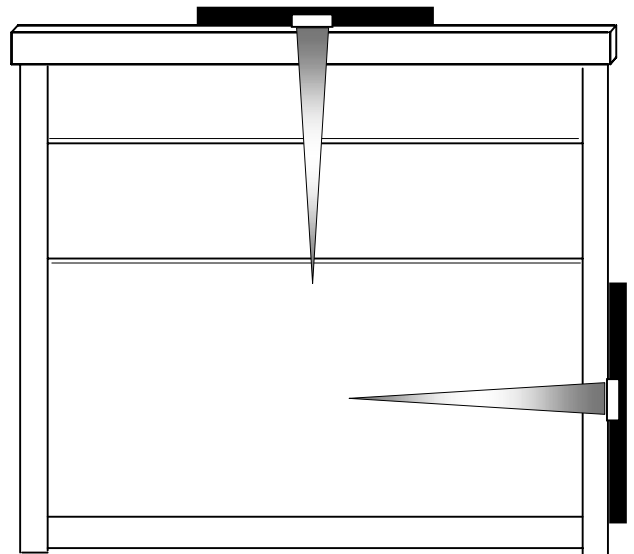


DOORS WHERE OVERHEAD ACTIVATION SENSORS ARE NOT ABLE TO BE MOUNTED:

For applications with limited mounting height using an IS-87 for activation for vehicles only, the SuperScan can be installed as shown to the left and wired in series so that both beams will have to be broke in order for detection to occur.

DOORS THAT OPEN TO TWO DIFFERENT HEIGHTS:

For applications where a door opens at two different heights, the SuperScan can be used for activation. By mounting the SuperScan's as show to the right, if the beam on the side of the door is broken, the door will only open partially. When both beams are broken, the door will open all of the way. Thus providing a savings in energy costs.

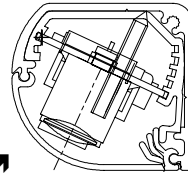


SUPERSCAN INSTALLATION PROCEDURES

****B.E.A. sensors, as with all automatic door equipment, should be set up and inspected in accordance with applicable ANSI standards.**

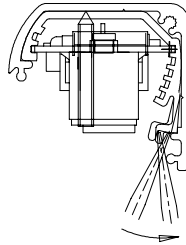
Mounting the aluminum extrusion to a door jamb or wall.

1. Remove the screws and end caps and snap the Plexiglas from the top edge by pulling out from the top.

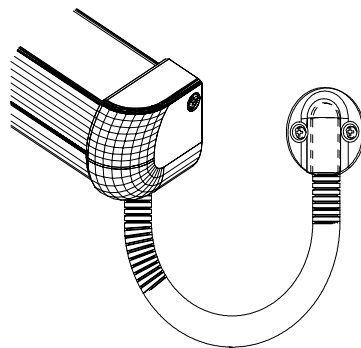


Pull lens out from the top ↗

2. Unclip the plastic supports as to allow the modules to be removed from the housing.



3. Hold the extrusion up to the door where it is to be mounted. Use the chart below to install the aluminum extrusion on the door properly. Be sure to mount the housing in a location that will not interfere with door arms, hinges, slide tracks, etc. Once positioned, mark the housing for screw locations. Drill clearance holes for the type of screws that need to be used. The holes may need to be countersunk if they align with the plastic support clips for the modules. The SuperScan extrusion does not come pre-drilled due to varying applications since it can be ceiling mounted or face mounted.
4. Once installed, drill a clearance hole, parallel with the extrusion, in the jamb to allow the wires to be routed to the header. Surface-mounted wiremold may be necessary for a raceway if jambs are solid. When selecting a side of the door to mount the wire transfer on, consider factors such as weather, and the type of traffic that will be using the door. Most often it is advantageous to install the door loop on the inside of the door and drill a hole through the door frame to allow the use of one door loop for wiring both SuperScans. Use the supplied door loop to secure the wiring coming out of the SuperScan housing at the end cap and also at the entry point at the jamb tube as shown on drawing.



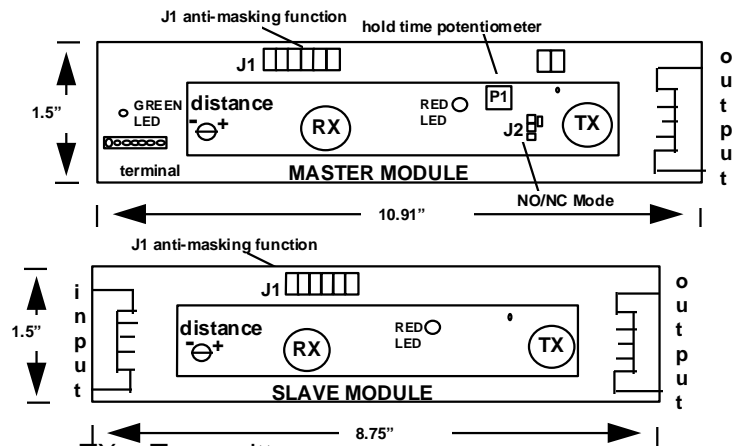
5. Run the connection cable from the header to the SuperScan extrusion. Be sure to route the conductor through the flexible sheath between the jamb and the extrusion. Once wire is run, install the jamb cap. On the extrusion's end cap, break out the part of the end cap on the bottom to allow wire passage.

Drill a through-hole in the door between the two extrusions to allow wire passage between them.

6. This concludes the installation procedure. Proceed to the wiring and configuration section next.

ON SITE ADJUSTMENTS

1. Position of the Master and Slave Modules in the Aluminum Extrusion



NOTE: RX = Receiver

TX = Transmitter

Please use the above diagrams for the terminology used to describe the installation of the SuperScans.

The position of the master and slaves in the aluminum extrusion is important to the operation of the SuperScan unit. The correct position of the Master/Slave combination is **Master on the Hinge side** of the door and the **Slave on the Leading edge side** of the door. The modules will have to be change for at least one side of the door because the SuperScan is factory preset to accommodate a right hand activation and/or left hand safety installation. Therefore, if the installation is left hand activation and/or right hand safety the position of the modules should be interchanged. Use the following procedure to change the position of the master and the slave:

1. Remove the Master and Slave modules from the housing. (NOTE: The plug connector on the Master module is in the upper right corner of the PCB & the ribbon cable on the Slave module is on the right hand side)
2. Disconnect the blue ribbon cable from the master making sure to leave the cable connected to the input connector of the Slave.
3. Rotate the Master module 180° so that the plug connector is in the lower left corner of the PCB.
4. Rotate the Slave module 180° so that the blue **input** ribbon cable is now on the left hand side of the PCB.
5. Remove and rotate the white mounting brackets on both the Master and Slave modules so that the modules will snap back into the aluminum extrusion.
6. Reconnect the blue ribbon cable to the Master module.
7. Continue to wire the unit as listed on page 14.

Adjustment of the Detection Distance

Use the procedure listed below to adjust each detector in order to obtain detection 12" to 16" above the floor. The following adjustments must be made with the detectors in the normal mode (position of J1)

1. To adjust the length of the pattern (from 2' to 8'), turn the distance potentiometer (cam) clockwise to increase the detection distance.

This can be tested by waving your hand in front of the optic and watching for the red LED to turn on.

NOTE: One notch of the distance adjustment corresponds to approximately 4".

2. Repeat this procedure until the desired distance is achieved.

Function J1: Anti-Masking



Anti-Masking is the ability to help reduce chances of non-detection due to faulty environmental situations, and also allows constant detection in the event of one or more of the following situations:

- Module aimed too high
- Module incorrectly oriented (towards sky for example)
- Defective amplification chain
- Faulty infrared transmitter
- Not enough reflectivity off of floor surface

Note: Floor must have at least 10% reflectivity to allow anti-masking to function properly.

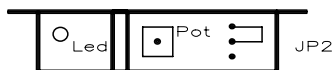
This configuration greatly reduces the chance of allowing the modules to function less than optimally. If one of the above-stated faults exists, the detector will remain active, thereby causing the door to stay open or to not open. This fail-safe operation will cause the door to be inoperative in the automatic mode, since there will be a constant signal either to the safety input or to the activation input of the door control, depending on which module is sensing detection. If an extremely dark floor is present set jumper to normal mode. **Also set to Normal Mode if using with B.E.A.'s SuperStop Module. The J1 function must be set on each module.**

Function J2: Relay Mode

J2 is a two-position jumper, which enables either a passive or active relay to be selected. The SuperScan comes factory preset with the relay in the ACTIVE MODE.

ACTIVE RELAY: The relay is energized when the detector is at rest

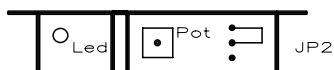
1. NORMALLY OPEN: Use the NC & COM terminals (5 & 6) & *leave JP2 at the factory preset position.*



FAIL SAFE MODE

Contact closed if detection or power supply removed (green led OFF, red led ON)

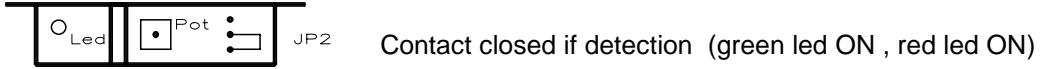
2. NORMALLY CLOSED: Use the NO & COM terminals (4 & 6) & **leave JP2 at the factory preset position.**



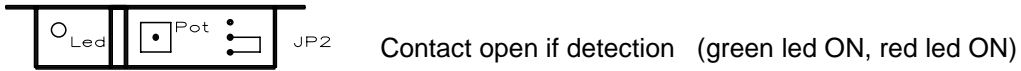
Contact open if detection or power supply removed (green led OFF, red led ON)

PASSIVE RELAY: The relay is de-energized when the detector is at rest

1. NORMALLY OPEN: Use NO & COM terminals (4 & 6) & **CHANGE JP2** from the factory preset position.



2. NORMALLY CLOSED: Use the NC & COM terminals (5 & 6) & **CHANGE JP2** from the factory preset position.



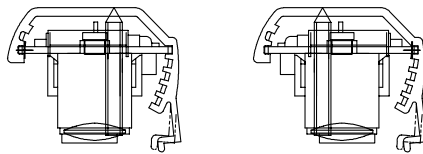
Potentiometer P1: Hold Time Adjustment

The hold time adjustment is altered by the turn of a potentiometer, and refers to the amount of time the output may be held. A range of 100 mS to 4.5 seconds can be obtained. Clockwise rotation increases hold time.

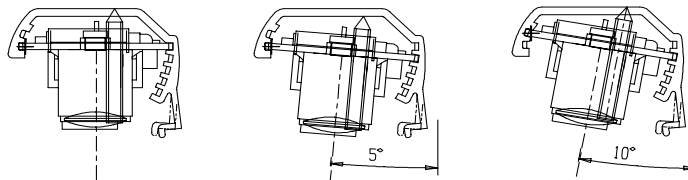
Mounting Angles

HINGE SIDE RIGHT

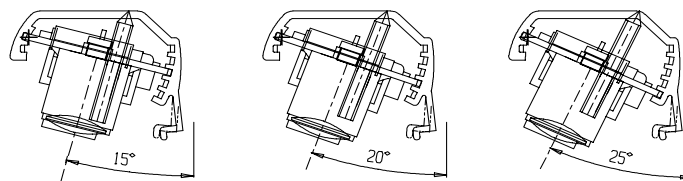
HINGE SIDE LEFT



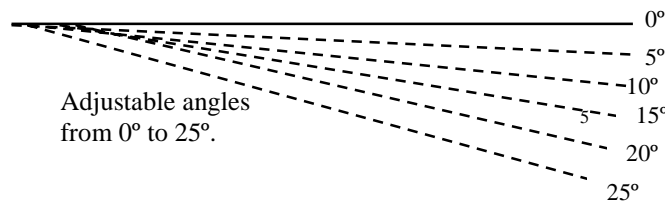
Angles of 0° through 10° shown below



Angles of 15° through 25° shown below



Top View



NOTE: On the approach side, it is recommended to choose the proper mounting angle as well as proper detection distance depending on the application, the # of modules used, and the width of the door.

SuperScan Terminals	Wiring Connections for Industrial Use
1	NOTE USED
2	NOT USED
3	NOT USED
4 (NO)	In the relay mode, depending on the position of JP2 this terminal will provide either a NO or NC contact. Please see page 9 for further explanation.
5 (NC)	In the relay mode, depending on the position of JP2 this terminal will provide either a NO or NC contact. Please see page 9 for further explanation.
6 (COM)	Common contact for relay.
7 (-)	This terminal is used for power input in the relay version of operation. A voltage of 12 to 24 volts AC or DC \pm 10% should be supplied and if voltage drops below the minimum (12v -10%) the detector will not function.
8 (+)	This terminal is used for power input in the relay version of operation. A voltage of 12 to 24 volts AC or DC \pm 10% should be supplied. Consumption under 12 volts will be 60 mA for the master module plus 40 mA for the slave module.

If after troubleshooting a problem, a satisfactory solution cannot be achieved, please call B.E.A., Inc. for further assistance during Eastern Standard Time at **1-800-523-2462 from 7am - 5pm or 1-800-407-4545 from 5pm - midnight & weekends.**

DO NOT leave any problem unresolved. 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.

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