

DESCRIPTION

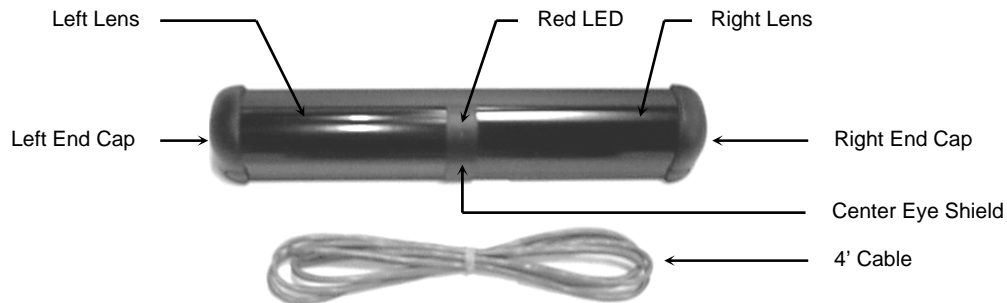
The LCN Header Mounted Safety Sensor (HMSS) (8310-877) is a self-monitored ready overhead-mounted diffused active infrared sensing device that provides detection for the triggering of automatic swing door safety functions. When used with LCN's lockout devices, the sensor is programmed to allow two different fields of detection - one for detection when the door is in the fully closed position and the other for detection when the door is fully open. While the door is in the fully open position, the HMSS extends its coverage back through the threshold area of the doorway, to provide coverage that will overlap with LCN's motion sensors.

As with all of LCN's programmable sensing devices, full adjustability is achieved with the use of LCN's hand-held remote control unit. This allows alteration of all of the available functions as well as for inquiry of existing settings. Should the need arise; the HMSS may also be tuned by means of two sensor-mounted buttons contained on the PC Board within the unit. With these two buttons, the sensor's field of detection can be altered without the use of the hand-held remote. If a complete Door-Mounted Safety Sensor (DMSS) system is not used in addition to the Header Mounted Safety Sensor, LCN recommends the use of a lockout safety beam to allow safety signaling if the zone is entered during a door closing cycle.

TECHNICAL SPECIFICATIONS

Installation Height - Variable	9'-0" max. (recommended 6'-6" to 8'-0")
Mounting Angles HMSS only HMSS with Spacer	+5°, +10° (factory default setting: +5°) 0°, +5°, +10°
Power Supply	12 to 24 V AC / DC +/- 10%
Frequency	50-60 Hz
Output	Max. Voltage at contacts: 60V DC / 125V AC Max. Current at contacts: 1 A Max. switching power: 30 W (DC), 60 VA (AC)
Relay Hold Time	0.5 to 9 seconds
Operating Temperature	-22°F to +140°F
Immunity	Immune to electrical and radio frequency interference
Cable	4'- six conductor cable
Weight	1 b. 11 oz. (765g)
Dimensions	11.8"L (305 mm.) x 1.9"H (51 mm.) x 1.9"W (46 mm.)
Material	Aluminum & ABS plastic
Housing Color	Black anodized aluminum

COMPONENT ID



INSTALLATION TIPS



- The sensor must be firmly fastened to prevent vibration.



- The sensor must not have any unwanted objects likely to move or vibrate in its path.



- The sensor should be mounted flush with bottom of door header.

SAFETY PRECAUTIONS

- Shut off all power going to the header before attempting any wiring procedures.
- Maintain a clean & safe environment when working in public areas.
- Constantly be aware of pedestrian traffic around the door area.
- Always stop pedestrian traffic through the doorway when performing testing that may result in unexpected reactions by the door.
- Always check placement of all wiring and components before powering up to insure that moving door parts will not catch any wires and cause damage to equipment.

MECHANICAL INSTALLATION - PREPARATION

To prepare the sensor for mounting to the header, perform the following:

- a) Remove both end caps from the sensor (Picture 1). Each is attached by one Phillips head screw.



- b) Remove both lenses from HMSS by simply sliding them out at each end (Picture 2).

- c) Remove the center eye shield (Picture 3) (take care not to damage the light tube on the inner side of the shield). Simply pull out from the top end and rotate out (Picture 3).



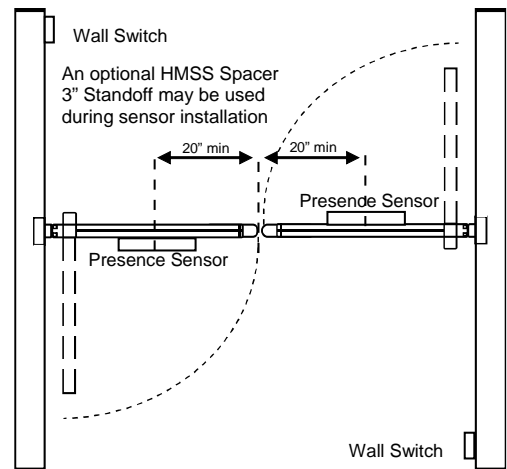
- d) Slide the PCB out of the extrusion and set it aside (Picture 4).

MECHANICAL INSTALLATION - PLACEMENT OF THE SENSOR

Remember these guidelines when installing a HMSS:

- ❑ The sensor should be mounted at a height range of 6' 6" to 8'. Maximum mounting height is 9'.
- ❑ The sensor should be mounted above the door on the swing side.
- ❑ The sensor shall be mounted flush with the bottom of the automatic door header. This is absolutely necessary to allow the detection pattern to reach back through the threshold area when the sensor is in the open door position.
- ❑ For SINGLE DOOR APPLICATIONS, the sensor should be mounted at the center of the door opening. However, if this is not possible, the unit may be installed off-center. In such cases, pattern location will have to be altered for proper placement of the field of detection. Try to avoid mounting locations that may pose potential problems such as directly over a door arm.
- ❑ For DOUBLE-EGRESS APPLICATIONS, one sensor should be mounted over each swing-path. There should be at least 40" of separation between the 2 HMSSs when measured between the centerline of each sensor. This configuration requires two controllers.
- ❑ If the HMSS is the only sensor being used for safety at the swing side of the door, to be in compliance with ANSI 156.10, a lockout safety beam or Door Mounted Safety Sensor is needed in addition to the Header Mounted Safety Sensor.

CAUTION: FOR ALL APPLICATIONS, REFER TO THE PATTERN CHARTS FOR WIDTH AND DEPTH IN THE APPLICABLE SECTION OF THIS GUIDE. PATTERNS SHALL BE ADJUSTED TO ACHIEVE MAXIMUM DETECTION ZONES, AND SHALL BE IN COMPLIANCE WITH ALL APPLICABLE SAFETY STANDARDS (I.E. ANSI A156.10).

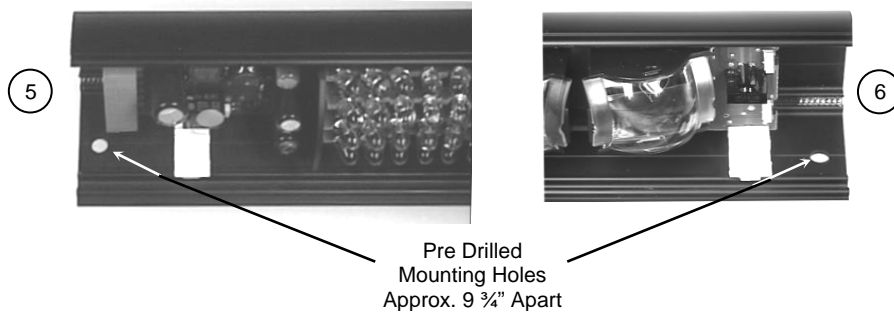


MECHANICAL INSTALLATION

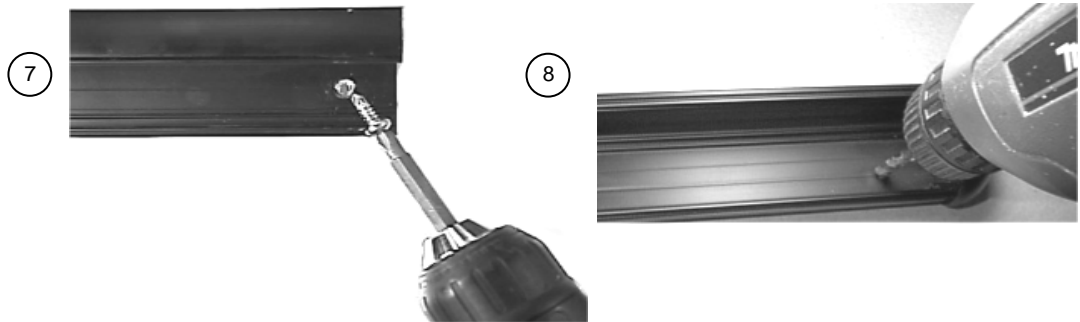
NOTE: LCN recommends the use of a HMSS Spacer (8310-877S) for most Header Mounted Safety Sensor applications. The HMSS Spacer is a 3" standoff that allows the HMSS to be slightly distanced from the face of the closed door. This helps to prevent ghosting caused by slight door movement while closed, and also prevents ghosting when DMSS are used (as the Door Mounted Safety Sensor extrusions at the top of the door are extremely close to the sensor while the door is closed).

**MECHANICAL
INSTALLATION
(Continued)**

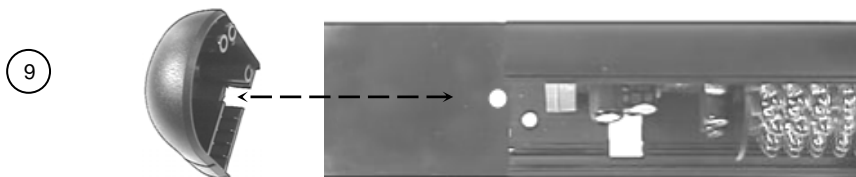
1. The extrusion has pre-drilled mounting holes at each end (Pictures 5 & 6).



2. Hold the HMSS up to the pre-determined location, and attach using the 2 self-drilling screws that are included with the package (Picture 7). It may be necessary to pre-drill a pilot hole (Picture 8) in the header for ease of screw installation. Ensure that the sensor is mounted securely at each end.

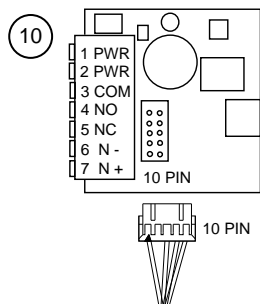


3. If the sensor is mounted directly to door header, and cabling is to pass directly into header, drill a 1/4" hole next to the sensor's left side end cap to allow wire passage into header (Picture 9). The wire passage hole should be in a location that aligns with the cut out in the end cap (Picture 9).



**ELECTRICAL
INSTALLATION
AND CABLING**

1. Once the sensor is securely attached to header, cabling & wiring may be completed. Install the 10-pin connector (Picture 10).



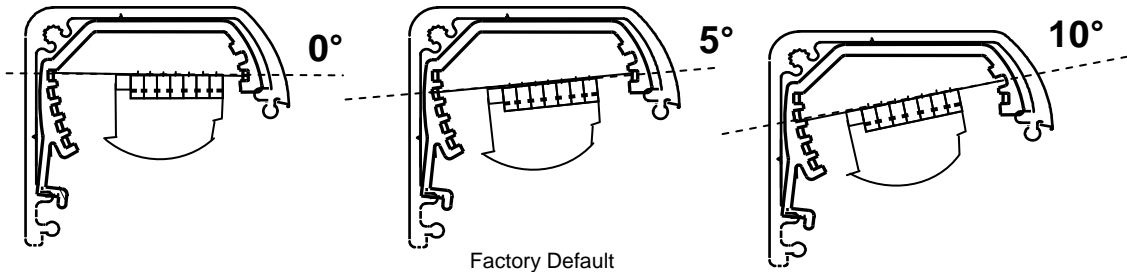
CAUTION: IF HARDWIRING DIRECTLY TO THE HMSS 7-PIN TERMINAL, ENSURE THE PROPER WIRE COLOR AND PIN NUMBER CONNECTIONS ARE MADE (SEE APPENDIX A).

MECHANICAL ADJUSTMENTS

1. Once all installation, wiring and cabling procedures have been completed, mechanical adjustments can be made. Please note that further adjustments may be required after powering and walk testing the detection field.
2. Aside from placement on the header, the only mechanical adjustment that may be made to the sensor is the angle adjustment. The HMSS is factory pre-set to the +5° position, but may be reduced to a 0° position or increased to a 10° position. The greater the angle, the farther from the door the pattern will be. The 0° angle should only be used when the sensor is mounted to a HMSS Spacer block or to a soffit above the door that extends out from the face of the safety side of the door – in this case, the 0° setting would improve the location of the detection field across the threshold area of the doorway. It is recommended that for most applications, the unit be powered and walk tested at the pre-set 5° angle. After walk testing, if the detection field needs to be changed, then proceed with changes to the angle setting as shown below.
3. To change the angle setting the end caps, lenses, and center eye shield must be removed (as shown on page 2). The terminal block must also be removed if it has been wired. Once removed release the white clips, as shown below, and rotate outward to remove the PCB (Pictures 12 & 13).



4. Once the PCB is completely removed from the housing, the angle position may be changed. There are two clips per sensor and the angle must match for each clip on the same PCB. The positions are shown below.



5. Slide the left and right lens back into place (Picture 14) and proceed with power-up procedures. Leave the end caps off until all final adjustments have been made.



POWER-UP PROCEDURES

1. Upon completion of mechanical and electrical installation, apply 12 to 24 V AC / DC +/- 10% to the sensor, with the door in the closed position. The HMSS will flash a green LED at a rate of 2 Hz, then it will expire upon a successful set-up in the door-closed position.
NOTE: If applying the sensor to a door control that requires a learn cycle upon powering, it is recommended to allow the doors to complete a learn cycle before applying power to the HMSS.
2. Activate the door to the full open position. The sensor will once again flash the green LED and will execute a door-open set-up. Upon completion of the set-up for the door-open position, the doors will begin closing. Normal operation should resume thereafter. Proceed with fine-tuning to insure compliance with all applicable safety standards (i.e. ANSI A156.10). If set-up is unsuccessful, refer to the Troubleshooting Guide at the end of this Users Guide, and also to the guide located at the end of the respective lockout User's Guide.

NOTE: Always be sure to refer to the applicable lockout User's Guide for more detailed information.

**DOUBLE EGRESSES:
REDUCING
CROSS TALK**

Perform the following set up using LCN's remote control to reduce cross talk between dual egress applications. Refer to the Figure on page 2 to ensure the two HMSSs are installed with at least 40" of separation when measured between the centerline of each sensor.

1. Place doors in the hold open position. Unlock sensor and set open door Pattern Depth to 5 (Medium Pattern). This sequence will turn off threshold IR while door is in open position. This function should be changed on both sensors:



2. The infrared frequency function may need to be changed. Change frequency on one of the sensors:



3. Change to a different mode in applications where high gloss floors or multiple doors are installed in vestibules.

Change sensor one to:



Change sensor two to:



**LCN'S UNIVERSAL
REMOTE
CONTROL**

The HMSS is fully compatible with LCN's Remote Control as shown below. Use of the remote control should be conducted within 10' – 15' of the sensor, and the remote should be pointed directly at the sensor when used. Refer to the 'Programming Guide' in the following section for each parameter and its values.

Additional program notes:

1. The HMSS is capable of having two patterns (door closed and door open) that are independently adjustable. Thus, when programming, it is necessary to adjust the pattern for door closed, and then to adjust the pattern again when the door is open. The following functions may be independently adjusted for each door position:
 - Sensitivity
 - Pattern Width
 - Pattern Depth
2. The following functions apply to both door closed and door open positions:
 - Automatic Learn Time
 - Immunity
 - Frequency
 - Output Configuration
 - Door Control Mode
 - Hold Time
 - Interface Type
3. The immunity modes include Medium (Rain) and High (Snow). During these modes, learn time of the sensor will not be affected. These modes affect the interpretation of the objects in the field of detection relative to the background.

Interface F1

1: LO-Linx
2: **LO21 - Old Style (LO21, B, K, P, U)**

Unlock	🔓
Inquire	?
Lock	🔒

To **UNLOCK** the sensor:
Press the **UNLOCK** key once. Red LED flashes slowly. If flashing fast, see Note below.

To **LOCK** the sensor:
Press the **LOCK** key twice, OR press once then followed by a 4-digit lock code. If less than 4 digits, press lock again after the last digit. LED goes out when complete.

To **INQUIRE** the sensor:
Unlock the sensor, press the desired function key, followed by the **INQUIRY** key – the number of green flashes corresponds to the value.

Note: If sensor is locked, but code is unknown, power the sensor off and then back on. Press the **UNLOCK** key within 60 seconds. Re-lock with 0000. This is the default code. Sensor will unlock with one press of the unlock key, when set to 0000.

Number Keys

Number keys (0 through 9) are used for assigning a value for a given function

Hold Time

0 (0.5s) → 9 (9s)

Infrared Frequency

	Mode	Frequency
1	Normal	Low
2	Normal	High
3	Quiet	Low
4	Quiet	High

See Note: Quiet Mode

Door Control F2

1: **Normal (LED in normal mode)**
2: Door permanently open (red LED ON)
3: Door permanently closed (red LED OFF)

Output Configuration

1 – **Normally Open Relay**
2 – Normally Closed Relay

Setup

🔼 🔼 launch a quick setup
🔼 9 restore factory defaults
🔼 1 launch a closed door setup
🔼 2 launch an open door setup

See **AUTOMATIC SETUP**

AUTOMATIC SETUP: When performing an automatic setup (setup key pressed twice in a row), the sensor will begin to flash green during the door closed position, and will continue to do so until the door is activated to the open position. The LED will then go out and the door will close. The LED will flash green again at the closed position until a setup is complete. Upon the next activation, the sensor will launch another setup for the open door position, and will begin normal operation thereafter.

QUIET MODE: The QUIET mode uses a different pulsing pattern to avoid interference with other infrared systems. The NORMAL mode transmits more energy and detects slightly in a more crisp fashion. The NORMAL mode is recommended for installations with only one door.

**PROGRAMMING
GUIDE – PATTERN
ADJUSTMENTS**

Sensitivity
Door Open-Closed

0 (min) → 9 (max) (default 7 for door open, default 6 for door closed)

Pattern Width
Door Open or Closed

1: Wide (closed door)
2: Middle (open door)
3: Asymmetric Left Narrow
4: Asymmetric Right Narrow
5: Narrow Left
6: Narrow Right
7: Asymmetric Left Wide
8: Asymmetric Right Wide
9: Center Narrow

See PATTERN WIDTH or DEPTH

Pattern Depth

1: Deep – Threshold ON
2: Medium – Threshold ON (open)
3: Limited – Threshold ON
4: Deep – Threshold OFF
5: Medium – Threshold OFF (closed)
6: Limited – Threshold OFF

See THRESHOLD
See PATTERN WIDTH or DEPTH



Automatic Learn Time

0: 30 seconds
1: 1 minute
2: 2 minutes
3: 3 minutes
4: 5 minutes
5: 7 minutes
6: 10 minutes
7: 15 minutes
8: 10 seconds
9: Infinity – no learn

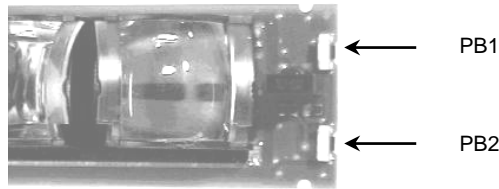
Immunity

1: Low (Normal)
2: Medium - Rain (Disregards more floor disturbances)
3: High - Snow (Disregards greatest floor disturbances)

THRESHOLD: The Threshold is always OFF when the door is closed.

PATTERN WIDTH OR DEPTH: When pattern width or depth is changed, a setup of the new pattern size will automatically be triggered once a value key has been pressed.

Without the LCN Remote Control, the HMSS may be set up using the manual push buttons (see diagram below) located under the right end cap. ONLY THE SENSITIVITY, RELAY MODE, AUTO-LEARN TIME, PATTERN WIDTH, AND PATTERN DEPTH MAY BE ADJUSTED WITH THE MANUAL PUSH BUTTONS. To adjust the sensor, complete the following:



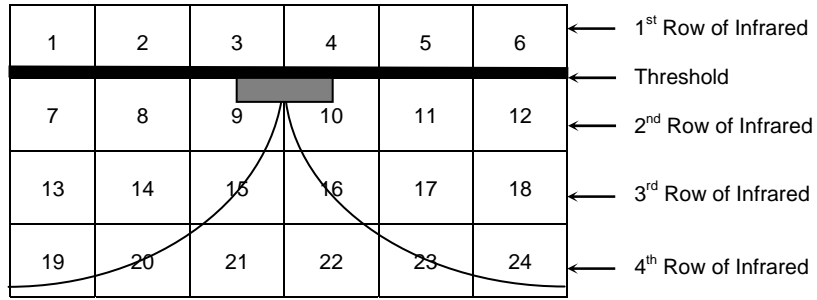
1. To start the set-up process, press PB1 (for less than 2 seconds)
 - The set-up function will be launched according to the current door position. The green LED will flash at 2+/- Hz for 10 seconds. This LED will stop flashing once a successful set-up is achieved.
 - If there is an interruption to the field of detection during this procedure, the green LED will flash at a slower rate. Press PB1 to re-launch the set-up.
2. To change the detector's parameters, press PB1 (for more than 2 seconds), then release.
3. Press either PB1 or PB2. The LED will immediately flash red, followed by a sequence of green flashes.
4. The red flashes indicate the parameter and the green flashes indicate the setting of the particular parameter.

NOTE: Pressing PB1 will toggle between the parameters and pressing PB2 will toggle between the range of adjustments for that particular setting. Once you achieve the highest adjustment, the value will roll over to the lowest setting, upon the next press of PB2. A zero value will result in no flash of the LED. To exit manual set-up, simply wait 20 seconds or press PB1 for more than 2 seconds. Replace the right end cap back on the sensor.

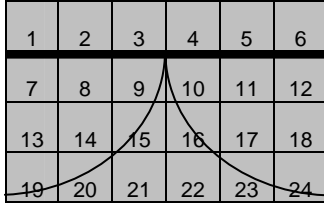
- Use the chart below as a reference for the manual set-up process.

RED LED STATUS	PARAMETER	DESCRIPTION	GREEN LED STATUS
1 Red Flash	1	Sensitivity (Door open)	0 – 9 Green Flashes (default = 7)
2 Red Flashes	2	Sensitivity (Door closed)	0 – 9 Green Flashes (default = 6)
3 Red Flashes	3	Output Configuration	1 – 2 Green Flashes (default = 1)
4 Red Flashes	4	Auto Learn Time	0 – 9 Green Flashes (default = 0)
5 Red Flashes	5	Pattern Width (Door Open)	0 – 9 Green Flashes (default = 2)
6 Red Flashes	6	Pattern Width (Door Closed)	0 – 9 Green Flashes (default = 1)
7 Red Flashes	7	Pattern Depth (Door Open)	1 – 6 Green Flashes (default = 1)
8 Red Flashes	8	Pattern Depth (Door Closed)	1 – 6 Green Flashes (default = 1)

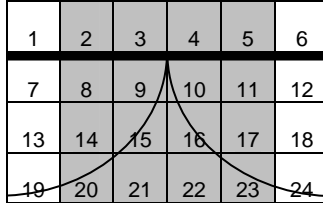
**BODYGUARD
WIDTH
PATTERNS**



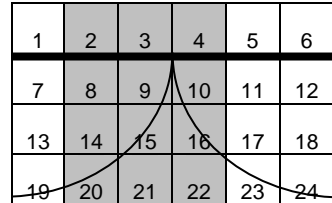
(1) Wide Pattern



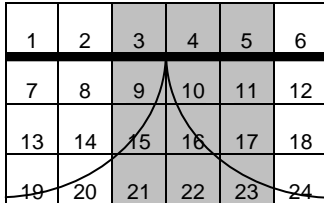
(2) Middle Pattern



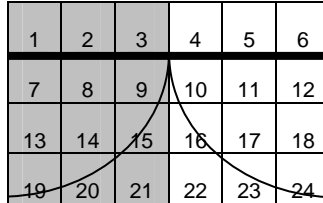
(3) Asymmetric Left Narrow



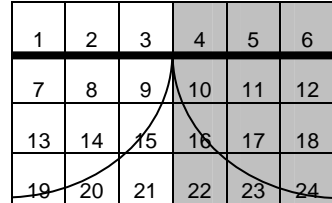
(4) Asymmetric Right Narrow



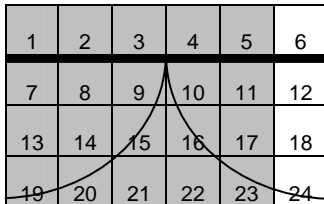
(5) Left Narrow



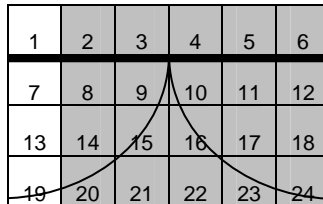
(6) Right Narrow



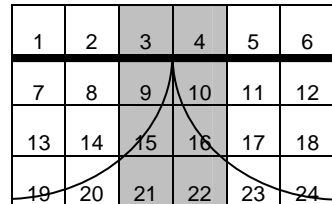
(7) Asymmetric Left Wide



(8) Asymmetric Right Wide



(9) Center Narrow

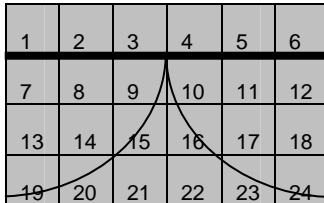


**BODYGUARD
DEPTH
PATTERNS**

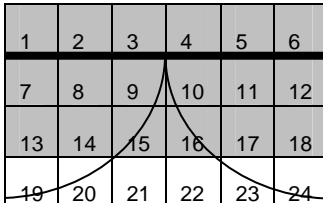
Row 1 (spots 1 through 6), remain on, even during the closed door position



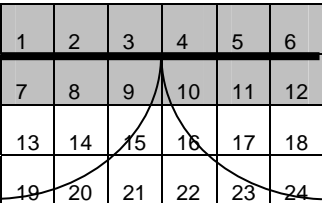
(1) Deep



(2) Middle



(3) Limited



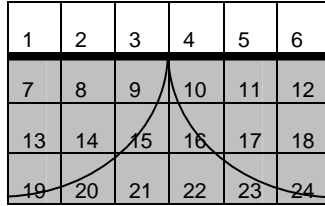
NOTE: When the sensor is mounted at 7', each block on the pattern charts shown above equates to a size of approximately 14" x 14". Pattern sizes shown are only as an approximation. Always walk-test the pattern once complete, to insure compliance with all applicable safety and performance standards.

**BODYGUARD
DEPTH
PATTERNS
(Continued)**

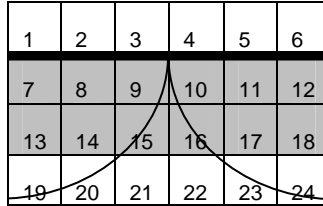
Row 1 (spots 1 through 6), are on during open door position and off during closed door position.



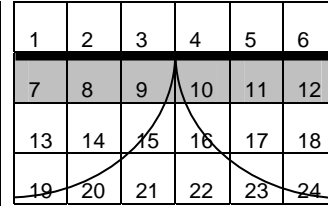
(4) Deep Without Row 1



(5) Middle Without Row 1



(6) Limited Without Row 1



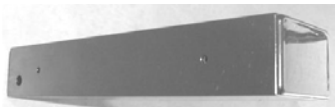
**TROUBLE-
SHOOTING**

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
HMSS will not set-up upon initial powering	<ol style="list-style-type: none"> 1. Improper input voltage 2. Sensor is in detection 3. Potential interferences from high intensity lighting 	<ol style="list-style-type: none"> 1. Check terminals 1 & 2 for proper voltage 24 V AC/DC \pm 10%. 2. Make certain that the field of detection is all clear during the set-up and that all lenses are installed on the sensor. If detection is encountered upon initial set-up, the sensor will continuously flash Green at \pm 2 Hz. The sensor will also not set-up if permanent stationary objects are extremely close to the sensor. Ensure that, not only is the detection field all clear, but that the sensor is mounted properly (using the HMSS Spacer if necessary). 3. Ensure that no high intensity lighting is in the immediate area of the sensor.
Door will not open once set-up has been completed.	<ol style="list-style-type: none"> 1. HMSS is in detection. 2. Improper wiring 3. Lockout safety beams are in detection 4. Improper relay output configuration 	<ol style="list-style-type: none"> 1. Ensure that there is no detection occurring at the sensor. If the Red LED is on steady, there is detection. Make sure there have been no changes in the field of detection since set-up. If permanent changes have occurred, launch a new set-up and re-test door. <p>CAUTION: THERE POSSIBLY MAY BE NO SAFETY ON THE DOOR WHEN THIS TEST IS PERFORMED.</p> <ol style="list-style-type: none"> 2. Remove the output wires (common, normally open, normally closed) from the Bodyguard. Activate the door control, if the door opens, the fault exists with the sensor or related wiring. If door does not open, the faults may exist with the door control or it's related wiring. 3. Ensure proper relay output setting. Refer to page 6. Typically, relay setting should be 'Normally Open'. This means the relay would close upon detection.

TROUBLE-SHOOTING
(Continued)

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
HMSS repeatedly re-learns the environment with each door position.	<ol style="list-style-type: none"> 1. Improper data from the lockout device 2. Data polarity at the sensor is incorrect 	<ol style="list-style-type: none"> 1. Allow the door to open in the automatic mode. Unlock the HMSS and launch a setup by pressing the Setup key, followed by the number 2. If the sensor does not begin flashing green, and instead goes back to a red indication, improper data exists. Refer to respective lockout User's Guide for troubleshooting. 2. Check for proper polarity at terminal 6 and 7. The negative wire from the lockout (white) should be connected to terminal 6, and the red/white striped wire from the lockout should connect at terminal 7. <p>☐ HELPFUL HINT: If faulty data is suspected, simply power the door to the open position (by activation OR with the use of a hold open switch). While the door is open, unlock the sensor, and press the setup key, followed by the number 2. If the sensor goes back to a red LED (as opposed to flashing the green LED to indicate a setup), there is a strong probability that the data is incorrect. Refer then to the respective lockout User's Guide for troubleshooting help.</p>
HMSS is not reacting to the remote control	<ol style="list-style-type: none"> 1. Batteries in the remote control are dead. 2. Distance between sensor and remote is too far. 	<ol style="list-style-type: none"> 1. Replace batteries in the remote control 2. Move in closer to the sensor when programming. 3. If remote control fails, manual programming procedures may have to be used (See Pg 8). <p>☐ HELPFUL HINT: Use LCN's Spotfinder to test the output of the remote control. Simply point the remote at the IR Spot on the Spotfinder, press the Unlock key on the remote, and red LED should illuminate.</p>

ACCESSORIES



HMSS SPACER
(8310-877S)



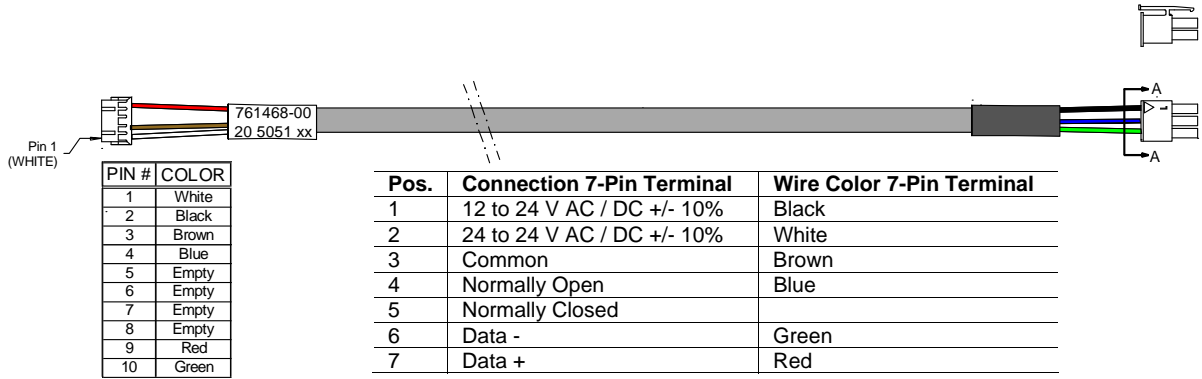
HMSS QUICK
DISCONNECT HARNESS
(8310-846)

COMPANY CONTACT

Do not leave problems unresolved. If a satisfactory cannot be achieved after troubleshooting a problem, please contact LCN at 1-800-526-2400. If you must wait for the following workday to call, 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.

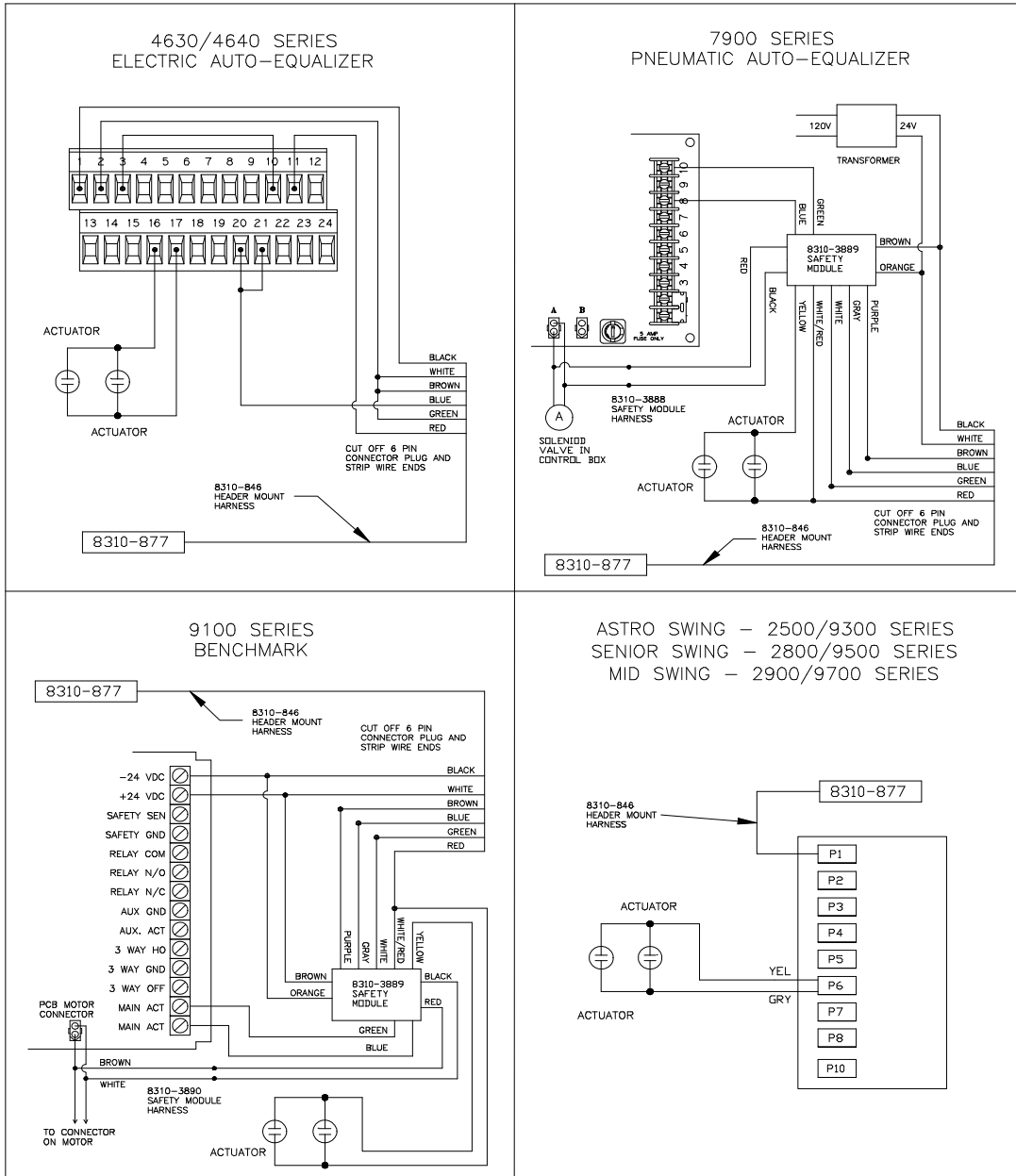
For more information, visit www.lcn.ingersollrand.com.

1. If hardwiring directly to the HMSS 7-Pin terminal, ensure the proper wire color and pin number connections are made.

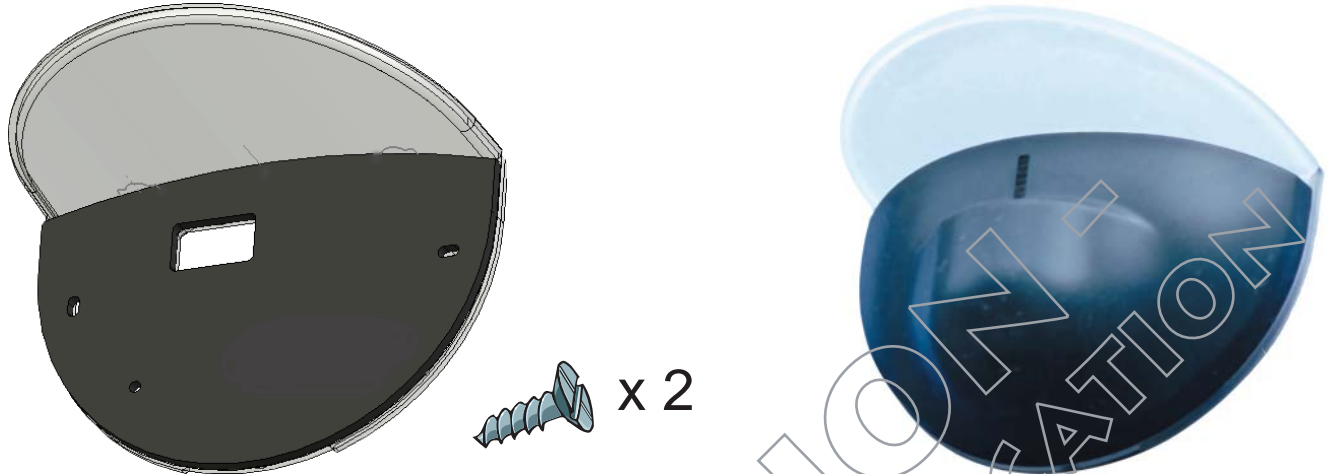


**WIRING TO HEADER MOUNTED SAFETY SENSOR 7-PIN
TERMINAL FOR LCN CONTROLLER / CABLE (8310-846)
FIGURE 1**

8310-877 HEADER MOUNT SENSOR
SINGLE DOOR WIRING

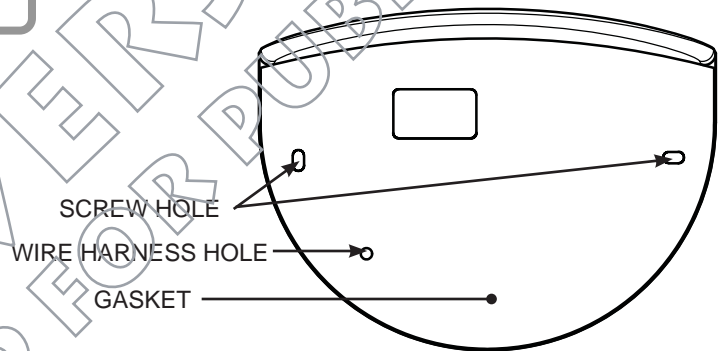


1 Description

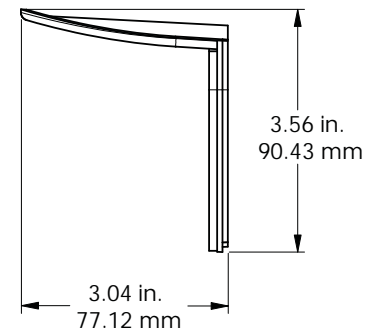
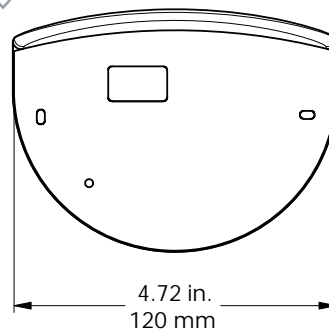


2 Installation

1. Clean and dry surface area.
2. Affix Mounting Template to surface area.
3. Drill holes as required for two screws.
4. Thread wiring harness thru hole in lower left side of cover and gasket.
5. Attach wire leads to terminal block on MMS (see MMS User Guide 75.5319).
6. Attach both the MMS and MMS Rain Cover to surface (wall or door frame) being careful not to pinch wiring harness or damage the MMS.
7. Re-install MMS Cover when finished.



NOTE: DO NOT apply too much pressure when cleaning the MMS Rain Cover.



3 Company Contact



Do not leave problems unresolved. If a satisfactory solution cannot be achieved after troubleshooting a problem, please contact LCN at 1-800-526-2400. If you must wait for the following workday to call LCN, 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.

For more information, visit www.lcn.ingersollrand.com.

1 Description

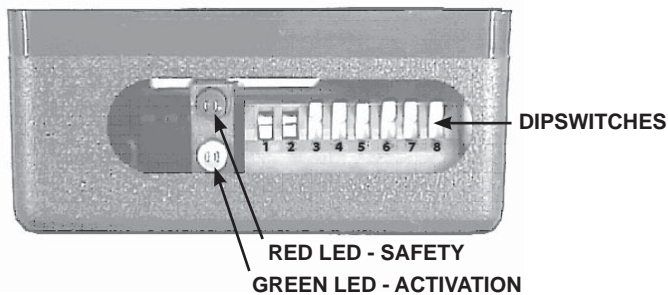
The LCN Safety Module is designed to add a safety circuit to the LCN 4800 Series automatic door operators. The 8310-889 aids the Bodyguard Safety Scanner by determining door position. If the door is closed and there is something in the Bodyguard pattern, the Safety Module will stop the activation device from opening the door. If in the open position and the swing path is not clear, the Safety Module will allow the Bodyguard to hold the door open as long as the Bodyguard detects something.

The Safety Module provides an adjustable timer that blocks the Bodyguard Safety Scanner signal as it detects the door during its closing cycle, thereby allowing re-activation if necessary. This system is known as a dedicated or committed system. Consequently, if a person were to step back into the swing path of the door while the door was closing; the Bodyguard would ignore them, until the door reached a fully closed position, when the Safety Module would normally time out.

2 Specifications

DESCRIPTION	SPECIFICATION
POWER SUPPLY	12-24 VAC/VDC
OPERATING FREQUENCY	4 MHz (Microprocessor)
POWER CONSUMPTION	10 mA at rest; 50 mA Max.
OUTPUT	2 x SPST Relays
MAX. VOLTAGE - RELAY CONTACT	60 VDC; 120 VAC
MAX. CURRENT - RELAY CONTACTS	2.0A DC; 0.5A AC

3 Identification

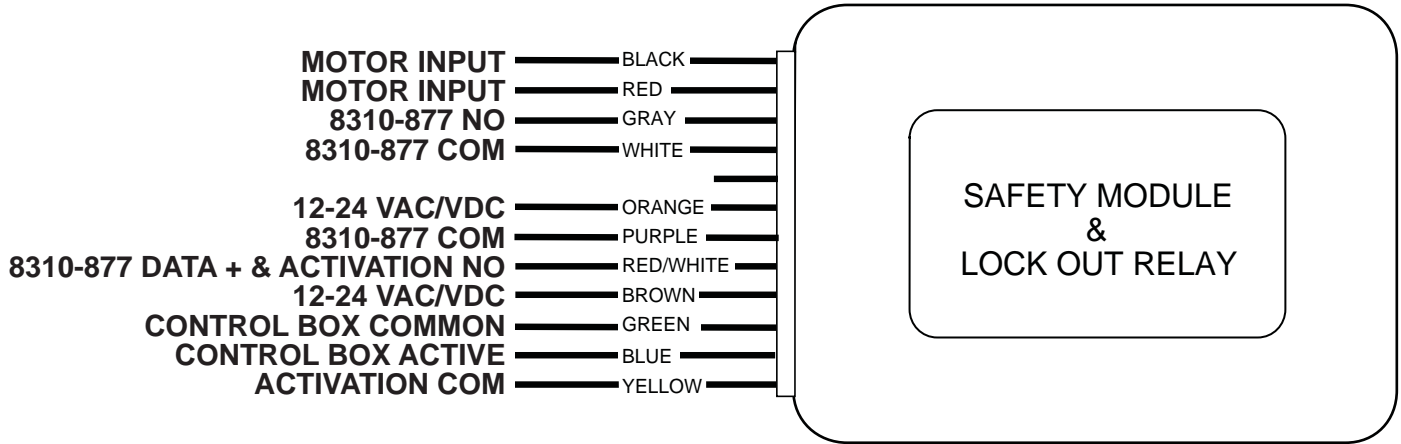


4 Precautions

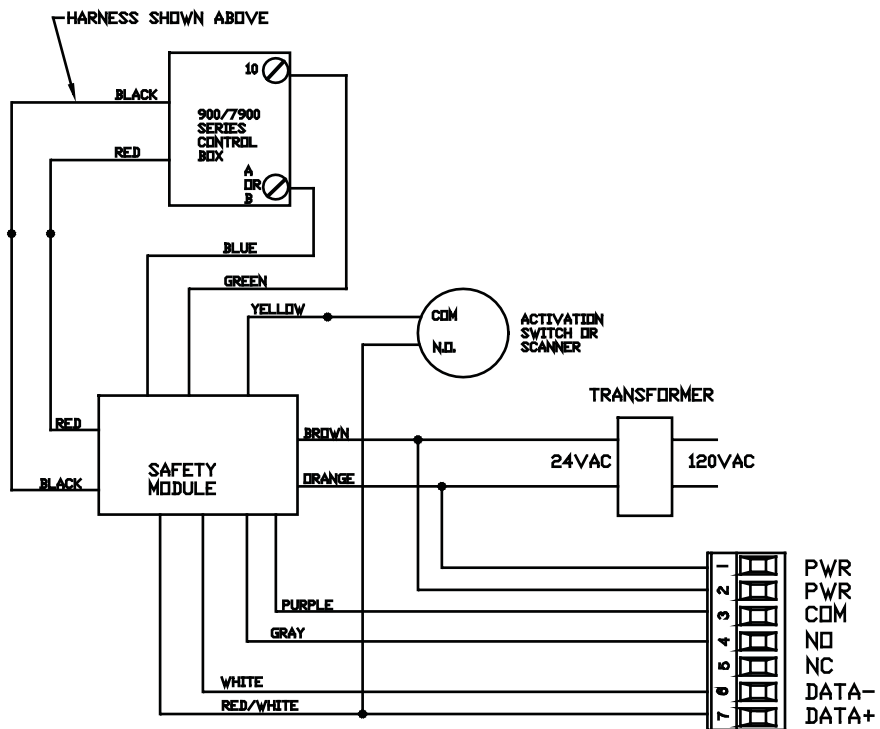


- Shut off all power before attempting any wiring procedures.
- Maintain a clean & safe environment when working in public areas.
- Constantly be aware of pedestrian traffic around the area.
- Always stop pedestrian traffic through the doorway when performing tests that may result in unexpected reactions 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 LCN, 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.

5 Wiring



SAFETY MODULE HARNESS

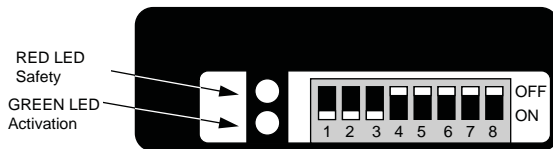


WIRING DIAGRAM

SAFETY SCANNER

6 Setup

- Once all components are properly wired together, apply power and begin the set-up process. The Safety Module has two LED's to indicate what function the Safety Module is currently performing. When the door is closed and someone steps into the safety zone, the Safety Module's red LED indicates that it will ignore any activation signal it receives. Therefore, the door will remain closed until the Bodyguard safety zone is clear. Once the safety zone is clear and the door has been activated, a normal opening cycle will commence.
- If someone steps into the safety zone when the door is open, the Safety Module's green LED will indicate that the Bodyguard will be connected to the activation circuitry of the door thus holding the door open for as long as someone is in its pattern.
- The lock out time delay for the door closing cycle must be set using the six dip switches located on the front of the unit. A 0 to 31 second lock out time delay can be achieved. The lock out time delay must be set so that the Bodyguard scanner does not send a safety signal during the closing cycle. As soon as the door reaches the jamb, the Safety Module should reactivate the Bodyguard.
- Check to make sure that the Safety Module locks out the Bodyguard for the entire closing cycle of the door. If the scanner sends a safety signal (scanner red light on) anytime during the closing cycle, the time delay set on the Safety Module must be increased. If the door goes into safety swing as soon as it starts to close and you have a time delay set for the length of the closing cycle, ensure that the AC power is being switched on and off at the point of connection for the red and black wires. Correct any faults before proceeding.
- Set the dip switches according to the chart below to achieve the desired lock out time delay. The dip switches are configured to send a binary coded input to the microprocessor to establish the correct lock out time delay.



- Dip Switch 1 = 1 second
- Dip Switch 2 = 2 seconds
- Dip Switch 3 = 4 seconds
- Dip Switch 4 = 8 seconds
- Dip Switch 5 = 16 seconds
- Dip Switch 6 = Not used (must be in off position)
- Dip Switch 7 = Not used (must be in off position)
- Dip Switch 8 = Not used (must be in off position)

For Example:

The normal closing cycle of an automatic door lasts about 7 seconds. In order to get the proper closing lock out time delay needed for the closing cycle of the door, the dip switches need to be set according to the chart below for 7 seconds (Default Setting). To get the proper lock out time delay dip switches 1, 2, & 3 must be in the ON position and Dip Switches 4 thru 8 must be in the OFF position.

TIME DELAY (sec)	DIP 1 (1 sec)	DIP 2 (2 sec)	DIP 3 (4 sec)	DIP 4 (8 sec)	DIP 5 (16 sec)
1	ON	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF
5	ON	OFF	ON	OFF	OFF
6	OFF	ON	ON	OFF	OFF
7	ON	ON	ON	OFF	OFF
8	OFF	OFF	OFF	ON	OFF
9	ON	OFF	OFF	ON	OFF
10	OFF	ON	OFF	ON	OFF
11	ON	ON	OFF	ON	OFF
12	OFF	OFF	ON	ON	OFF
13	ON	OFF	ON	ON	OFF
14	OFF	ON	ON	ON	OFF
15	ON	ON	ON	ON	OFF
16	OFF	OFF	OFF	OFF	ON

TIME DELAY (sec)	DIP 1 (1 sec)	DIP 2 (2 sec)	DIP 3 (4 sec)	DIP 4 (8 sec)	DIP 5 (16 sec)
17	ON	OFF	OFF	OFF	ON
18	OFF	ON	OFF	OFF	ON
19	ON	ON	OFF	OFF	ON
20	OFF	OFF	ON	OFF	ON
21	ON	OFF	ON	OFF	ON
22	OFF	ON	ON	OFF	ON
23	ON	ON	ON	OFF	ON
24	OFF	OFF	OFF	ON	ON
25	ON	OFF	OFF	ON	ON
26	OFF	ON	OFF	ON	ON
27	ON	ON	OFF	ON	ON
28	OFF	OFF	ON	ON	ON
29	ON	OFF	ON	ON	ON
30	OFF	ON	ON	ON	ON
31	ON	ON	ON	ON	ON

NOTE: Manual operation of the door will not affect the operation of the Safety Module, since there is no voltage being created to drive to Safety Module.

7 Company Contact



Do not leave problems unresolved. If a satisfactory solution cannot be achieved after troubleshooting a problem, please contact LCN at 1-800-526-2400. If you must wait for the following workday to call LCN, 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.

For more information, visit www.lcn.ingersollrand.com.

1 Description

The 8310-836 is a 36 inch tall by 6 inch wide automatic door activation switch. Pressing anywhere on the switch surface will activate a door-open cycle. It is designed to mount directly to any flat wall surface or to LCN's 8310-866FLA bollard post. The faceplate is made of stainless steel for durability, and has concealed fasteners for aesthetics and to minimize vandalism.

The 8310-836T includes a two conductor wire harness to allow hardwired connection to the door operator system. The 8310-836TW includes a wireless transmitter in the top end cap to allow wireless connection to the door operator system. See page 3 for additional wiring descriptions. Please note that the 8310-836TW wireless switch is intended for interior installations. When exterior wireless installations are necessary, please use the 8310-836T switch, the 8310-866FLA bollard post, and the 8310-844 9v transmitter kit.



2 Specifications

Switch Sub Assembly		Push Plate Assembly	
Contact Configuration	SPST N.O.	Base Material	6063 Aluminum
Switching Voltage	.1 to 50 VDC	Face Plate	304 Stainless Steel
Switching Capacity	1 Watt	Switch Actuator Material	Nylon 66
Switching Current	.005 to 100 ma DC	End cap Material	UL94 ABS
Operating Temperature	-32F (-35C) to 212F (100C)	Hardware	Stainless Steel

CAUTION: TO BE CONNECTED TO A CLASS 2, POWER LIMITED, POWER SOURCE ONLY.

3 Precautions



- Shut off all power going to header before attempting any wiring procedures.
- Maintain a clean & safe environment when working in public areas.
- Constantly be aware of pedestrian traffic around the door area.
- Always stop pedestrian 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 ESD charge.
- Always check placement of all wiring before powering up to ensure that moving door parts will not catch any wires and cause damage to equipment.
- Ensure compliance with all applicable safety standards and/or building codes (i.e. ANSI A156.10, 156.19) upon completion of installation.
- DO NOT attempt any internal repair of the components. All repairs and/or component replacements must be performed by LCN. 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 resulting in a voided warranty.

4 Installation

1 MOUNTING LOCATION

CAUTION: PRIOR TO MOUNTING THE PLATE, ENSURE THE TWO (2) IN-TRANSIT LOCKING SCREWS ARE REMOVED FROM THE BACK OF THE PLATE. THESE SCREWS ARE NOT REQUIRED FOR INSTALLATION.

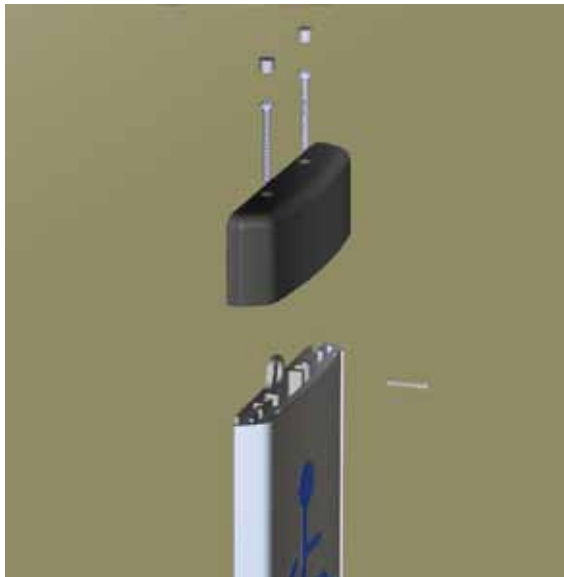
CAUTION: MOUNTING THE PLATE ON AN UNEVEN SURFACE WILL CAUSE THE SWITCHING MECHANISM TO HOLD THE CIRCUIT CLOSED AT ALL TIMES.

Determine appropriate location on the wall or bollard. Follow the appropriate steps below for the version that will be installed. If installing a hardwire version, it will be necessary to (following the steps below) install a junction box flush with the wall. The junction box and installation needs to be in accordance with the National Electric Code (NEC) or Local Codes. Use appropriate wall anchors for the wall type.

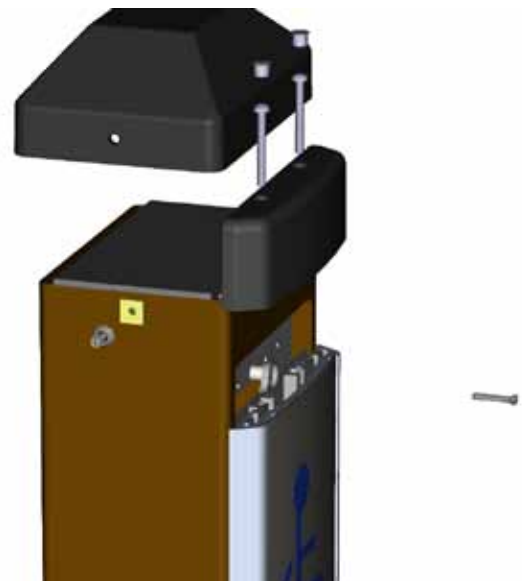
2 MOUNTING PROCEDURE

Please note that the faceplate should not be removed during mounting.

WALL MOUNT



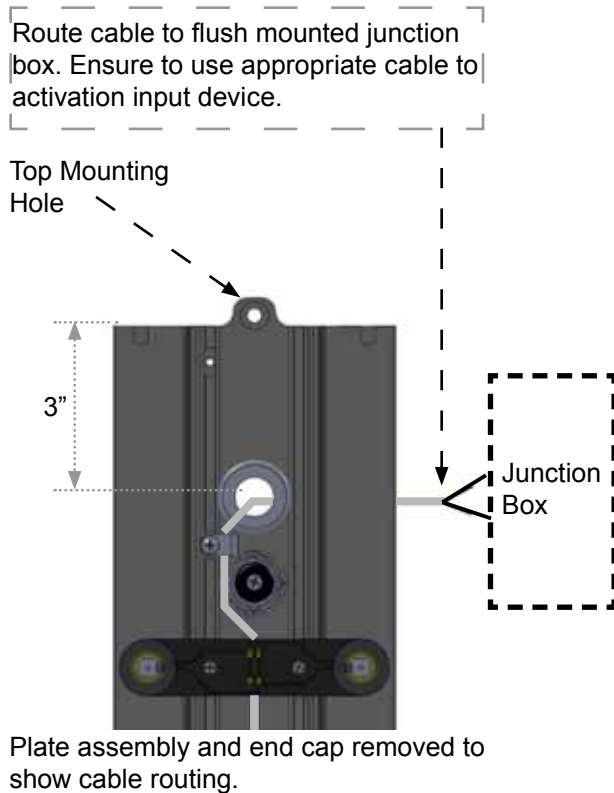
BOLLARD MOUNT



3 MOUNTING DETAILS

3a HARD WIRED VERSION (WALL)

Install an appropriate junction box flush with the mounting surface approximately 3 inches centered below top edge of the plate assembly. Remove top screw caps, end cap screws and end cap. Make necessary electrical connections ensuring to keep excess wire(s) inside the junction box. Install appropriate anchor thru top mounting hole. To avoid activation issues, do not push excess wire(s) into the plate assembly during re-assembly.

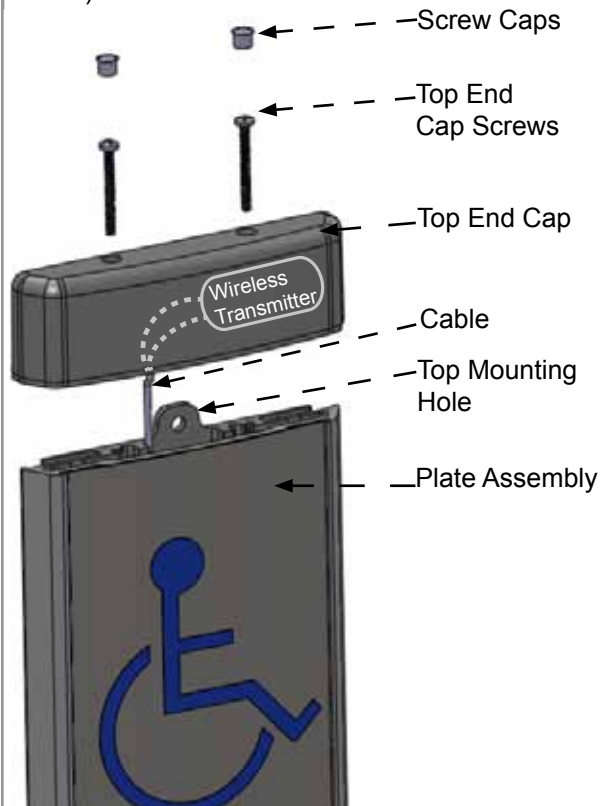


WIRELESS VERSION (WALL OR BOLLARD)

CAUTION: DO NOT PULL ON THE CABLE ATTACHED TO THE TOP END CAP.

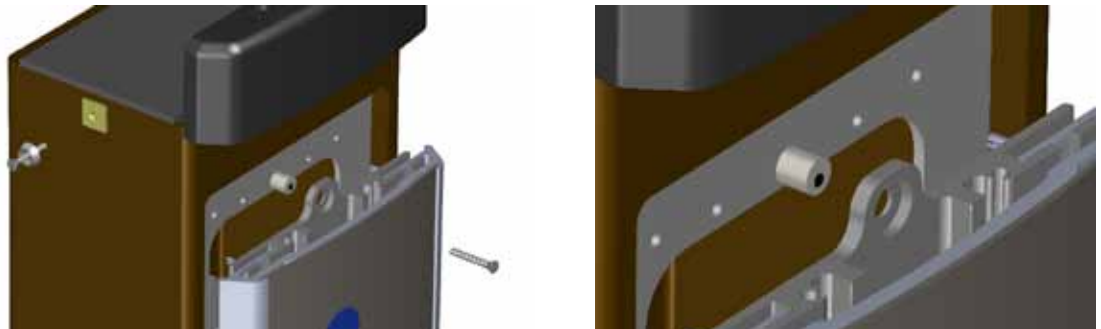
Remove Top Screw Caps, End Cap Screws and End Cap. Allow Top End Cap assembly to hang by the cable during the following steps. Install appropriate anchor thru top mounting hole. To avoid activation issues, do not push excess wire(s) into the plate assembly during re-assembly.

NOTE: To complete the wireless setup procedure or change the battery, review the respective wireless transmitter user guide (75.5315 - LCN 433 User's Guide).



3b BOLLARD MOUNTING

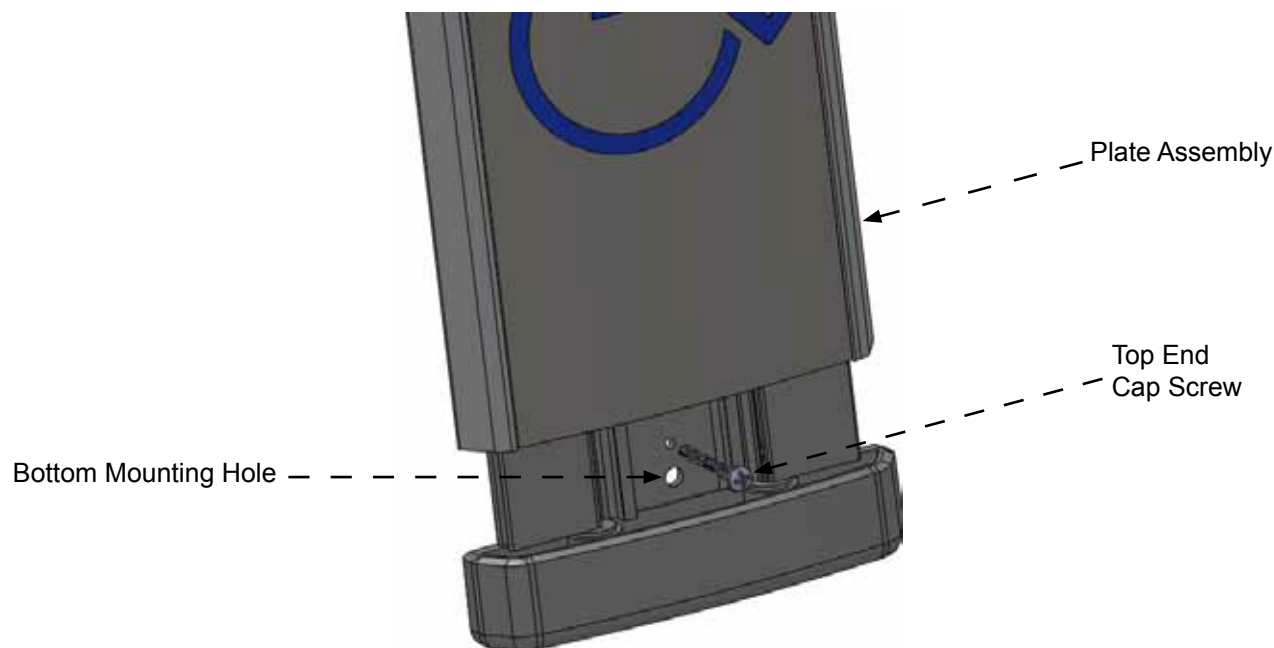
Hold the nylon spacer over the center mounting hole and attaching the switch to bollard using one 10-24 x .75 mounting screw.



4 Installation continued

3 BOTTOM PLATE ASSEMBLY AND ALIGNMENT (WALL OR BOLLARD)

To expose the bottom mounting hole, slide the front plate upwards a few inches. Insert one of the top end cap screws in the threaded hole on the bottom of the base plate to hold the front plate up.



With the bottom mounting hole now exposed, plumb the plate assembly and install the bottom mounting screw. Remove top end cap screw from base while supporting the front plate. Slide the front plate back down. Replace top end cap with the provided screws and insert push-in plastic screw caps.

5 Cleaning

The push plates are constructed with durable stainless steel and painted with scuff-resistant coatings. To clean the plates, use only a damp, non-abrasive cloth. Regular cleaning with harsh solvents or abrasive materials may cause deterioration of the paint coating. Ensure the user is aware of this procedure.

6 Company Contact

ANSI / AAADM Compliance  *American Association of Automatic Door Manufacturers*

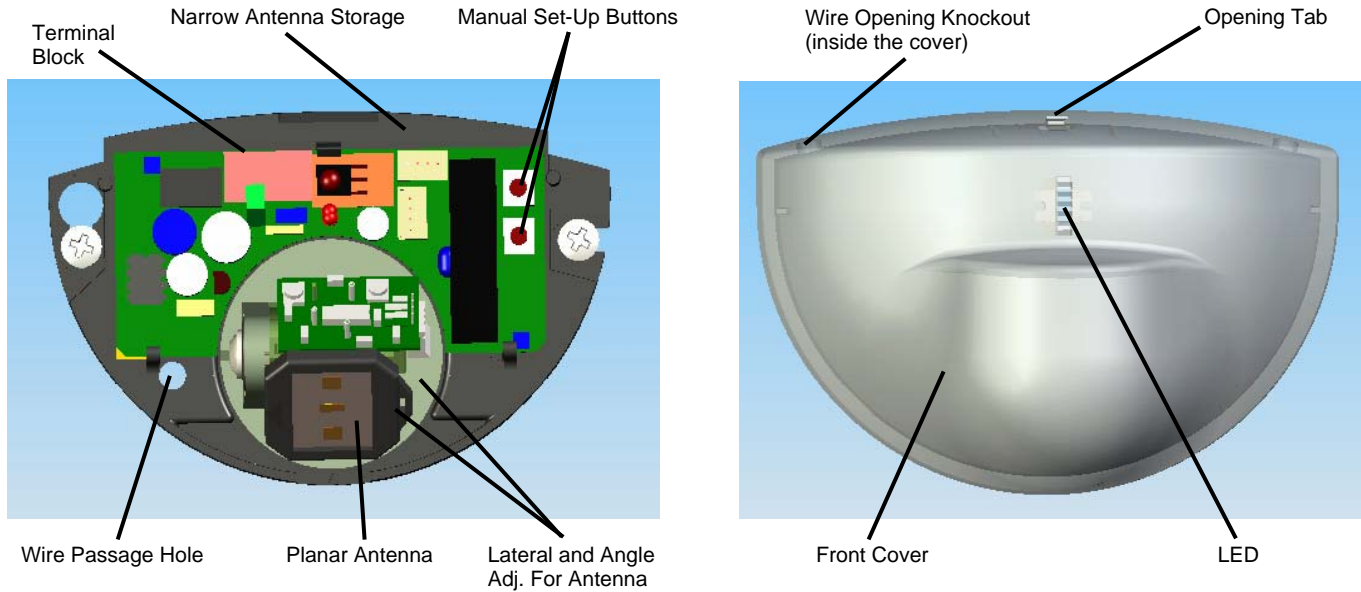
Upon completion of the installation or service work, at a minimum, perform a daily safety check in accordance with the minimum inspection guidelines provided by AAADM. Provide each equipment owner with an owner's manual that includes a daily safety checklist and contains, at a minimum, the information recommended by AAADM. Offer an information session with the equipment owner explaining how to perform daily inspections and point out the location of power/operation switches to disable the equipment if a compliance issue is noted. The equipment should be inspected annually in accordance with the minimum inspection guidelines. A safety check that includes, at a minimum, the items listed on the safety information label must be performed during each service call. If you are not an AAADM certified inspector, BEA strongly recommends you have an AAADM certified inspector perform an AAADM inspection and place a valid inspection sticker below the safety information label prior to putting the equipment into operation.

7 Company Contact



Do not leave problems unresolved. If a satisfactory solution cannot be achieved after troubleshooting a problem, please contact LCN at 1-877-671-7011. If you must wait for the following workday to call LCN, 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. For more information, visit www.allegion.com/us.

1 Description

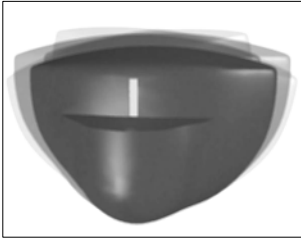


2 Specifications

DESCRIPTION	SPECIFICATION
Frequency:	24.125 GHz
Supply voltage:	12 to 24 V AC: $\pm 10\%$ 12 to 24 V DC: $-10\% / +30\%$
Mounting height:	Normal: 7'; Maximum: 10'-0"
Tilt angle:	0 to 90 vertical -15 to +15 lateral
Detection area:	
Wide	13ft (W) x 6.5ft (D)
Narrow	6.5ft (W) x 8.2ft (D) (supplied as optional)
Minimum detection speed:	2 in/sec. (measured in axis)
Power consumption:	< 2 W
Standard output relay:	
Max contact voltage	60 VDC / 125 VAC
Max contact current	1A (resistive)
Max switching power	30W (DC) / 60VA (AC)
Hold time:	0.5 sec. to 9 sec. (adjustable)
Temperature range:	-4°F to 131°F
Dimensions:	4.75in (W) x 3.15in (H) x 2.0in (D)
Weight:	0.5lbs
Material:	ABS
Housing color:	Black - Can be painted with non-metallic paint
Cable length:	6ft

3 Installation

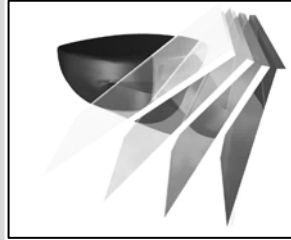
1 Tips



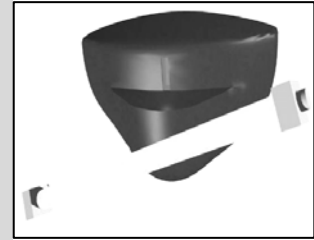
The sensor must be firmly fastened to prevent vibration.



The sensor must not be placed directly behind a panel or any kind of material.



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



The sensor must not have any fluorescent lighting in its sensing field.

2 Safety Precautions

- Shut off all power going to the header before attempting any wiring procedures.
- Maintain a clean & safe environment when working in public areas.
- Constantly be aware of pedestrian traffic around the door area.
- Always stop pedestrian traffic through the doorway when performing tests that may result in unexpected reactions by the door.
- Always check placement of all wiring and components before powering up to insure that moving door parts will not catch any wires and cause damage to equipment.
- Ensure compliance with all applicable safety standards upon completion of installation.

ELECTROSTATIC DISCHARGE (ESD) PRECAUTIONS



Circuit board components are vulnerable to damage by electrostatic discharge (ESD). ESD can cause immediate or subtle damage to sensitive electronic parts. An electrostatic charge can build up on the human body and then discharge when you touch a board. A discharge can be produced when walking across a carpet and touching a board, for example. Before handling any board, make sure you dissipate your body's charge.

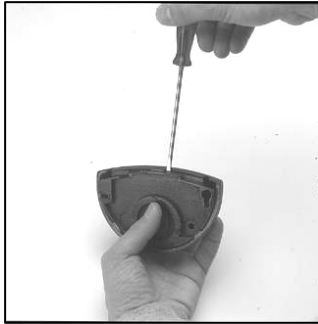
CAUTION: In the event a unit needs to be opened, observe the following precautions.

Ground yourself by touching a conductive surface of the door or other element connected to common earth ground to discharge the static electricity present in your body.
Avoid walking around while replacing items inside the case, especially if you are on carpet or during conditions of low temperature and low humidity.
Handle the board by the edges only to avoid touching electronic components.
Store a loose board in an anti-static bag.

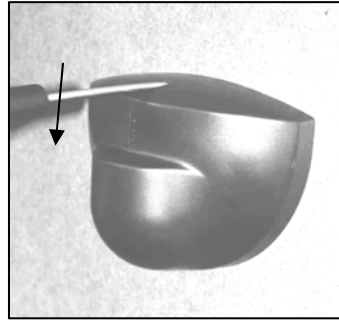
3

Mechanical Installation

Opening the Microwave Motion Sensor (MSS)

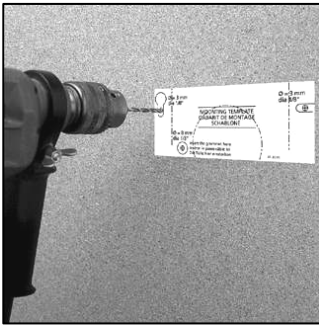


❑ From behind, before installation

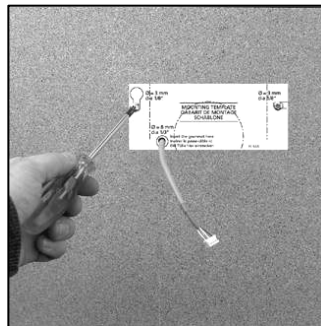


❑ From the front, after installation

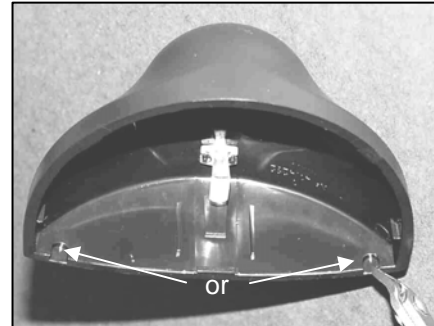
Mounting the MMS



- ❑ Paste the template at desired location.
- ❑ Drill as instructed.



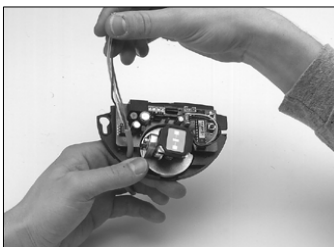
- ❑ Insert screws but do not screw them fully in.
- ❑ Pass the cable where indicated.



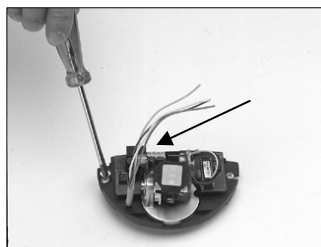
- ❑ Optional cable routing: Notch the cover as shown in the picture.

4

Electrical Installation



- ❑ Run the cable through the wire passage hole just below PCB.



- ❑ Position the sensor and tighten the two screws. Make sure you leave enough cable to reach the terminal block near the top of the sensor.

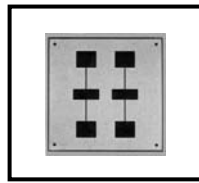
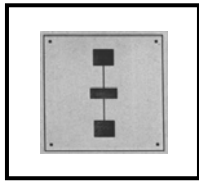
Terminal	Connection
1 (Red)	12 to 24 VAC / DC (+)
2 (Black)	12 to 24 VAC / DC (-)
3 (White)	Relay Common
4 (Green)	Relay NO
5	Relay NC
Note: Input power tolerance is +/- 10% for AC, and -10% to +30% for DC power.	

- ❑ Wiring connections are as shown above.

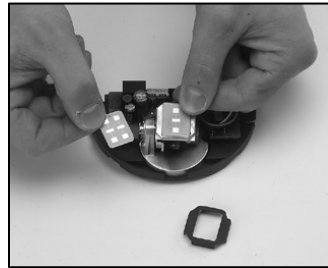
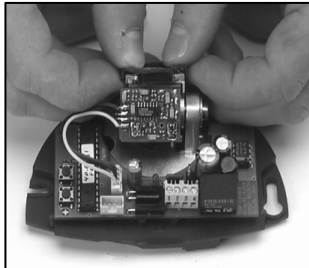
5

Mechanical Adjustments

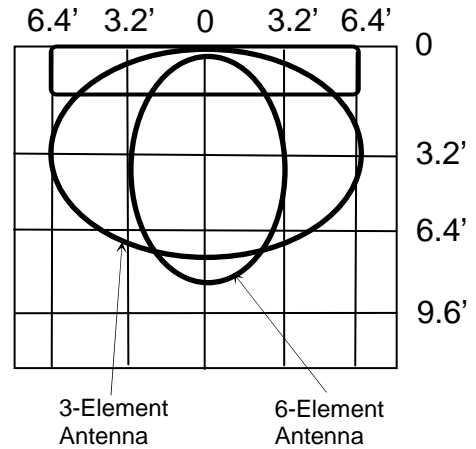
A. THE WIDTH OF THE SENSING FIELD IS DETERMINED BY THE CHOICE OF THE PLANAR ANTENNA (OPTION)



Wide sensing field: 3-element antenna	Narrow sensing field: 6-element antenna
--	--



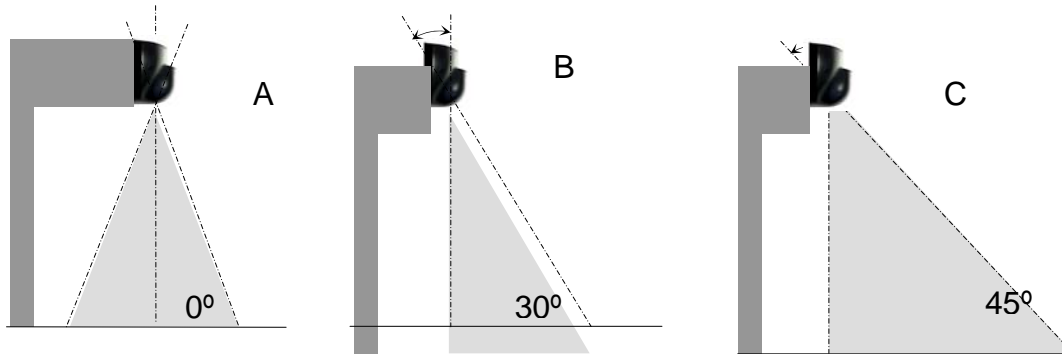
Carefully remove the protective cover of the antenna with a screwdriver.	Change the antenna and replace the protective cover.
--	--



SENSING FIELDS ACCORDING TO THE TYPE OF ANTENNA

The sensing fields above correspond to the following adjustments:
 vertical angle of the antenna: 30°
 sensitivity: 9
 Mounting height: 7'

B. THE POSITION OF THE SENSING FIELD IS DETERMINED BY THE VERTICAL TILT ANGLE OF THE ANTENNA

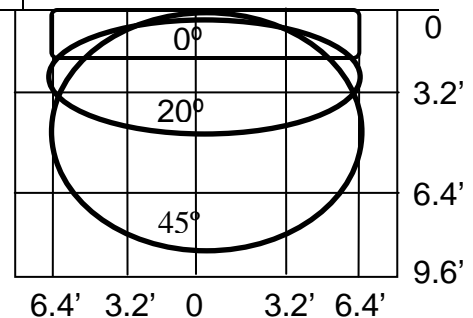


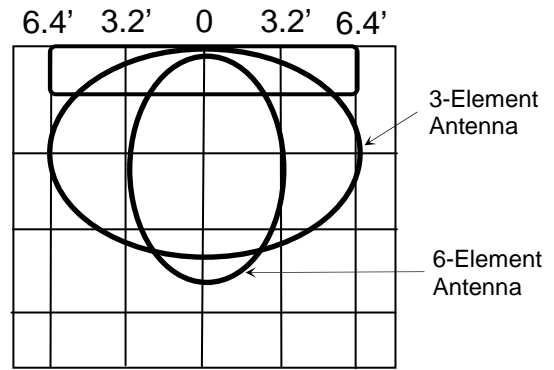
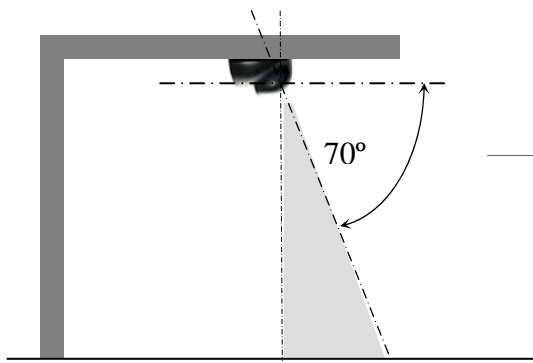
Sensing field as close to the door as possible: -antenna set at the position of 0°	Sensing field close to the door: -antenna set at the position of 30°	Sensing field far from the door: -antenna set at the position of 45°
---	---	---

SENSING FIELDS ACCORDING TO THE VERTICAL TILT ANGLE OF THE ANTENNA

The sensing fields on the right correspond to the following adjustments:

wide sensing field antenna
 vertical angle of the antenna: 0°, 20°, 45°
 sensitivity: 9
 Mounting height: 7'





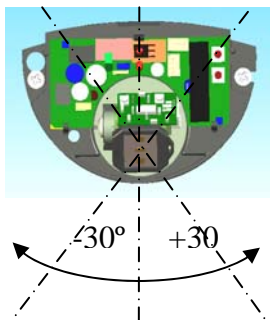
- ❑ For ceiling mounting, the vertical tilt angle of the antenna must be set at the maximum position of 70-75° and the spherical part of the sensor must be oriented in the opposite direction to the door.

SENSING FIELDS – CEILING MOUNT

The sensing fields above correspond to the following adjustments:

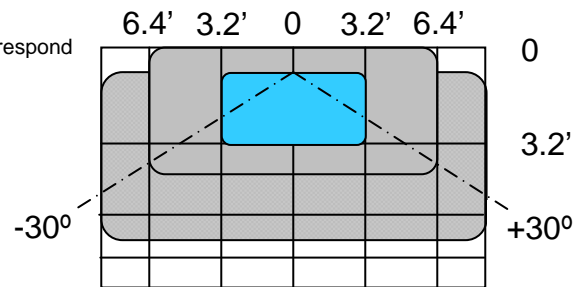
- ❑ Vertical angle of antenna: 70°
- ❑ Sensitivity: 9
- ❑ Mounting height: 7'

C. THE LATERAL POSITION OF THE SENSING FIELD IN FRONT OF THE DOOR IS DETERMINED BY THE LATERAL TILT ANGLE OF THE ANTENNA.



The sensing fields on the right correspond to following adjustments:

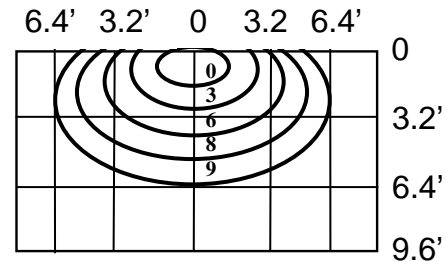
- Wide sensing field antenna
- Lateral angle of the antenna: +30°, -30°
- Sensitivity: 1 = min., 6 = middle, 9 = max.
- Mounting height: 7'



D. THE DIMENSIONS (WIDTH, DEPTH) OF THE SENSING FIELD DEPEND ON THE SENSITIVITY SETTING.

The sensing fields on the right correspond to the following adjustments:

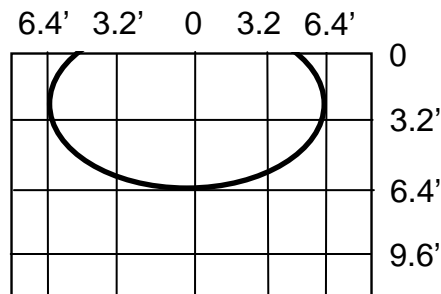
- Wide sensing field antenna
- Vertical angle of the antenna: 30°
- Mounting height: 7'



E. THE DIMENSIONS (WIDTH, DEPTH) OF THE SENSING FIELD DEPEND ON THE MOUNTING HEIGHT

The sensing fields on the right correspond to the following adjustments:

- Wide sensing field antenna
- Vertical angle of the antenna: 20°
- Sensitivity: 9
- Mounting height: 9.6'



6 Programming Guide

The Microwave Motion Sensor (MMS) is equipped with a Motion Tracking Feature (MTF). The MTF is available when the sensor is used in the uni-directional mode. The MMS is factory preset with the MTF ON. MTF is recommended for use in short vestibule areas to help reduce unwanted door hold-open time. Refer to the Programming Guide to alter this setting. LCN recommends keeping the MTF enabled for all applications. The detection capabilities perform as follows:

BI-DIRECTIONAL MODE:

- Detection of all motion towards or away from the sensor.


UNI-DIRECTIONAL MODE:




- The detector will work in a uni-directional mode at all times regardless of traffic patterns - detecting only motion moving toward the sensor.

OR

UNI-DIRECTIONAL MODE WITH MTF: The principle is as follows:

- The detector does NOT activate its relay as long as it detects movement exclusively moving away from the detector. It acts like the classic unidirectional detector.
- As soon as the MMS detects movement toward the sensor, it automatically switches to bi-directional mode.
- The MMS maintains the bi-directional function for approximately 2 seconds following the last detection of motion toward the door.
- At the end of the 2-second time frame, if the sensor does not detect any further motion, it switches back to the unidirectional mode.



Number Keys	Adjustment Keys
Number keys (0 through 9) are used for assigning a value for a given function	Plus (+) and minus (-) keys are used for incremental adjustments to the sensor
Unlock  Inquire  Lock 	Relay Configuration
To UNLOCK the sensor: Press the UNLOCK key once. Red LED flashes quickly	The relay configuration has 4 possible output values: 1= Normally Open Relay 2= Normally Closed Relay 3=Continuous Detection 4=Continuous Non-Detection Default: 1
To LOCK the sensor: Press the LOCK key twice, OR press once then followed by a 4-digit lock code. If less than 4 digits, press lock again after the last digit. LED goes out when complete.	Default Values
To INQUIRE the sensor: Unlock the sensor, press the desired function key, followed by the INQUIRY key – the number of green flashes corresponds to the value.	After pressing the DEFAULT VALUE key, the red LED flashes quickly. After pressing a number button, the red LED flashes slowly.
Default: 0000	1 = Normal Mounting Height (only for serial numbers lower than 84000) 2 = Boost Mode, increases sensitivity for high mount applications. 9 = Restore default values except lock code (for serial number 84000 and greater)

Sensitivity

0 = Minimum Sensitivity
9 = Maximum Sensitivity

Default: 8

Detection Mode

Detection mode offers 3 different levels of detection:

- 1 = Bi-Directional
- 2 = Uni-Directional
- 3 = Uni-Directional with motion tracking feature

Default: 3



Relay Hold Time

Relay hold time refers to the hold time on the output relay of the Eagle. Values range from 0 to 9.

0 = .5 sec.

1 = 1 sec through 9 = 9 sec in 1 second intervals

Default: 0

Immunity

Immunity helps to reduce the chance of unwanted detections due to environmental disturbances.

1 = Reduced

2 = Normal

3 = Increased

4 through 9: enhanced immunity (for highly reflective environment)

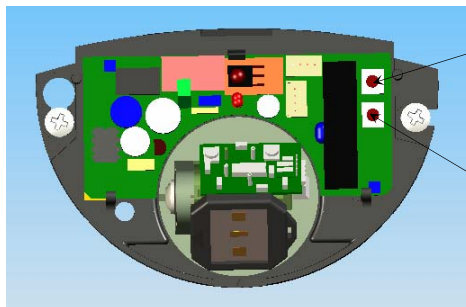
Default: 2

* Every adjustment, when using the infrared remote control, must start with the unlocking function, and end with the locking function.

7 Manual Setup

If a remote control is not available, only the sensitivity parameter can be adjusted manually, by means of the push buttons **+** (Plus) and **-** (Minus).

The sensor parameters that are not accessible manually will remain at the factory preset values.



+ Press to increase sensitivity by one unit.

- Press to decrease sensitivity by one unit.

Pressing the two push buttons located on the circuit board, simultaneously for at least two seconds, will restore all default values except the lock code. Previously set lock codes will be retained.

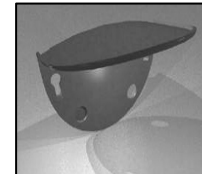
4 Troubleshooting

SYMPTOMS	PROBABLE CAUSE	CORRECTIVE ACTION
The door will not open and no red LED lights up.	The sensor power is off.	Check the wiring and power supply.
	The door control is set to level 3.	Set door control to automatic mode (level 1).
The door opens and closes constantly.	The sensor 'sees' the door moving When closing the door creates vibrations picked up by the sensor.	Increase the tilt angle and/or reduce the sensitivity and/or increase the immunity. Ensure the sensor is correctly fixed. Switch to unidirectional mode. Increase the immunity. Reduce the sensitivity.
The door will not close the. Red LED off.	On Off switch at door control in wrong position or is faulty. Improper output configuration on the sensor.	Check to insure On-Off switch for door is in the ON or AUTOMATIC position. Check the output configuration setting on each sensor connected to the door operator.
It rains and the sensor detects for no apparent reason.	The sensor detects the motion of the raindrops.	Use the MMS Rain Accessory. Switch to unidirectional mode (without MTF) and increase the immunity.
In airlock vestibules, the sensor sees the opposite door.		Increase immunity.
In airlock vestibules, the sensor sees the movement of the door leaves, despite of an increased immunity.		Make sure the antenna for the narrow sensing field is used.
In metallic environments, the sensor detects objects outside its detection field.		Increase immunity.
The sensor will not unlock when access code is entered.	Batteries in the remote control are weak or installed improperly. Remote control improperly pointed.	Check the batteries insertion. Change the batteries. Point the remote control toward the sensor.

5 Accessories



**MMS CEILING ADAPTOR
(8310-854ECA)**
For mounting into the ceiling.



**MMS RAIN COVER
(8310-854ERC)**
Rain protection accessory.

6 Company Contact

LCN®



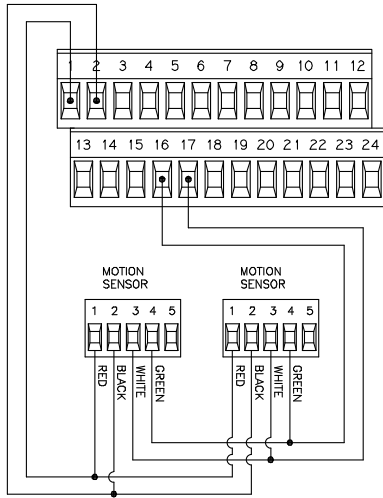
Do not leave problems unresolved. If a satisfactory cannot be achieved after troubleshooting a problem, please contact LCN at 1-800-526-2400. If you must wait for the following workday to call, leave the door inoperable until satisfactory repairs can be made. Never sacrifice the safe operation of the automatic door or gate for an incomplete solution.

For more information, visit www.lcn.ingersollrand.com.

Appendix – Wiring Diagrams

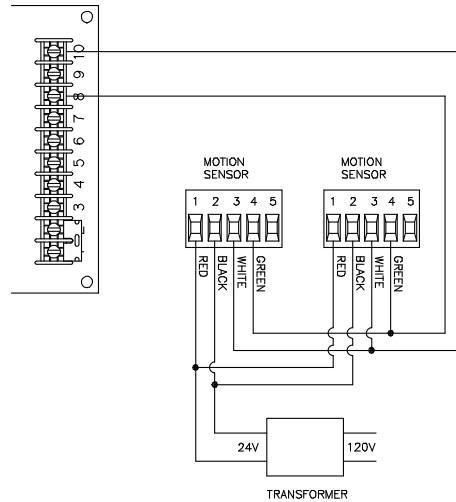
8310–854 MOTION SENSOR SINGLE DOOR WIRING

4630/4640 SERIES
ELECTRIC AUTO-EQUALIZER



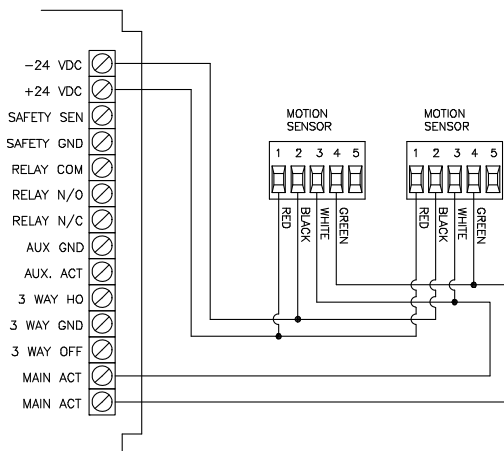
NOTE:
TO BE CODE COMPLIANT ON INSTALLATIONS
WHERE MOTION SENSORS ARE USED, SAFETY
SENSORS "MUST" BE INSTALLED AND FUNCTION IN
ACCORDANCE WITH ANSI/BHMA A156.10

7900 SERIES
PNEUMATIC AUTO-EQUALIZER



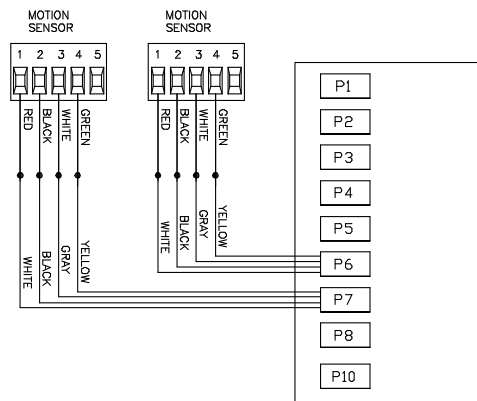
NOTE:
TO BE CODE COMPLIANT ON INSTALLATIONS
WHERE MOTION SENSORS ARE USED, SAFETY
SENSORS "MUST" BE INSTALLED AND FUNCTION IN
ACCORDANCE WITH ANSI/BHMA A156.10

9100 SERIES
BENCHMARK



NOTE:
TO BE CODE COMPLIANT ON INSTALLATIONS
WHERE MOTION SENSORS ARE USED, SAFETY
SENSORS "MUST" BE INSTALLED AND FUNCTION IN
ACCORDANCE WITH ANSI/BHMA A156.10

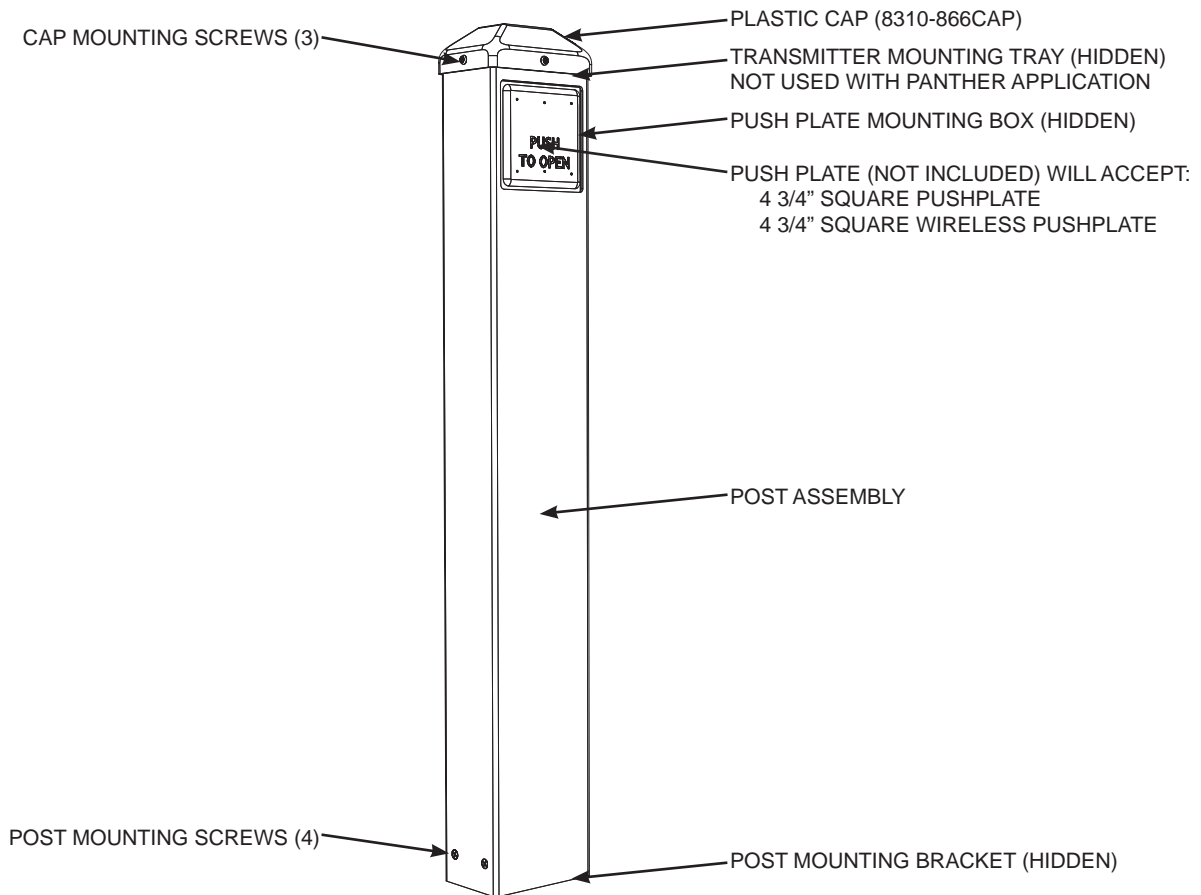
ASTRO SWING – 2500/9300 SERIES
SENIOR SWING – 2800/9500 SERIES
MID SWING – 2900/9700 SERIES



NOTE:
TO BE CODE COMPLIANT ON INSTALLATIONS
WHERE MOTION SENSORS ARE USED, SAFETY
SENSORS "MUST" BE INSTALLED AND FUNCTION IN
ACCORDANCE WITH ANSI/BHMA A156.10

1 Description

The Bollard (8310-866) is used for mounting pushplates that activate automatic doors. It will accept LCN's 4 3/4" Square Pushplate and 4 3/4" Square Wireless Pushplate. The post is made of durable carbon steel and the mounting bracket is made of stainless steel for strength. It can be mounted on either existing concrete or newly poured concrete.



2 Specifications

DESCRIPTION	SPECIFICATION
Dimensions (with cap attached)	41 1/2"H x 6 1/4" W x 4 1/4"D
Material <ul style="list-style-type: none"> • Post • Cap • Mounting Bracket 	Powder-Coated (Inside and Out) Carbon Steel UV-Resistant ABS Plastic Stainless Steel
Pushplate Options	4 3/4" Square and 4 3/4" Square Wireless Pushplates
Weight	35 lbs (16 kilos)
Color	Aluminum or Dark Bronze
Mounting Hardware	L-Anchors, Expansion Anchors, Split Washers and Nuts (Included)

3 Precautions



CAUTION

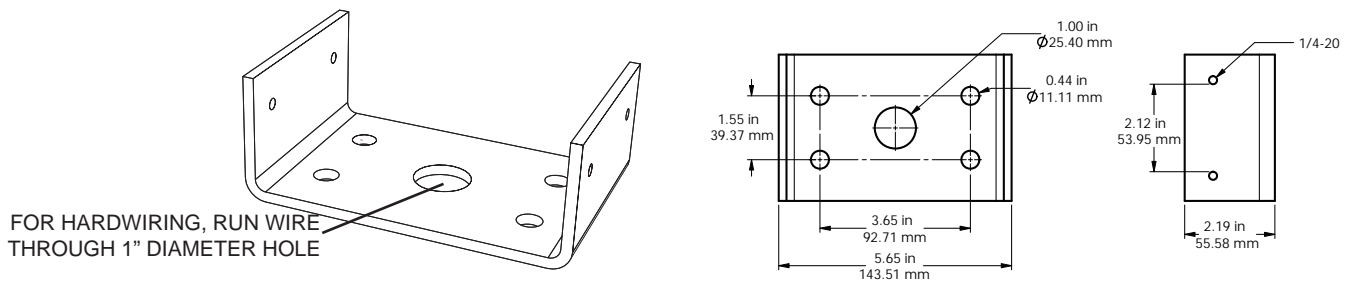
- ❑ Shut off all power going to header before attempting any wiring procedures.
- ❑ Maintain a clean & safe environment when working in public areas.
- ❑ Constantly be aware of pedestrian traffic around the door area.
- ❑ Always stop pedestrian traffic through the doorway when performing tests that may result in unexpected reactions by the door.
- ❑ Always check placement of all wiring before powering up to insure moving door parts will not catch any wires and cause damage to equipment.
- ❑ Ensure compliance with all applicable safety standards (example: ANSI A156.19 / A156.10) upon completion of installation.
- ❑ DO NOT attempt any internal repair of the sensor. All repairs and/or component replacements must be performed by LCN. 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 Pre Installation Check

1. When preparing to wire multiple devices together for a 'system' configuration, it is best to ensure the correct operation of each device independently before starting to help reduce troubleshooting time later in the event of a discrepancy.
2. Prior to installing any equipment, ensure correct line voltage and stability. When applying equipment on a new installation utilizing new electrical supply circuits, always ensure correct line voltage exists and is stable. Remember to shut the power back off after this is checked and before performing any wiring to the system.

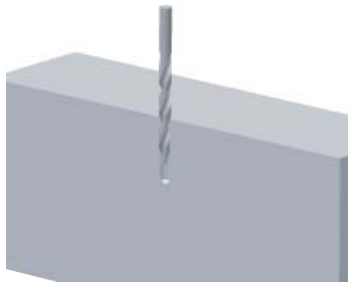
5 Installation

1 Hardwire Bracket - Optional

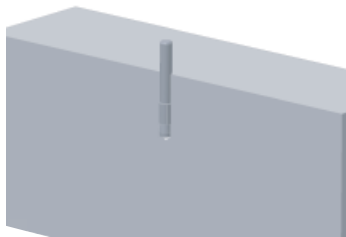


1. The Bollard is designed to house a pushplate used to activate a door by either a remote controlled transmitter or hardwired directly to the door control. If the door is hardwired, pass the wire through the 1 inch diameter hole in the mounting bracket.

2 Attach Mounting Bracket Using Expansion Anchors - Existing Concrete



1. Mark and drill 3/8" diameter hole in four locations.



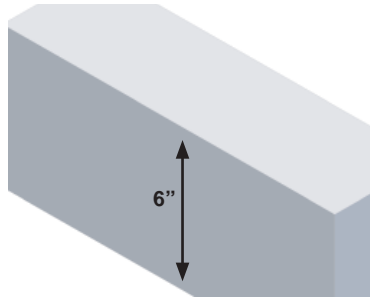
2. Hammer in and set anchor in four hole locations.



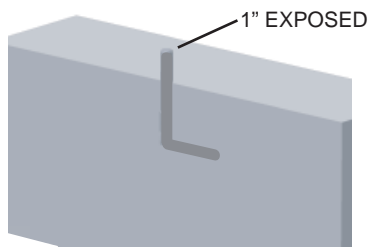
3. Install and tighten nuts to secure mounting bracket.

5 Installation (Continued)

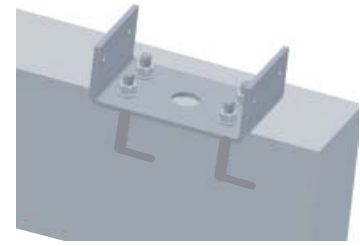
3 Attach Mounting Bracket Using 'L' Shaped Anchors - New Concrete



1. Pour concrete at least 6 inches deep.

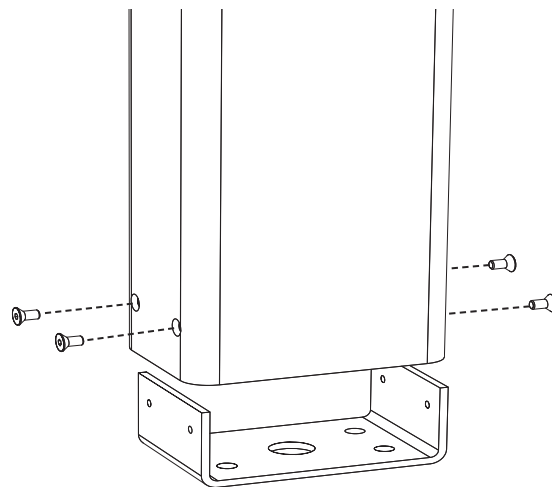


2. Insert anchors into curing concrete. Leave at least 1 inch exposed.



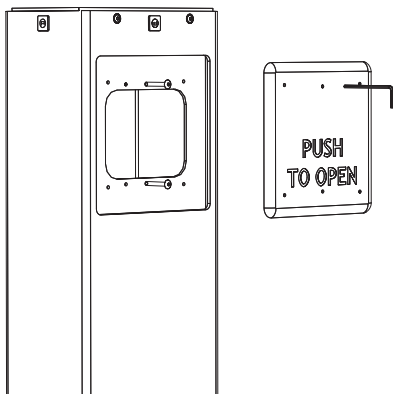
3. Once concrete has cured attach anchor and tighten nuts onto mounting bracket.

4 Attach Post to Mounting Bracket

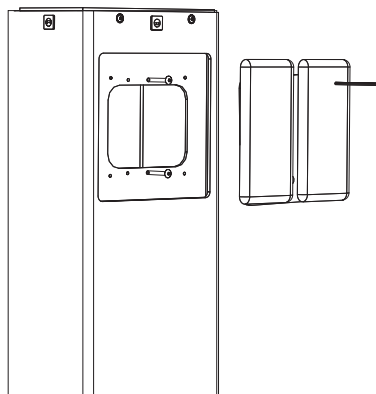


1. Align post to mounting bracket and attach post to mounting bracket with four post mounting screws.

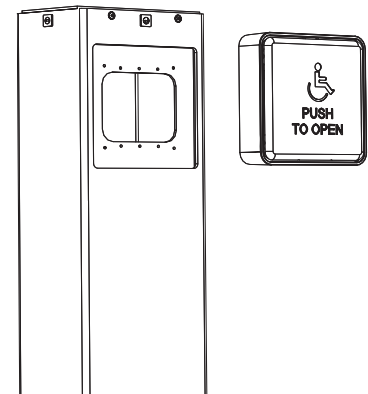
5 Install Push plate



PUSHPLATE INSTALLATION



DUAL VESTIBULE INSTALLATION

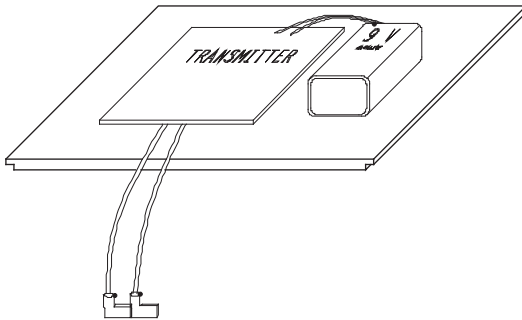


PANTHER PUSHPLATE INSTALLATION

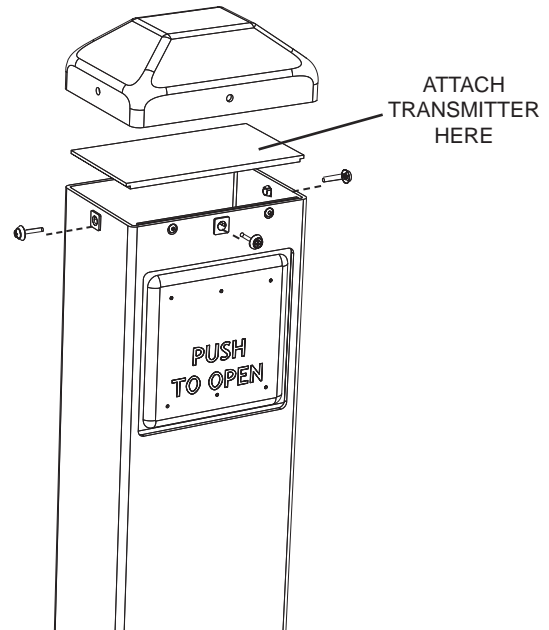
1. Thread the push plate screws into the mounting box leaving a majority of the screw exposed. Attach the pushplate to the mounting screws, then use the hex key provided to fully tighten the screws. Refer to the appropriate pushplate User's Guide for detailed installation and setup instructions.

5 Installation (Continued)

6 Attach Transmitter



TRANSMITTER MOUNTING TRAY



CAUTION: IF THE TRANSMITTER IS ALLOWED TO HANG DOWN INSIDE THE BOLLARD, ERRATIC OPERATION MAY OCCUR.

1. If using the transmitter for this application, attach transmitter to mounting tray with velcro pad included in the package. Hardwired systems do not require this step.
2. Attach plastic cap to top of the post with three cap mounting screws. Tighten screws with hex key included in the pushplate package.

6 Company Contact

LCN®



Do not leave problems unresolved. If a satisfactory solution cannot be achieved after troubleshooting a problem, please contact LCN at 1-800-526-2400. If you must wait for the following workday to call LCN, 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.

For more information, visit www.lcn.ingersollrand.com.

1 Description

The 433MHz Series Transmitters and Receiver are ideal for the opening of automatic doors. The Transmitter is available in hand-held or pushplate style and transmits a unique rolling code each time the switch is closed to provide a secure door-opening signal. The transmitter is powered by either a 3-volt or a standard 9-volt battery and a red indicator light when the transmitter is activated.



**8310-861
ONE BUTTON**



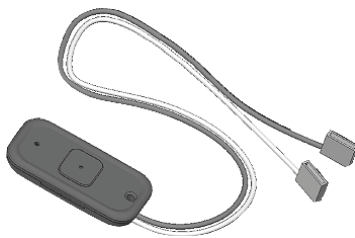
**8310-862
TWO BUTTON**



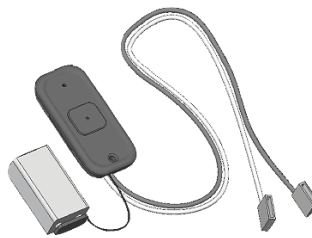
**8310-863
THREE BUTTON**



**8310-864
FOUR BUTTON**



**8310-844J - ONE BUTTON,
3 VOLT w / WIRE LEADS**



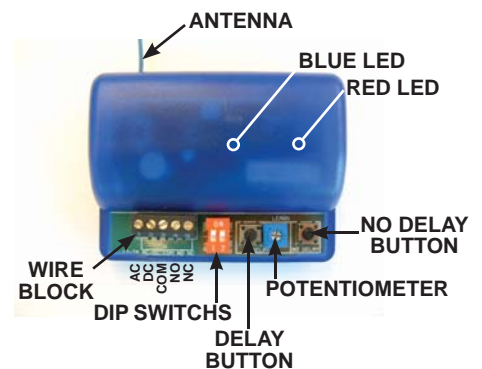
**8310-844 - ONE BUTTON,
9 VOLT w / WIRE LEADS**



8310-865 - RECEIVER

2 Specifications

DESCRIPTION	SPECIFICATION
FREQUENCY	433 MHz
EMMITTED RADIO POWER	-28.7 dBm
POWER CONSUMPTION	250mA
OPERATING TEMPERATURE	14°F TO 131°F (-10°C TO 55°C)
MAX No. OF PROGRAMMED UNITS FOR EACH RECEIVER	100 TRANSMITTERS
LEDs	RED - Receiver Learn BLUE - Relay Activation
DIMENSIONS	2 3/4" X 1 3/8" X 9/16" (70mm x 35mm x 14mm) 2 3/4" x 2 1/8" x 1" (70mm x 55mm x 25mm)
CERTIFICATIONS	FCC, IC, CE



3 FCC Compliance

FCC ID#: G9B-10TD433HH4 IC ID#: 4680A-10TD433HH4

- This Digital Transmitter complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:
 - This device may not cause harmful interference and;
 - This device must accept any interference received including interference that may cause undesired operations.
 - This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide a reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
 - Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/ TV technician for help.
- This transmitter operates in the band 40.66 - 40.70 MHz & above 70 MHz and is restricted to periodic transmissions of up to 5 seconds.
- Changes or modifications not expressly approved by BEA, Inc. for compliance could void the user's authority to operate the equipment.

4 Precautions



CAUTION

- ❑ Shut off all power going to work area before attempting any wiring procedures.
- ❑ Maintain a clean & safe environment when working in public areas.
- ❑ To remain in compliance with Part 15.231, do not operate transmitter (hold down button) for longer than 5 seconds.
- ❑ Constantly be aware of pedestrian traffic around the area.
- ❑ Always stop pedestrian traffic through the doorway when performing tests that may result in unexpected reactions by the door.
- ❑ ESD: Circuit boards are vulnerable to damage by electrostatic discharge. Before handling ensure you dissipate your body's charge.
- ❑ Always check placement of components before powering up so that moving parts will not catch any wires or 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 components. All repairs and/or component replacements must be performed by LCN, 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.

5 Battery Replacement



CAUTION: THERE IS A RISK OF EXPLOSION IF AN INCORRECT BATTERY TYPE IS USED. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

3-VOLT TRANSMITTER

1. Remove screw from back of transmitter.
2. Separate housing and install a fresh 3-Volt (Type CR2032) battery making sure to observe properly polarity.
3. Reassemble housing and replace screw.

NOTE: Don't throw used batteries away with the general trash. Discard per your local municipal laws in order to protect the environment.

9-VOLT TRANSMITTER (8610-844 ONLY)

1. Remove old battery.
2. Connect a new / fresh 9-Volt (Type 6LR61) battery making sure to observe properly polarity.

6 Programming

HAND HELD CONFIGURATION

1. Set dip switches on the receiver to the desired activation cycle (dip switch 1 - position for toggle (1) or position for pulse (2) and dip switch 2 - 0.5 second hold (1) or 10 second hold (2)).
2. Press either delay switch or no delay switch on the receiver depending on the activation requirements (If delay learn is selected, adjust potentiometer for desired delay time 0-30 seconds).
3. Depress transmitter button several times until Blue LED on the receiver illuminates (this indicates reception of signal from transmitter).
NOTE: Repeat Step 2. before programming the next transmitter.
4. To test the system, depress transmitter button (Red LED on Transmitter will illuminate) and observe that the Blue LED illuminates on the receiver. This indicates that the relay has been activated.

NOTE: To erase all codes, press and hold both Delay Buttons for 10 seconds or until the blue indicator light turns on then off.

PUSH PLATE CONFIGURATION

1. Before beginning, it is easiest to have already prepared the installation of the pushplate.
2. Connect the wires from the transmitter to the NO and COM contacts of the pushplates switch.
3. Follow Step 1 thru 4 (Hand-Held Configuration); depress the pushplate to activate the transmitter.
4. Attach the transmitter to the inside of the electrical box and complete the installation.

7 Dip Switch Operation

# 1	DESCRIPTION	FUNCTION
OFF	Pulse Relay	Press the transmitter once and the relay will be active momentarily.
ON	Toggle Relay	Press the transmitter once and the relay output is active indefinitely, press it again and it will become passive.

# 2	DESCRIPTION	FUNCTION
OFF	0.5 sec Hold Time	Relay will remain active 0.5 second after the loss of activation.
ON	10 sec Hold Time	Relay will remain active 10 seconds after the loss of activation.



In Toggle Setting (1-ON), the Hold Time is inactive. Either setting for #2 dip switch will have the same result.



0.5 second Pulse Setting 10 second Pulse Setting

8 Company Contact



CAUTION

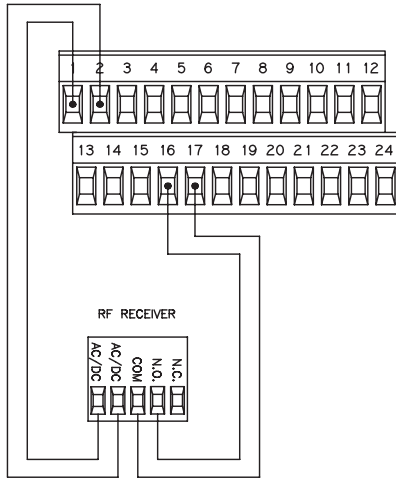
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For more information, visit www.lcn.ingersollrand.com.

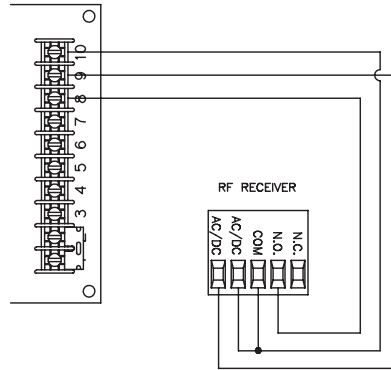
Appendix - Wiring Diagram

8310-865 RF RECEIVER SINGLE DOOR WIRING

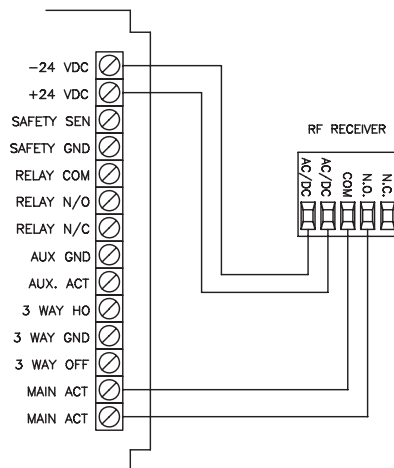
4630/4640 SERIES
ELECTRIC AUTO-EQUALIZER



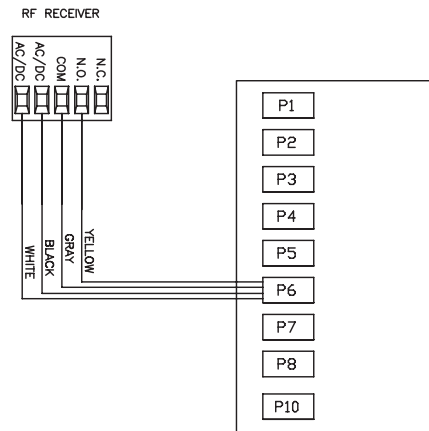
7900 SERIES
PNEUMATIC AUTO-EQUALIZER



9100 SERIES
BENCHMARK



SENIOR SWING - 2800/9500 SERIES
MID SWING - 2900/9700 SERIES



1 Description

LCN introduces its new stainless steel pushplate line. These pushplates are designed to fit into standard electrical gang boxes, and/or LCN's line of plastic enclosures. The faceplate is made of 1/16" thick stainless steel for durability, and has concealed fasteners to minimize vandalism. The pushplates may be hard wired to the door operator or connected to LCN's line of radio-controlled transmitters. Part numbers are shown below.



2 Specifications

DESCRIPTION	4.5" ROUND	6" ROUND	4.75" SQUARE	JAMB
LOGO	8310-856	8310-852	8310-853	8310-818
LOGO AND TEXT	8310-856T	8310-852T	8310-853T	8310-818T
SIZE	4.50" X 0.62"	6.00" X 0.62"	4.75" X 4.75" X 0.62"	1.50" X 4.75" X 0.62"

3 Precautions



- Shut off all power going to header before attempting any wiring procedures.
- Maintain a clean & safe environment when working in public areas.
- Constantly be aware of pedestrian traffic around the door area.
- Always stop pedestrian 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 door 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 LCN 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 Accessories

PLASTIC ENCLOSURES - Wide Range of Surface and Flush Mount Electrical Boxes.

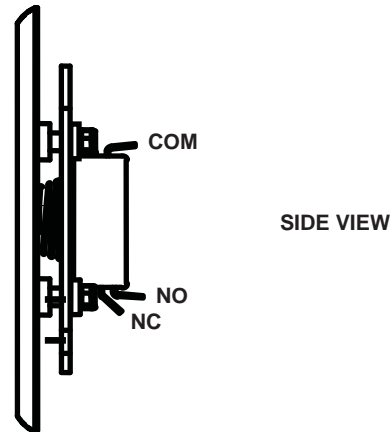
RADIO CONTROLLED TRANSMITTERS & RECEIVERS - 433 MHz Digital Transmitters and Receivers.

BOLLARD - Steel Pushplate Mounting Post Available in Black, Bronze and Silver for use with 4 1/2" Round & 4 3/4" Square Pushplates.

ESCUTCHEON - Stainless Steel Mounting Plate for 4.5" & 6" Round Pushplates.

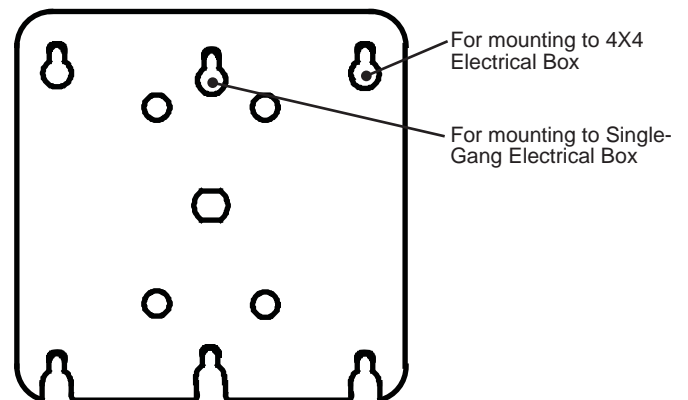
5 Installation

1. Wire the pushplate to the door controller or radio controlled transmitter using the NO or NC contacts and common.



2. Finger-tighten the enclosed hex-head screws into the electrical enclosure.

NOTE: The 6" round and the 4 3/4" square pushplate there are two different sized screws. The larger screws (#8) are for the corner locations on 4X4 electrical type boxes and the two smaller screws (#6) are for the single-gang electrical type boxes.



3. Place the pushplate holes over the hex-head screws. Use the enclosed hex key to fully tighten the screws.
4. Test for proper pushplate activation.

BACK OF SQUARE & ROUND PUSHPLATES

6 Cleaning Operations

The pushplates are constructed with durable stainless steel and painted with scuff-resistant coatings. To clean the plates, use only a damp, non-abrasive cloth. Regular cleaning with harsh solvents or abrasive materials may cause deterioration of the paint coating. Please make the end-user aware of this procedure.

7 Company Contact

LCN®



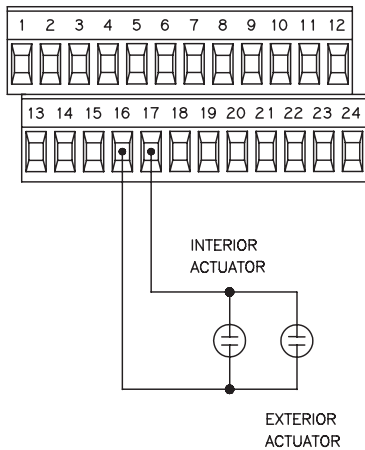
Do not leave problems unresolved. If a satisfactory solution cannot be achieved after troubleshooting a problem, please contact LCN at 1-800-526-2400. If you must wait for the following workday to call LCN, leave the door inoperable until satisfactory repairs can be made. Never sacrifice the safe operation of the automatic door or gate for an incomplete solution.

For more information, visit www.lcn.ingersollrand.com.

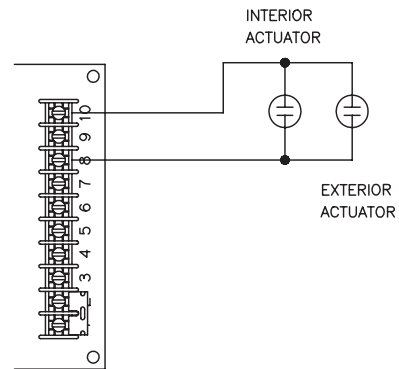
Appendix - Wiring Diagram

8310 SERIES HARDWIRED ACTUATOR SINGLE DOOR WIRING

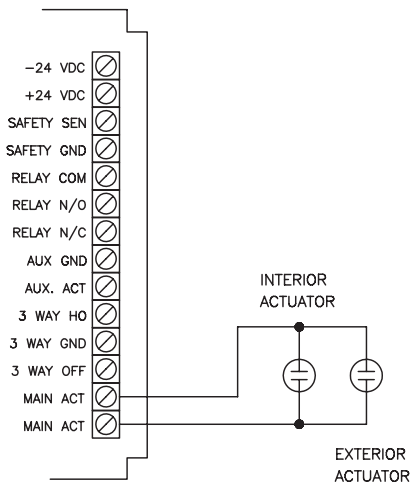
4630/4640 SERIES
ELECTRIC AUTO-EQUALIZER



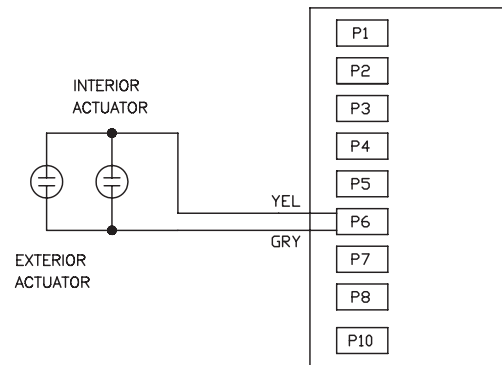
7900 SERIES
PNEUMATIC AUTO-EQUALIZER



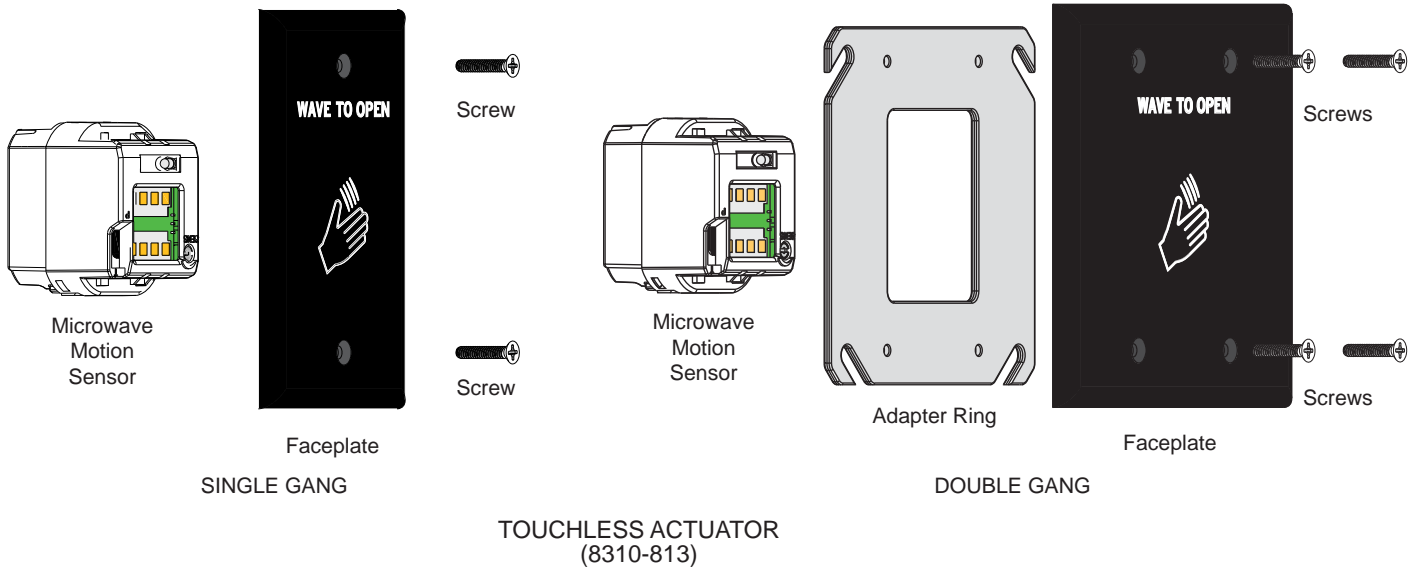
9100 SERIES
BENCHMARK



SENIOR SWING – 2800/9500 SERIES
MID SWING – 2900/9700 SERIES



1 Description



2 Specifications

DESCRIPTION	SPECIFICATION
Technology	Microwave motion sensor
Radiated Frequency	24.125 GHz
Radiated Power Density	5 mW/cm ²
Supply voltage	12 to 24VAC ± 10% 12 to 24VDC +30% / -10%
Supply Frequency	50 to 60Hz
Power Consumption	< 1.5W
Output Relay contact rating (max voltage) Relay contact rating (max current) Max switching power	Relay with switch-over contact (voltage free) 60 VDC/ 125 VAC 1A (resistive) 30W (DC)/ 60VA (AC)
Detection Range	4" to 24" (adjustable)
Detection Mode	Motion (bidirectional)
Output Hold Time	0.5s (in pulsed mode)
Temperature Range	-4°F to + 131°F
Immunity	Immune to electrical and radio frequency interference
Weight	0.34 lbs.
Material	ASA, Nylon, PC
Certification	Electromagnetic compatibility (EMC) according to 2004/108/EC FCC: G9B-MS08 IC: 4680A-MS08

3 Precautions



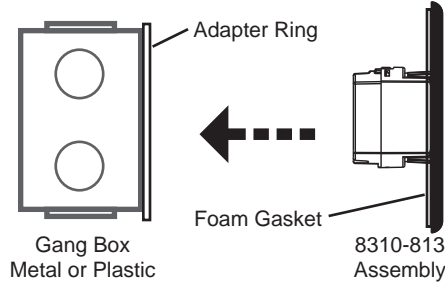
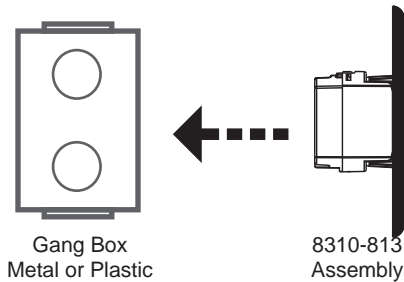
- ❑ Shut off all power going to wall outlet before attempting any wiring procedures.
- ❑ Maintain a clean & safe environment when working in public areas.
- ❑ Constantly be aware of pedestrian traffic around the door area.
- ❑ Always stop pedestrian traffic through the doorway when performing tests that 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 door parts will not catch any wires and cause damage to equipment.
- ❑ Ensure compliance with all applicable safety standards (i.e. ANSI A156.10 / A156.19) upon completion of installation.
- ❑ DO NOT attempt any internal repair of the sensor. All repairs and/or component replacements must be performed by LCN, 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 Pre-Installation Check

1. When wiring multiple devices together creating a system configuration, it is best to ensure that each device works independently. This will reduce troubleshooting if a discrepancy occurs.
2. Prior to installing any equipment in either new or existing circuits, ensure correct line voltage and line stability. Always remember to shut the power OFF before performing circuit wiring.

5 Installation / Wiring / Setup

1 Installation

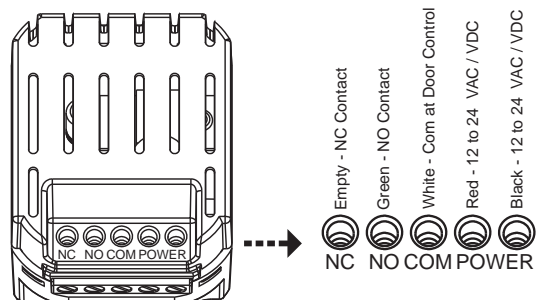


1. The Touchless Actuator may be mounted in conventional metal or plastic electrical gang boxes. Make sure the unit sensor does not come in contact with the metal gang box to avoid shorting out the unit.
 - Do not place the sensor in the door's opening range, where the sensor may see door movement.
 - Do not place moving objects in front of the sensor.

2. Depending on the door installation, the weather resistant foam gasket or the plastic adapter ring may be used. The weather resistant foam is used as a protective barrier against the elements. The plastic adapter ring is designed to enable the double gang face plate to attach to various plastic and metal gang boxes.

2 Wiring

SEE APPENDIX FOR WIRING DIAGRAMS

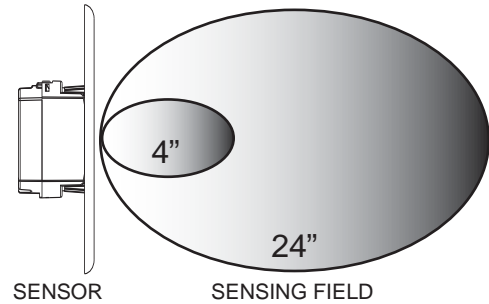
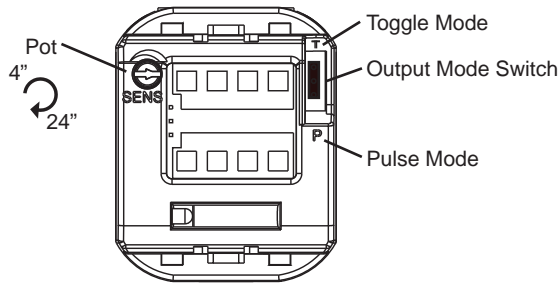


1. Wire the 4-conductor cable to the door operator according to manufacturer specifications.

2. Attach the 4-conductor cable connector to the Touchless Actuator.

5 Installation & Wiring (Cont'd)

3 Setup



1. Adjust unit to desired setup. Two adjustments can be made to the sensor. The Potentiometer is used to adjust the size of the units' sensing field and the Output Mode switch is used to select Toggle or Pulse mode.
2. Rotate potentiometer clockwise to increase the sensing field. It may be adjusted from 4" to 24".

2. Adjust Output Mode by moving switch in the up position (Toggle Mode) or in the down position (Pulse Mode).

Toggle Mode: Recommended for switch applications. In Toggle mode a detection activates the relay and a second detection deactivates the relay.

Pulse Mode: Recommended for automatic door applications. In Pulse mode a detection activates the relay for a short period of time - depending on the duration of movement in front of door.

6 Troubleshooting

1 Troubleshooting Procedures

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Door does not open when swiping hand in front of sensor.	<ol style="list-style-type: none"> 1. Bad or no power supply. 2. Detection range is too small 3. Wrong connection. 	<ol style="list-style-type: none"> 1. Check power supply. If LED switches on or flashes, power connections are OK. 2. Adjust the detection range. Remove any metal plates in front of sensor. 3. Check wiring and relay connection.
Door remains permanently open.	<ol style="list-style-type: none"> 1. Environmental conditions are influencing the sensor. 2. Wrong connection. 	<ol style="list-style-type: none"> 1. Remove any moving objects close to the sensor. 2. Check wiring and relay connection.
The door remains open after detection/activation.	<ol style="list-style-type: none"> 1. Wrong output mode. 2. Wrong connection. 	<ol style="list-style-type: none"> 1. Switch the output mode to Pulse mode. 2. Check wiring and relay connection.

12 Company Contact

LCN



Do not leave problems unresolved. If a satisfactory solution cannot be achieved after troubleshooting a problem, please contact LCN at 1-800-526-2400. If you must wait for the following workday to call LCN, 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.

For more information, visit www.lcn.ingersollrand.com.

FCC APPROVAL

This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada. Operation is subject to the following two conditions:

*this device may not cause harmful interference, and
 *this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

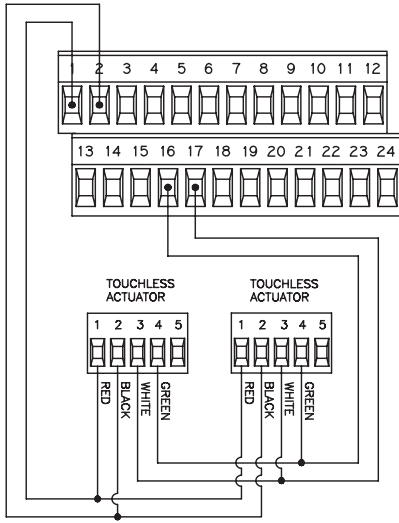
*Reorient or relocate the receiving antenna
 *Increase the separation between the equipment and receiver
 *Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
 *Consult the dealer or an experienced radio/TV technician for help

WARNING: CHANGES OR MODIFICATIONS TO THIS EQUIPMENT NOT EXPRESSLY APPROVED BY BEA INC. MAY VOID THE FCC AUTHORIZATION TO OPERATE THIS EQUIPMENT.

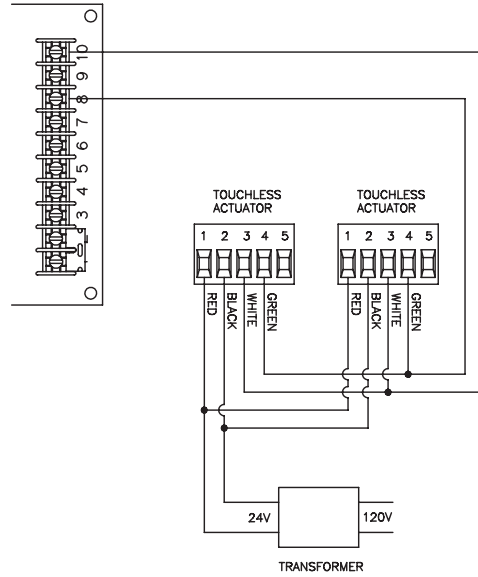
Appendix - Wiring Diagram

8310-813 TOUCHLESS ACTUATOR SINGLE DOOR WIRING

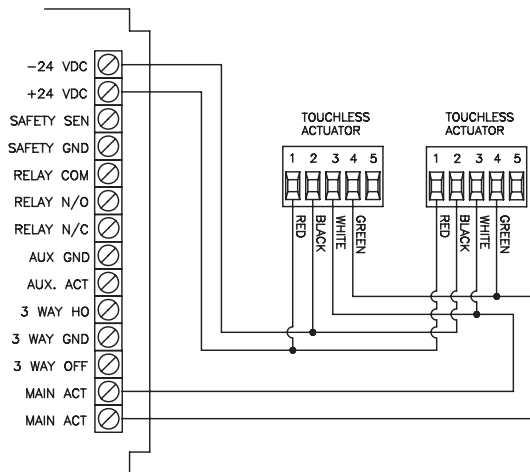
4630/4640 SERIES
ELECTRIC AUTO-EQUALIZER



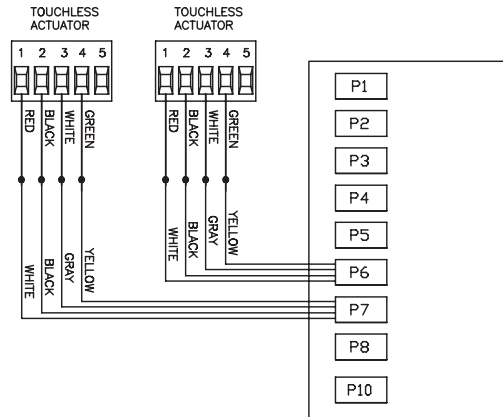
7900 SERIES
PNEUMATIC AUTO-EQUALIZER



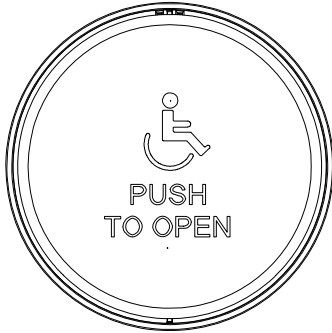
9100 SERIES
BENCHMARK



SENIOR SWING - 2800/9500 SERIES
MID SWING - 2900/9700 SERIES



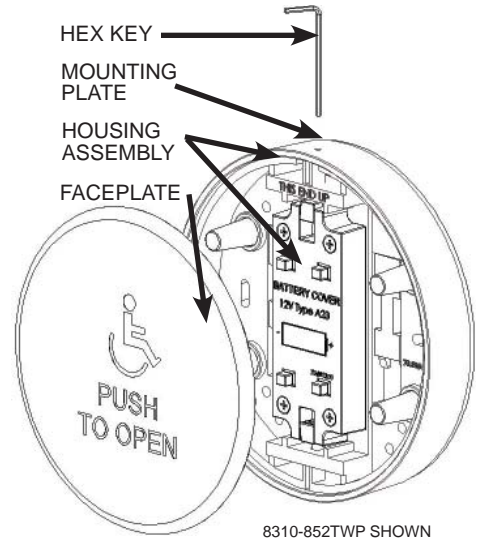
1 Description



6" ROUND
8310-852TWP (shown)
8310-852WP (not shown)



4.75" SQUARE
8310-853TWP (not shown)
8310-853WP (shown)



8310-852TWP SHOWN

2 Specifications

DESCRIPTION	SPECIFICATION
DIMENSIONS	6" Round: 6.33"R X 1.45"D (160.80m X 36.87mm) 4.75" Square: 5.12"H X 5.12"W X 1.42"D (130.0mm X 130.0mm X 36.1mm)
WEIGHT	6" Round: 1.2 lbs (0.54 kg) 4.75" Square: 1.04 lbs (0.47 kg)
MATERIAL	ABS Plastic and Stainless Steel
FREQUENCY	433 MHz
CERTIFICATION	FCC

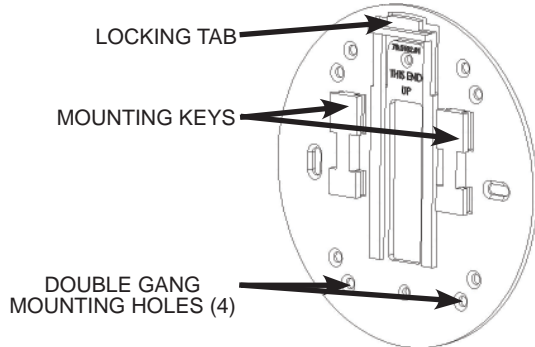
3 Precautions



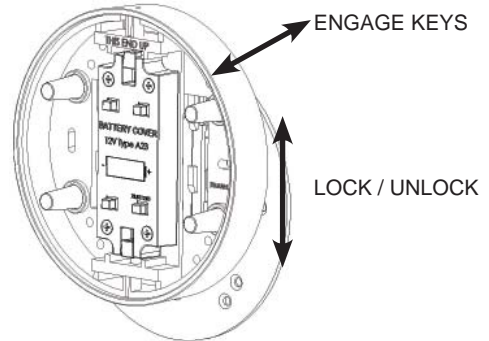
- Shut off all power going to header before attempting any wiring procedures.
- Maintain a clean & safe environment when working in public areas.
- Constantly be aware of pedestrian traffic around the door area.
- Always stop pedestrian traffic through the doorway when performing tests that may result 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 door 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 LCN, 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

1 Mounting the Pushplate



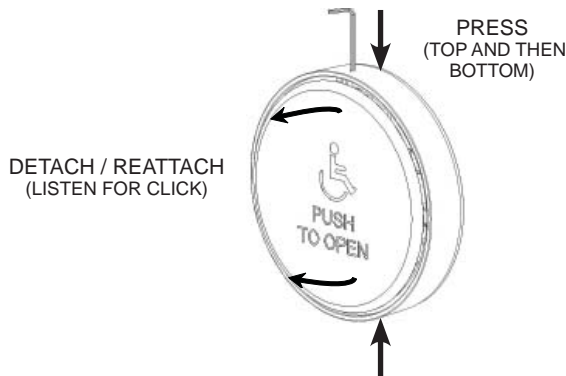
The Wireless Pushplate may be mounted WITH or WITHOUT the mounting plate. To use the mounting plate, screw a minimum of two (2) screws into a solid surface through the holes in the mounting plate (#8 countersunk head screws must be used). The mounting plate must be mounted so that the text side is facing up.



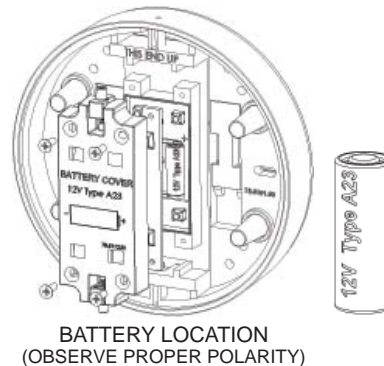
To attach the housing to the mounting plate, place the housing over the key tabs on the mounting plate and then slide the plate downward until the locking tab engages the housing. To remove the housing, press in the locking tab and reverse this procedure.

NOTE: To securely lock the plate, put an additional screw through both the housing and the mounting plate.

2 Pushplate Function



To assemble or disassemble the pushplate, use the enclosed hex key (or similar diameter tool) to press in and release the spring clips from the housing. The spring clip will need to be engaged / disengaged from the top and bottom, one at a time. When the spring clips are correctly engaged, they will make a CLICK. It may be necessary to rotate the faceplate slightly to have them lock correctly.



To replace the battery, remove the faceplate and the four (4) screws holding the battery cover to expose the transmitter assembly. Replace the battery with a fresh 12V (A23) battery and reassemble the pushplate.

WARNING: DO NOT OVER TIGHTEN THE SCREWS ON THE BATTERY COVER. THIS MAY CAUSE THE TRANSMITTER TO BE IN CONSTANT ACTIVATION. THE HEAD OF THE SCREWS SHOULD BE FLUSH WITH THE TOP OF THE PLASTIC COVER.

3 Receiver Setup

For complete Receiver (8310-865, sold separately) Setup & Installation procedures, refer to LCN publication 75.5315 (433MHz Transmitters & Receiver User's Guide).

5 Company Contact

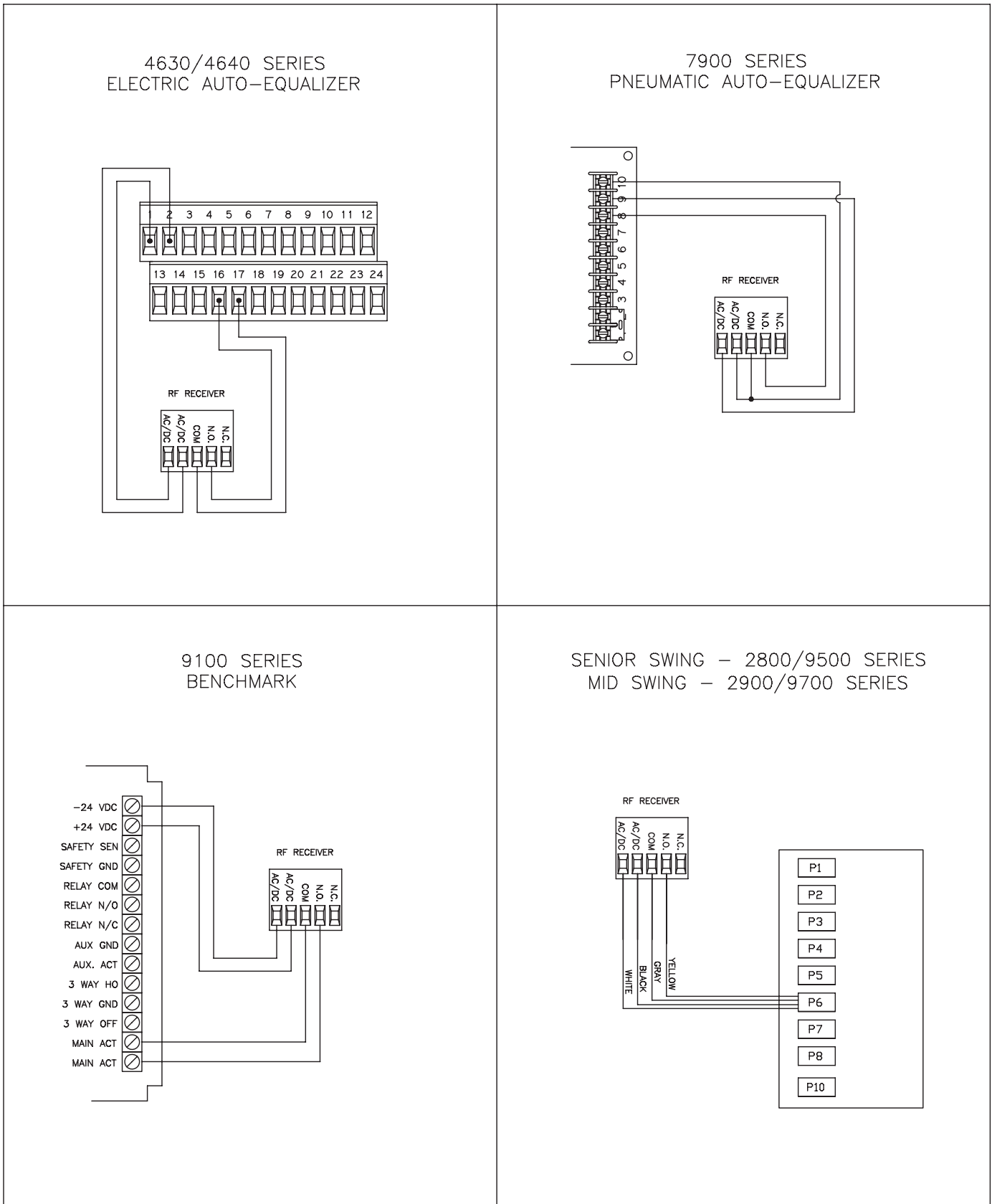


Do not leave problems unresolved. If a satisfactory solution cannot be achieved after troubleshooting a problem, please contact LCN at 1-800-526-2400. If you must wait for the following workday to call LCN, leave the door inoperable until satisfactory repairs can be made. Never sacrifice the safe operation of the automatic door or gate for an incomplete solution.

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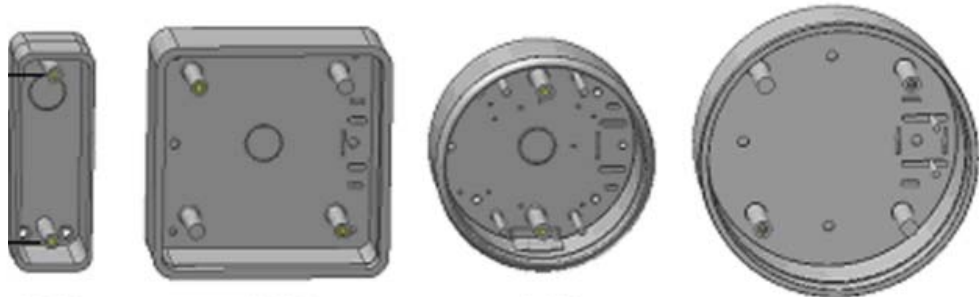
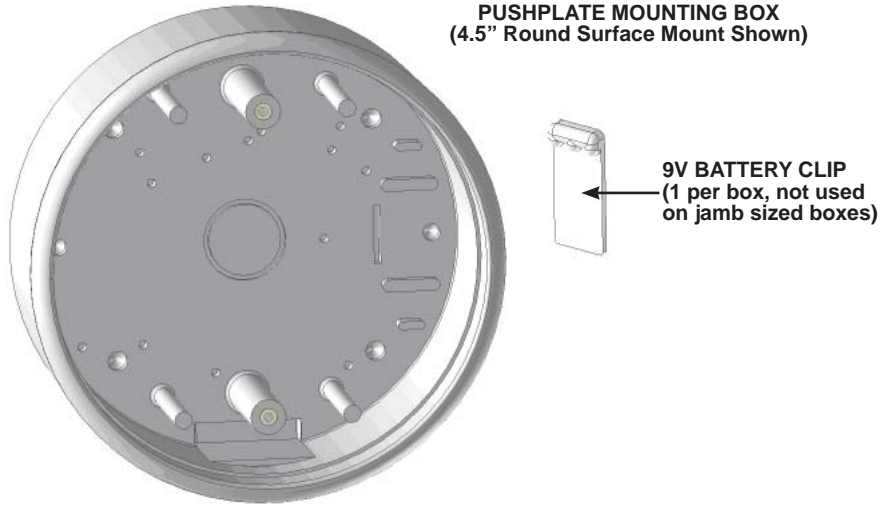
Appendix - Wiring Diagram

8310-865 RF RECEIVER SINGLE DOOR WIRING



1 Description

LCN's line of pushplate hardware is expanded by its line of surface and flush mount pushplate boxes. These boxes are made of durable ABS plastic and are made to securely mount a pushplate and a variety of optional transmitters to activate an automatic door. Many of the boxes have an optional weather ring to give even more weather protection to the switch. They are also designed to attractively recess the pushplate in the housing to and to minimize vandalism from prying up the pushplate.



PART NUMBERS	4 3/4" JAMB	4 3/4" SQUARE	4 1/2" ROUND	6" ROUND
SURFACE	8310-819S	8310-867S	8310-868S	8310-869S
FLUSH	8310-819F	8310-867F	8310-868F	8310-869F
WEATHER RING <u>1</u>		8310-801	8310-800	8310-802

1 - Optional

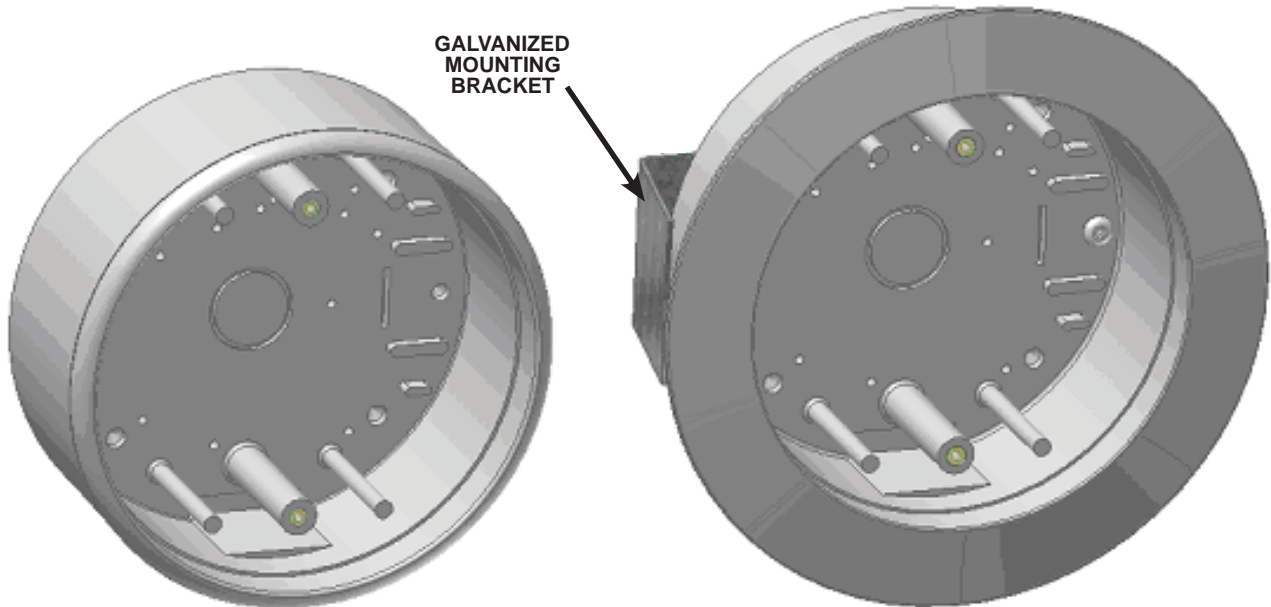
2 Precautions



- Shut off all power before attempting any wiring procedures.
- Maintain a clean & safe environment when working in public areas.
- Constantly be aware of pedestrian traffic around the area.
- Always stop pedestrian 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 LCN, Inc. Unauthorized disassembly or repair:
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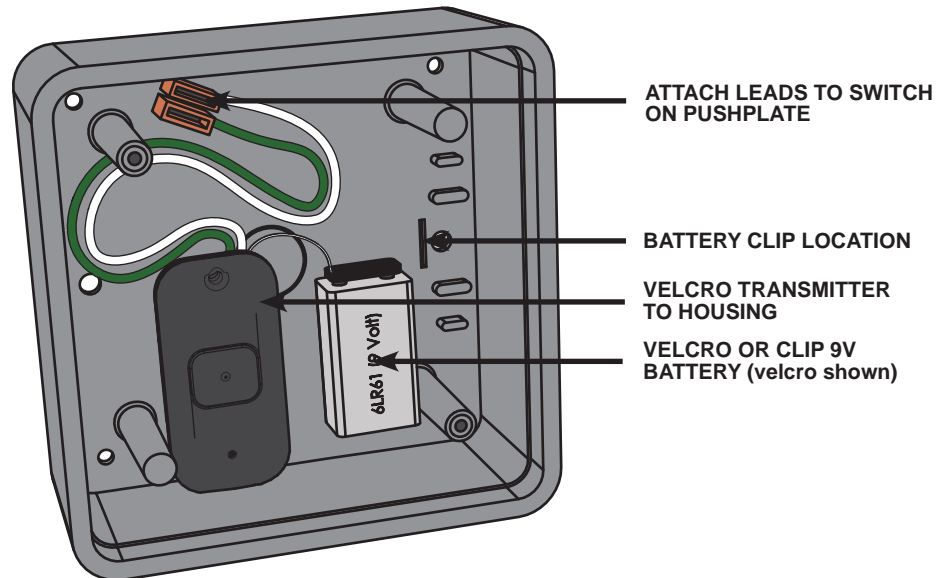
3 Installation

1. Prepare the box for installation. If the pushplate is to be hard-wired to the operator, remove either the knockout on the back or bottom of the box. Then route the appropriate wire to the box.
2. Attach the box to the mounting surface. For surface mounted boxes, securely attach the box to the surface using the corner holes. For flush mounted boxes, cut a hole in the mounting surface large enough that the galvanized steel bracket will pass through the hole. Then use a Phillips head screwdriver to tighten the two screws that tighten the bracket to the inside of the wall surface.



3. If Applicable, mount a radio frequency transmitter to the inside of the housing using either the Velcro enclosed with the transmitter kit or battery clip.

NOTE: For jamb sized boxes, use the 3V Transmitter (8310-844J).



4 Company Contact



Do not leave problems unresolved. If a satisfactory solution cannot be achieved after troubleshooting a problem, please contact LCN at 1-800-526-2400. If you must wait for the following workday to call LCN, 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.

For more information, visit www.lcn.ingersollrand.com.

1 Description

This pushplate is designed to fit into either double-gang or 4x4 electrical boxes. Typical uses include controlling inside and outside doors of a vestibule. The faceplates are made of 1/16" thick stainless steel for durable use. The pushplate may be hard wired to the door operator or connected to a radio-controlled transmitter.

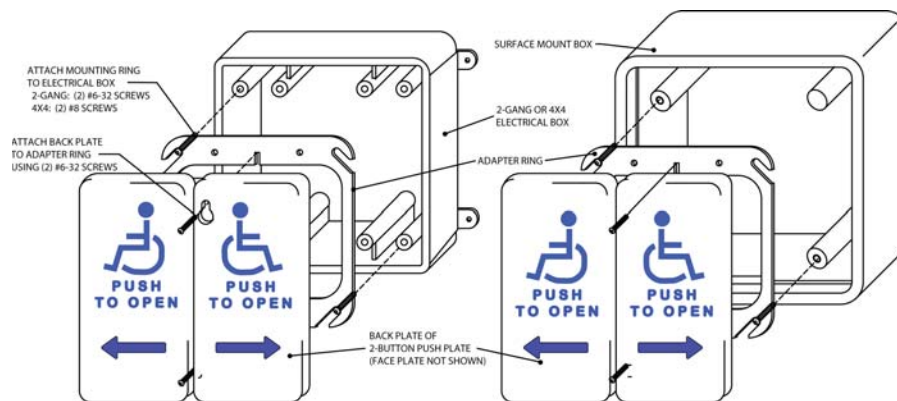
2 Precautions



- ❑ Shut off all power before attempting any wiring procedures.
- ❑ Maintain a clean & safe environment when working in public areas.
- ❑ Constantly be aware of pedestrian traffic around the area.
- ❑ Always stop pedestrian 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.
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3 Installation

1. Attach the adapter ring to the electrical box. Use (2) #6-32 screws for 2-gang electrical boxes or (2) #8-32 screws for 4x4 boxes.
2. Wire the switches of the pushplates to the door controllers or radio controlled transmitters using the NO or NC contacts and common.
3. Start (2) #6-32 screws into the center holes of the adapter ring. Place the keyway-shaped holes of the backplate over the holes, and fully tighten the screws with the enclosed hex key.
4. Test the pushplates for proper activation.

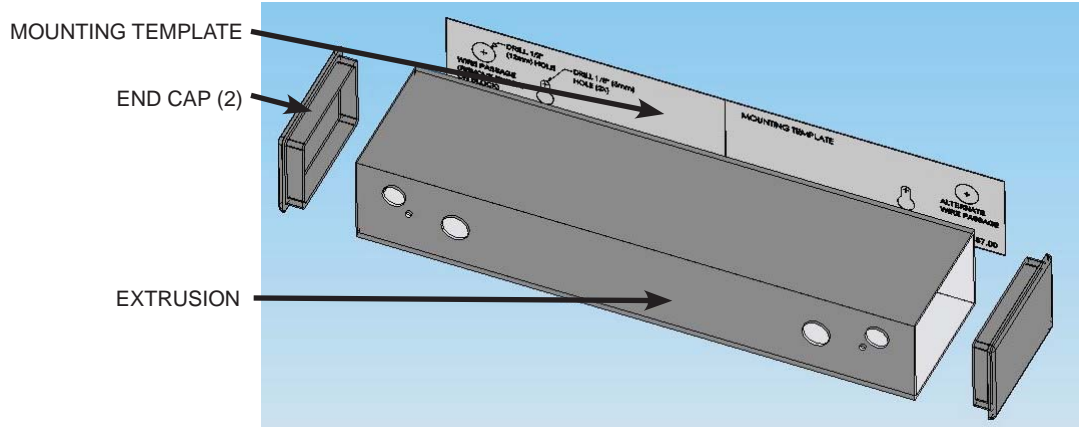


4 Cleaning

The pushplates are constructed with durable stainless steel and painted with scuff-resistant coatings. To clean the plates, use only a damp, non-abrasive cloth. Repeated cleaning with harsh solvents or abrasive materials may cause deterioration of the coating. Please make the end-user aware of this procedure.

5 Company Contact

1 Description



2 Specifications

DESCRIPTION	SPECIFICATION
DIMENSIONS	12.25" X 3.00" X 2.00" (313mm X 76mm X 51mm)
WEIGHT	1.4 lbs. (0.64kg)
MATERIAL	Black Painted Aluminum and Vinyl

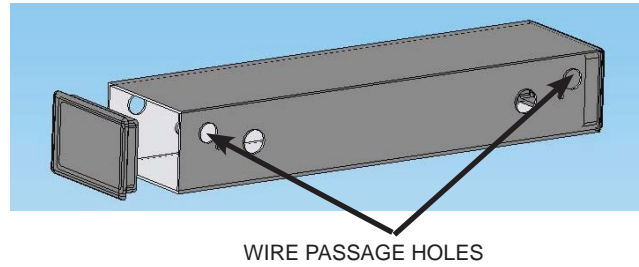
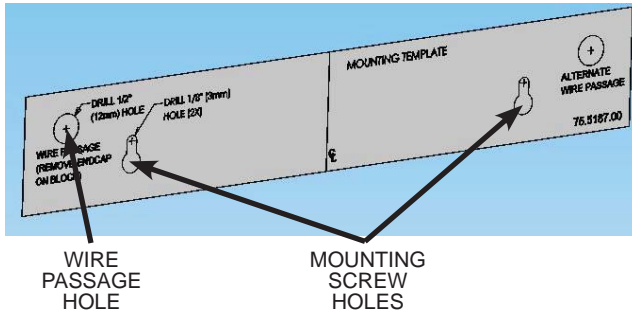
3 Precautions



- Shut off all power going to header before attempting any wiring procedures.
- Maintain a clean & safe environment when working in public areas.
- Constantly be aware of pedestrian traffic around the door area.
- Always stop pedestrian traffic through the doorway when performing tests that may result in unexpected reactions by the door.
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- Ensure compliance with all applicable safety standards (i.e. ANSI A156.10/19) upon completion of installation.
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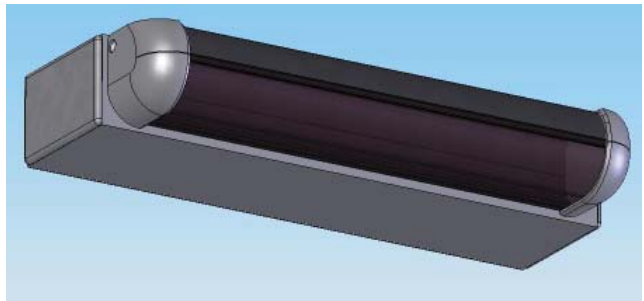
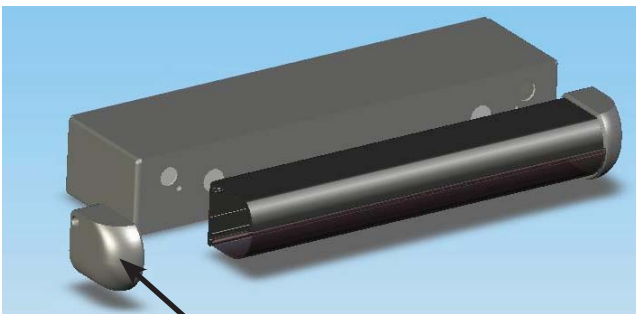
4 Installation

1 Mounting the HMSS Spacer



1. Place the adhesive mounting template on the appropriate surface, depending on the application.
2. Then drill pilot holes for the wire passage and mounting screws as shown.
3. Then partially drive the two Phillips head mounting screws into the small pilot holes.
4. Remove the left endcap on the Spacer. This will make it easier to route the wiring harness from the Spacer thru to the operator.
5. Then slide the extrusion over the mounting screws and using a screwdriver, finish tightening to attach the block.

2 Mounting the HMSS



1. Once the block is secure and the harness is routed (use two screws provided with sensor), attach the sensor to the mounting block.
2. It is necessary to remove one endcap and the two lenses to attach the sensor.
3. Finish by reinserting the lenses and center clip and replacing both the HMSS and Spacer endcaps.

5 Company Contact

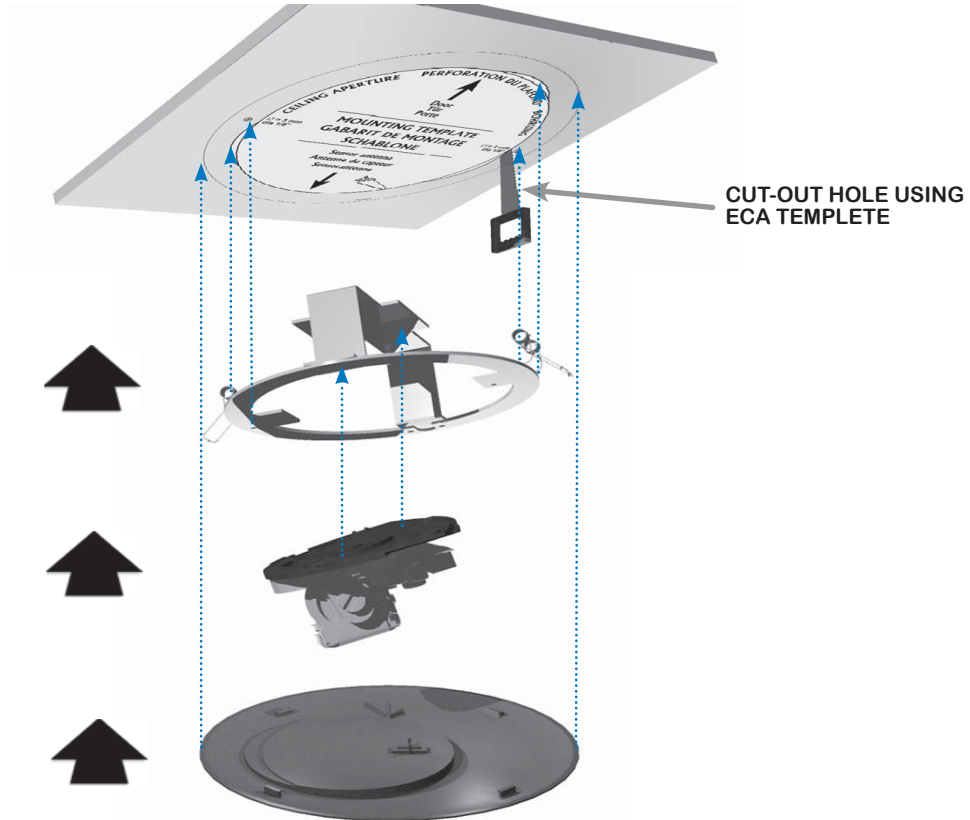
LCN



Do not leave problems unresolved. If a satisfactory solution cannot be achieved after troubleshooting a problem, please contact LCN at 1-800-526-2400. If you must wait for the following workday to call LCN, 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.

For more information, visit www.lcn.ingersollrand.com.

1 Installation



2 Precautions



CAUTION

- Shut off all power in access control circuit before attempting any wiring procedures.
- Maintain a clean & safe environment when working in public areas.
- Constantly be aware of pedestrian traffic around the door area.
- Always stop pedestrian 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 door 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 Piezo Button. All repairs and/or component replacements must be performed by LCN. 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.

3 Company Contact



CAUTION

Do not leave problems unresolved. If a satisfactory solution cannot be achieved after troubleshooting a problem, please contact LCN at 1-800-526-2400. If you must wait for the following workday to call LCN, 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.

For more information, visit www.lcn.ingersollrand.com.

1 Description / Specifications

This switch (8310-805C) is a hermetically sealed (polyurethane potted compound) reed switch. The housing 'Wings' flex to hold the sensor securely in place thus allowing for 'ease of installation' and added protection from swelling wood.

DESCRIPTION	SPECIFICATION
VOLTAGE MAX.	30 VAC/VDC
CURRENT MAX.	0.25 A
POWER MAX.	3.0 W
ELECTRICAL CONFIGURATION	SPDT
WIRING: (12" 22AWG)	NO: Red NC: White COM: Black
GAP DISTANCE MAX.	1/2 INCH



2 Precautions



CAUTION

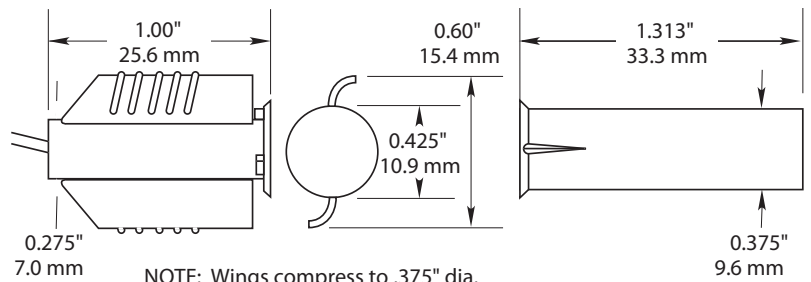
- Shut off all power before attempting any wiring procedures.
- Maintain a clean & safe environment when working in public areas.
- Constantly be aware of pedestrian traffic around the area.
- Always stop pedestrian traffic through the doorway when performing tests that may result in unexpected reactions 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 door 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 Piezo Button. All repairs and/or component replacements must be performed by LCN. 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.

3 Installation

1. Drill a 3/8" dia. x 1" deep hole for the contact and a 3/8" dia. x 1 5/16" deep hole for the magnet.

NOTE: 'Wings' on contact allow for expansion if hole is slightly oversized (See Dimensions to the right).

2. Press the magnet into the door and the contact into door frame.
3. Connect the NO, NC & COM from the contact to applicable circuit.



4 Company Contact



Do not leave problems unresolved. If a satisfactory solution cannot be achieved after troubleshooting a problem, please contact LCN at 1-800-526-2400. If you must wait for the following workday to call LCN, 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.

For more information, visit www.lcn.ingersollrand.com.

DESCRIPTION

The Door Mounted Safety Sensor (DMSS) (8310-804) detector is a door-mounted presence detection system that is used on automatic pedestrian swing doors. Unlike other door-mounted sensing devices, the sensors unique electronic architecture allows the detection modules to be mounted near the top of the door, out of harm's way. A rotating cam is used for the range adjustment of the detection zone. Width patterns may be altered by adding slave modules to the master module. 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 without interrupting other modules in the same extrusion. Once installed, the detection zone (in addition to being adjustable for distance) can be angled independently from the other modules.

Each DMSS 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. This transmission and reception forms a detection triangle, 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 or background of the object that interrupts the angle.

TECHNICAL SPECIFICATIONS

DESCRIPTION	SPECIFICATION
Power Supply	12 to 24 VAC ± 10% / 12 to 24 VDC ± 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 to 24 VAC ± 10%: / 12 to 24 VDC ± 10% / Inhibited when voltage is applied
SMR Input Data	12-18 VDC: Inhibited when voltage is applied
Output Interface; relay	Relay; max. contact rating is 1A @ 30v (resistive)
Detection Range	0' to 8'
Distance Adjustment	2' to 8' / Rotating cam with linear adjustment
Max. Mounting Height	8'
Detection Time	< 50 ms
Detection Signal Duration	Infinite Presence Detection
Output Hold Time	Potentiometer Range: 0.1 to 4.5 seconds.
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" Slave: 8.75" x 1.5"
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 Normal Mode or Background Analysis Mode

COMPONENT ID

DOOR MOUNTED SAFETY SENSOR



DMSS Quick Disconnect Cable (8310-847)

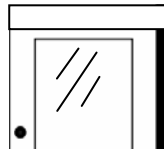


Jamb Cap (2)

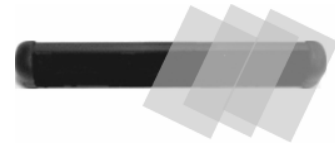
INSTALLATION TIPS



- ❑ The sensor must be firmly fastened to prevent vibration.



- ❑ Sensor must be in a location that does not interfere with door hardware (finger guards, lock rods, etc.).



- ❑ The sensor must not have any unwanted objects likely to move or vibrate in its path.

**SAFETY
PRECAUTIONS**



- Shut off all power going to the header before attempting any wiring procedures.
- Maintain a clean & safe environment when working in public areas.
- Constantly be aware of pedestrian traffic around the door area.
- Always stop pedestrian traffic through the doorway when performing tests that may result in unexpected reactions by the door.
- Always check placement of all wiring and components before powering up to ensure that moving door 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.

**MECHANICAL
INSTALLATION-
PREPARING AND
MOUNTING THE
SENSOR**

1. Install push or pull arm.
2. Remove the screw that secures the end cap to the Door Mounted Safety Sensor extrusion (as shown in Picture 1 below).

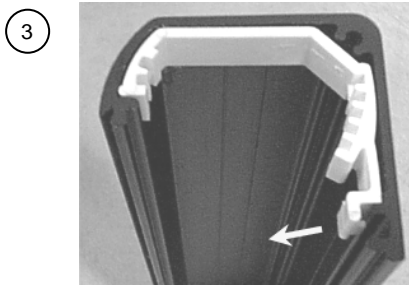


3. Remove the plastic lens by pulling the lens out from the top of the extrusion (as shown in Picture 2 above). Do not use a screwdriver to pry the lens, as cracking may occur.

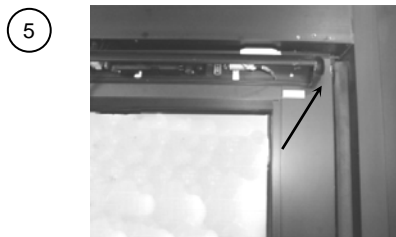


CAUTION: REMOVE THE MASTER AND ALL SLAVE CIRCUIT BOARDS FROM THE ALUMINUM EXTRUSION BEFORE PERFORMING ANY DRILLING. WHEN COMPLETE, ENSURE THAT ALL METAL SHAVINGS ARE CLEANED FROM THE EXTRUSION BEFORE RE-INSERTING THE CIRCUIT BOARDS.

4. Picture #3 below shows the angle adjustment clip in its proper position within the extrusion (PCB's are removed, and clip is shown at end of extrusion for clarity only). To remove the clip, simply pull the tab out away and downward from the extrusion, then rotate the module out from extrusion as shown in picture #4. To re-install, simply reverse the procedure - the PCB must first be installed into the adjustment clip, then installed into the aluminum extrusion.

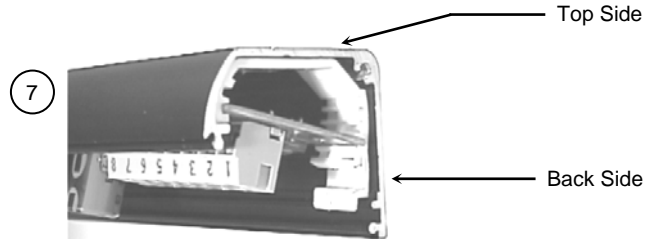


IMPORTANT NOTE: The end of the extrusion that is towards the pivot end of a center hung door, should be in far enough from the edge of the door, as shown in picture #5, to prevent the end cap of the DMSS from rubbing against the finger guard during door movement. Pay particular attention on the safety side of the door. Hinge hung doors will not require as much clearance between the end of the DMSS and hinge-side jamb as shown in picture #6 below. At the leading edge of the door the edge of the DMSS, including the end cap, should be as close as possible to the leading edge of the door without creating mechanical interference with the door jamb or with an adjacent door (pairs).



NOTE: If a brick store front is encountered during installation, route the sensor wiring through the door header.

5. Hold the Door Mounted Safety Sensor extrusion up to the top of the door. Insure that the extrusion is oriented correctly as shown below.



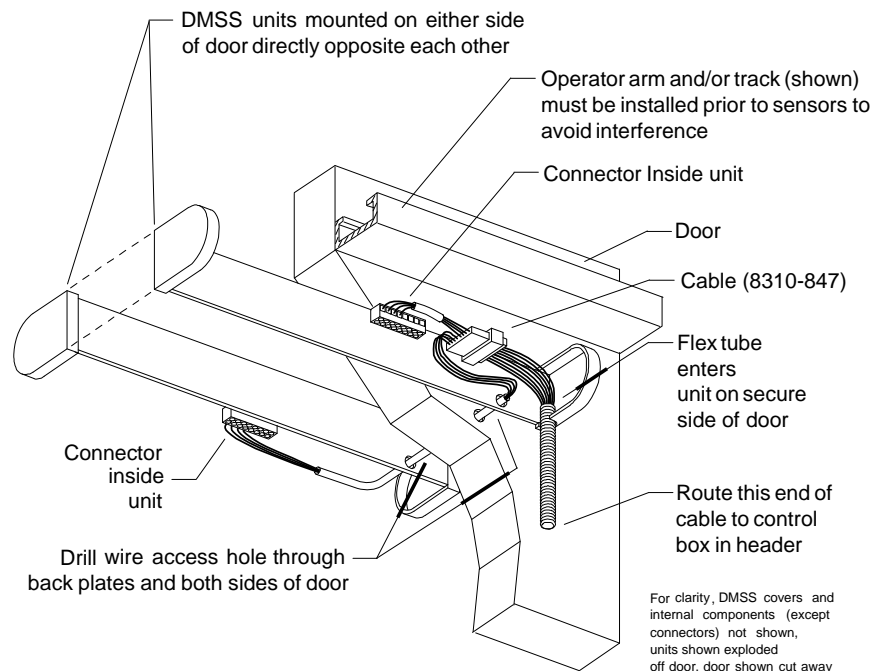
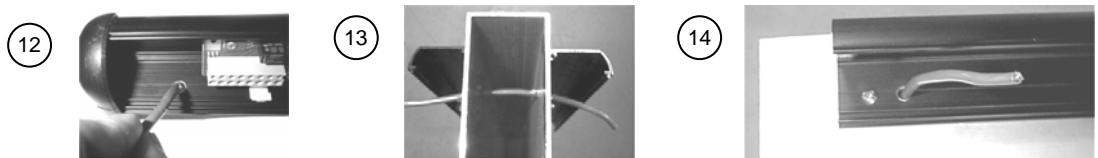
6. Mark and drill the extrusion (as shown in pictures 8, 9 and 10 below) where the mounting holes (one at each end) should be located. Also, be sure to mark and drill the proper end for an additional hole to be used for wire passage. Wire passage hole should be approximately 1/4" diameter. Screw mount holes only serve as a pilot hole for ease of installing the self-drilling screws that are provided.

NOTE: Take care to avoid screw holes near the seams of the door, where it may be difficult to drill and install a screw, and possibly damage the inside structural braces of the door.

7. Hold the DMSS back up to the door at the pre-drilled location and attach the unit to the door with the 2 screws provided (as shown in picture 11 below). Insure the DMSS extrusion is tight against the door.



8. If Door Mounted Safety Sensors are to be mounted on both sides of the door, a wire passage hole will be required through the door to go from the approach side to the safety side, as shown below. Again, be sure not to drill through any through-bolts or braces within the door. A cutaway view below (Picture 13) shows wire passage through the door. Picture 12 and 14 shows an approximate location for the wire passage hole. The extension wire going between the terminal blocks should be approximately 18" long and can then be cut back if needed. Refer to the detailed drawing below for wire routing, connector and cable location.



**MECHANICAL
INSTALLATION-
PREPARING AND
MOUNTING THE
SENSOR (Cont'd)**

9. Next, a wire passage hole will be required in the door header (Picture 15) and also in the jamb tube (Picture 16) at approximately the same height as the Door Mounted Safety Sensor. The wire transfer hole in the jamb should be at the secure side of the door. Normally this would be the interior side. Feed the wire through the jamb tube up to the header. Insure that enough wire is left out to reach the Door Mounted Safety Sensor terminal block.

15



16



NOTE: Ensure there is enough slack in cabling to allow adequate movement of the cable throughout the range of door travel.

10. Once all cabling is in place, the plastic sheath must be installed over the wire coming out of the jamb tube. This must be done before making final connection to the terminal block. The sheath may have to be cut to fit the application. Once the wire is fed though, the plastic cap may be installed on the jamb, over the transfer hole.

17



18



19

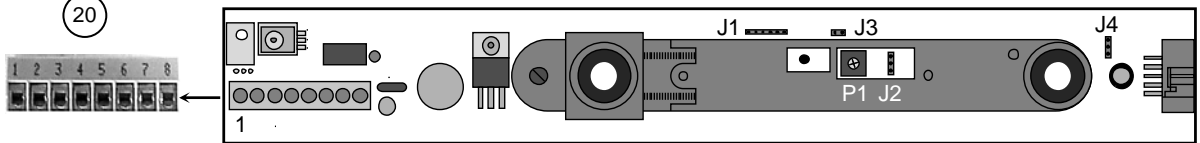


← Plastic ribbed sheath

**ELECTRICAL
INSTALLATION-
CABLING &
CONNECTIONS**

1. With cabling in place, wiring at the terminal connector on the DMSS master module (picture 20) may be completed. Wiring will vary according to the application. Available positions on the connector are shown below:

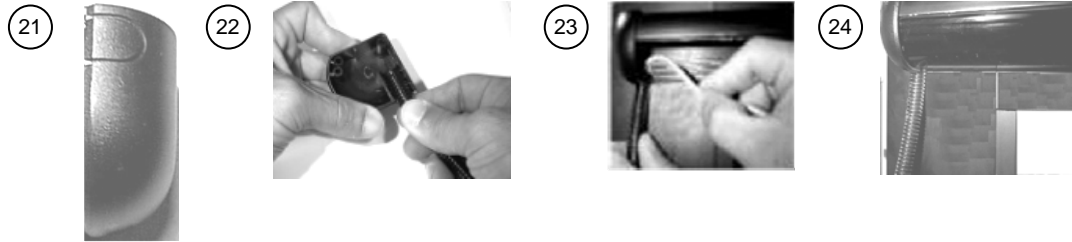
20



TERMINAL	EXPLANATION OF WIRING CONNECTIONS
1 TST	TEST DATA - Used with SMR systems only.
2 GND	GROUND - Negative terminal if Input inhibition is used.
3 INH	INPUT INHIBITION - All detection is ignored. Infrared emission is stopped. Inhibition occurs when 12 to 24 VAC ± 10% or 12 to 24 VDC ± 10% is applied between terminal 3 and terminal 2.
4 NO	In the relay mode, depending on the position of JP2 this terminal will provide either a NO or NC contact. (JP2 factory default will result in NC on terminal 4)
5 NC	In the relay mode, depending on the position of JP2, this terminal will provide either a NO or NC contact. (JP2 factory default will result in NO on terminal 5)
6 COM	COMMON - Contact for relay.
7 -	NEG. POWER - This terminal is used for power input. A voltage of 12 to 24 VAC ± 10% or 12 to 24 VDC ± 10% must be supplied.
8 +	POS. POWER - This terminal is used for power input. A voltage of 12 to 24 VAC ± 10% or 12 to 24 VDC ± 10% must be supplied.

**ELECTRICAL
INSTALLATION-
CABLING &
CONNECTIONS
(Cont'd)**

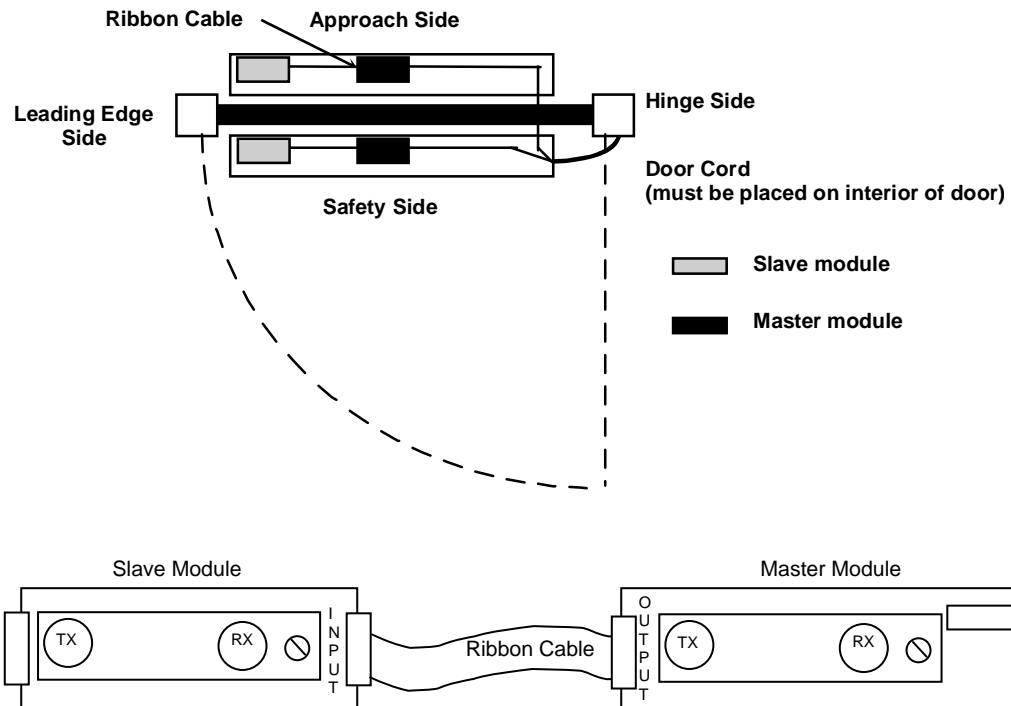
- Once all wiring has been completed, the end caps and lens may be installed. At the DMSS end of the cable (picture 23), leave enough slack to allow a relaxed connection at the terminal block. Locate the DMSS end cap that goes towards the hinged end of the door. Remove the tab at the bottom of the cap (picture 21) to allow insertion of the plastic sheath. Insert the plastic sheath (picture 22) and install the end cap. The DMSS lens may then be installed to fit tight against the end cap and plastic sheath to hold it in place, as shown in picture 24. Leave the end cap off at the opposite end until all mechanical adjustments have been completed.



* REFER TO THE BACK OF THIS GUIDE FOR WIRING SCHEMATICS.

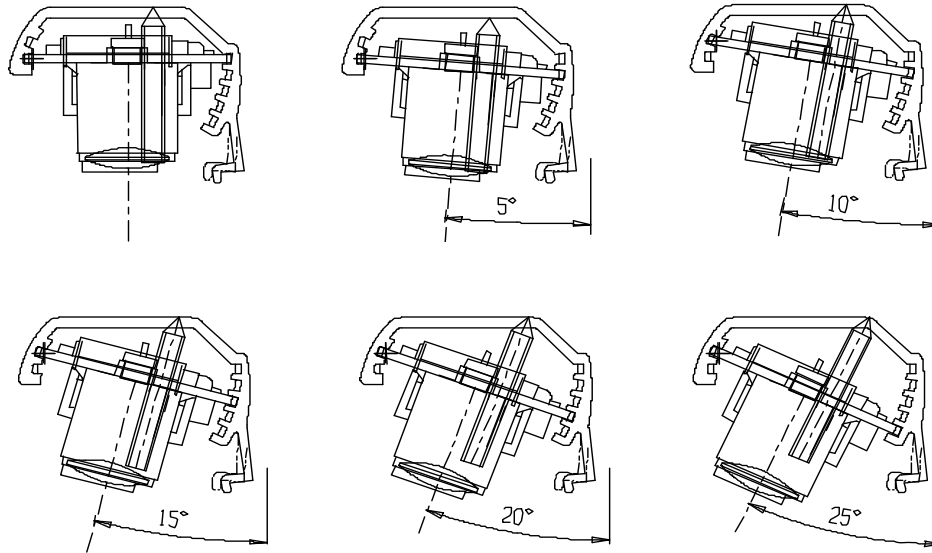
**MECHANICAL
ADJUSTMENTS –
POSITIONING AND
ANGLING THE
MODULES**

- The positioning of the modules within the aluminum extrusion will be as shown below. The modules will always be positioned so that the transmitter (TX) is at the leading edge of the door. Modules may be flipped around to accommodate handing of doors.



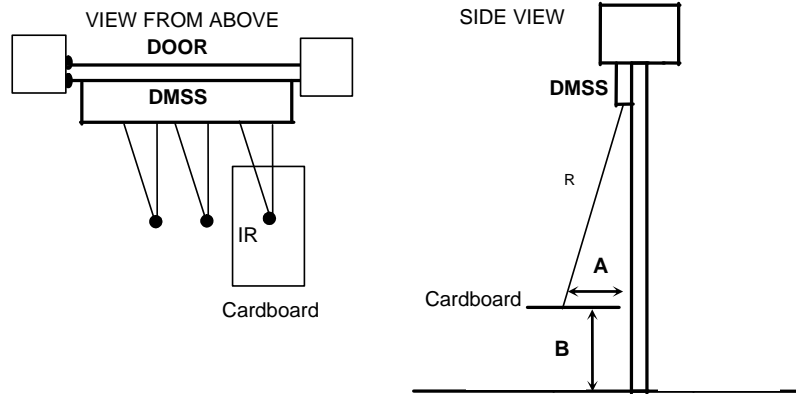
MECHANICAL ADJUSTMENTS – POSITIONING AND ANGLING THE MODULES (Cont'd)

2. The angle of each module may be set independently. Use the charts below to help determine the angling. The angles may have to be altered once the units have been powered up and walk-tested.



POWER-ON POSITIONING, ANGLING AND ADJUSTING THE MODULES

DEAD ZONE DISTANCE FROM FLOOR (B)	DOOR MOUNTED SAFETY SENSOR ANGLE (C)					
	0°	5°	10°	15°	20°	25°
8"	0	6"	12 ½"	19 ¼"	26"	33 ¼"
12"	0	6"	12"	18"	24 ½"	31 ½"
16"	0	5 ½"	11 ¼"	16 ¾"	23 ¼"	29 ½"
20"	0	5 ¼"	10 ½"	16"	21 ½"	27 ½"

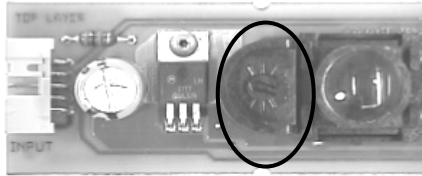


3. The following procedures will be used to adjust each module's detection zone upon power-on, and must be made with the Background Analysis jumper set to 'Normal Mode'.

- Power the sensors up with 12 to 24 VAC ± 10% or 12 to 24 VDC ± 10%. LED status should reflect what was configured for the relay output.
- Use a white, gray, or black piece of cardboard about 8" x 11" and hold it as shown in the diagram above.
- Move the cardboard from the floor upward until it is detected. This will determine the height of the dead zone (B distance).
- Measure the height at which the cardboard was detected.
- If this height does not fall between 12" & 16" above the floor or does not meet your requirements, an adjustment must be made to the detection distance.

POWER-ON POSITIONING, ANGLING AND ADJSUTING THE MODULES (Cont'd).

33



Detection Distance Adjustment

- One notch of the distance adjustment corresponds to approximately 4".
- If Zone B is too high: Turn the distance adjustment clockwise to increase the detection distance and to decrease Zone B.
- If Zone B is too low, turn the distance adjustment counter-clockwise to decrease the detection distance.
- Per current ANSI A156.10, the detection zone must be within 28" of the floor. Ideally, each detector should be adjusted so that detection occurs at 12" to 16" above the floor. Less than 12" of Zone B may result in occasional false triggering of the sensor.
- Once all sensors have been adjusted, activate the door several times and allow it to go through a full cycle each time. Insure that no false triggering is occurring, as would be indicated by the door recycling or stopping by itself at any point of travel.
- Ensure compliance of all applicable safety standards (i.e. ANSI A156.10 / 19).
- Install all remaining covers, end caps, screws, etc.

TROUBLE-SHOOTING

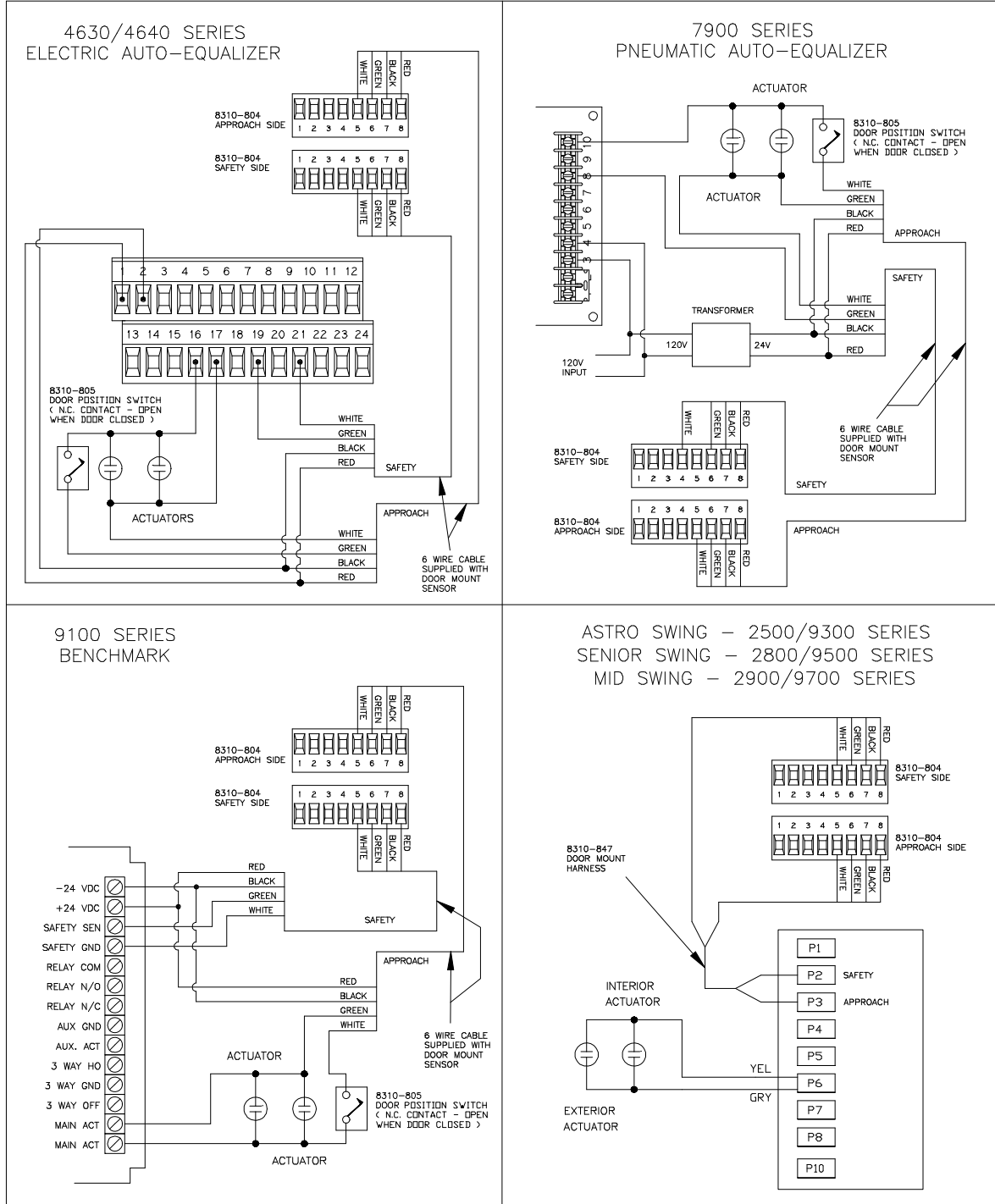
PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Door Mounted Safety Sensor does not work at all. No LED indications.	Faulty power supply Faulty connections	Power supply must be 12 to 24 VAC \pm 10% or 12 to 24 VDC \pm 10%. Check for this power at terminals 7 & 8 of the affected DMSS module.
DMSS output appears to be working opposite of what is expected.	Relay output may be configured improperly.	Refer to Appendix for relay configurations. Be sure to observe the LED indications on the affected modules to help determine status.
Door stops by itself before reaching the full open position.	Safety side DMSS may be seeing an adjacent wall or rail behind the door near the open position.	Observe the LED status on safety side of door. Find the Door Mounted Safety Sensor module that is falsely being triggered. Check for: <ul style="list-style-type: none"> <input type="checkbox"/> Proper detection angle <input type="checkbox"/> Detection range adjustment Door Mounted Safety Sensor may need to be inhibited at a specific point of door travel at the safety side for proper operation. Refer to the terminal connections on page 4.
Activation or safety is being held triggered.	DMSS detection module may be seeing the floor or unwanted object near door.	Reduce the detection range on the affected module(s). Detection should occur at 12" to 16" above the floor.
Erratic detection behavior is occurring throughout the door's opening and closing cycle.	Possible faulty wiring at door transfer location.	Check each wire for continuity with a multi-meter, at the transfer location. Move the wires around during testing to help locate any breaks. Replace faulty wiring as necessary.

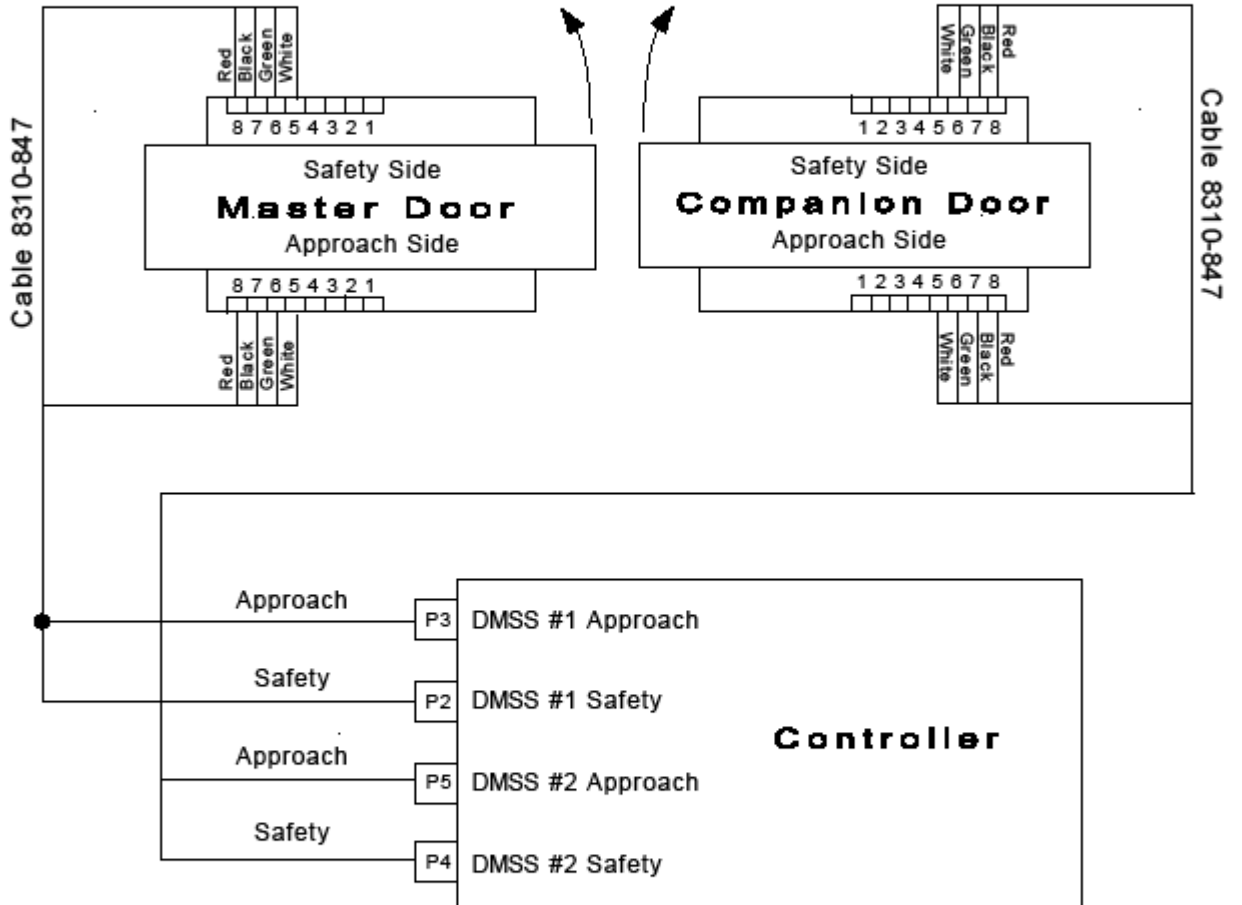
COMPANY CONTACT

Do not leave problems unresolved. If a satisfactory cannot be achieved after troubleshooting a problem, please contact LCN at 1-800-526-2400. If you must wait for the following workday to call, 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.

For more information, visit www.lcn.ingersollrand.com.

8310-804 DOOR MOUNT
SAFETY SENSOR
SINGLE DOOR WIRING





1 Description

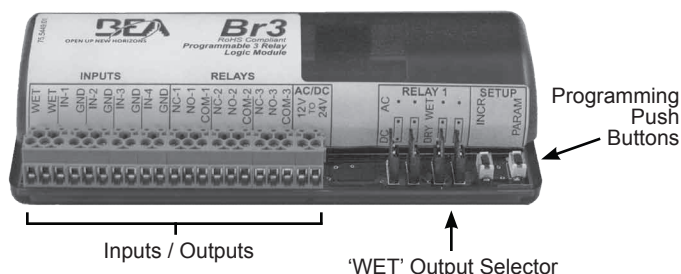
The 8310-845 is a programmable 3 relay logic module that may be used for multiple applications, including simple timing, door mounted sensor inhibiting and advanced relay sequencing. The 8310-845 contains 12 different programmable functions which allow the technician to carry one and only one module.

In addition to the ability to provide up to 3 Amps through the first two relays and 1 Amp through the third relay used in "DRY" mode, the 8310-845 provides the ability to select a 'WET' voltage output of up to 1 Amp on Relay 1 to power electric strikes and magnetic locks without the need for an external power supply. This feature can greatly simplify the installation (as long as the power supply powering the 8310-845 is rated for 1 Amp).

The 'WET' output can also be set using jumpers to output DC if the 8310-845 is supplied with AC, otherwise it will just pass the AC voltage that is supplied. Similarly if powered by DC, the 'WET' output will only output DC.

The module provides removable screw terminal connectors which help to reduce extra wiring.

Another feature of the 8310-845 is that it also provides an easy 2-button digital programming with a user-friendly display, hold times being adjustable from 0 to 60 seconds, and delay times being adjustable from 0 to 60 seconds with ¼, ½ and ¾ also available to the applicable functions.



8310-845 APPLICATIONS GUIDE (Refer to the corresponding page number for a more detailed description and programming of each function.)			
FUNCTION	SUBJECT	DESCRIPTION	PAGE
21 (LE21)	Inhibitor w/Door Position Input	Provides an activation of Relay 1 with an inhibitor of activation of Input 1 until Input 2, Input 3 or 'WET' Input is triggered, which all activate Relay 1. Additionally Input 4 provides a door position switch input for which closing it will re-inhibit Input 1.	5
25 (MC25)	2 Relay Sequence	Provides a sequence for Relay 1 and/or Relay 2 triggered by Input 1 or 'WET' Input.	7
55 (MC65)	2-Way, 2 Relay Sequence	Provides a two-way sequencer to sequence Relay 1 and/or Relay 2 triggered by Input 1. Similarly, it also provides a sequence in the opposite direction to sequence Relay 2 and/or Relay 1 triggered by Input 2. Inputs 3 and 4 also trigger Relays 1 and 2 individually.	13

2 Specifications

DESCRIPTION	SPECIFICATION	DESCRIPTION	SPECIFICATION
Supply Voltage	12 to 24 VAC/VDC: +/- 10%	Contact Rating 'DRY' - Relay 1	3 A at 24 VAC; 3 A at 30 VDC
Current Consumption	30 to 130 mA ('DRY' Output)	- Relay 2	3 A at 24 VAC; 3 A at 30 VDC
Temperature Range	-15°F (-26°C) to +150°F (65°C)*	- Relay 3	1 A at 24 VAC; 1 A at 30 VDC
Input Specification	Inputs 1 to 4: 'DRY' Contact 'WET' Input: 5 VAC/VDC to 24 VAC/VDC: +/- 10%	Contact Rating 'WET' - Relay 1	1 A
		Dimensions	5.2" (133mm) W x 2.2" (55mm) D x 1" (25mm) H
		Housing Material	ABS – Grey Translucent

*NOTE: If the 8310-845 is powered with AC voltage and is using the 'WET' output to convert to DC, and the current draw of the device is greater than .9 amps the upper temperature range is +130°F (54°C).

3 Precautions



CAUTION

- Shut off all power before attempting any wiring procedures.
- Maintain a clean & safe environment when working in public areas.
- Constantly be aware of pedestrian traffic around the door area.
- Always stop pedestrian traffic through the doorway when performing tests that may result in unexpected reactions by the door.
- ESD: Circuit boards are vulnerable to damage by electrostatic discharge. Before handling ensure you dissipate your body's charge.
- Always check placement of components before powering up so that moving parts will not catch any wires or cause damage to equipment.
- Ensure compliance with all applicable safety standards (i.e. ANSI A156.10 / 19) upon completion of installation.
- When preparing to wire multiple devices together for a 'system' configuration, it is best to ensure the correct operation of each device independently before starting to help reduce troubleshooting time later, in the event of a discrepancy.
- When applying equipment on a new installation, utilizing new electrical supply circuits, always ensure that correct line voltage exists and is stable. Remember to shut the power back off once this is checked, before performing any wiring to the system.
- DO NOT attempt any internal repair of the sensor. All repairs and/or component replacements must be performed by LCN, 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 resulting in a voided warranty.

4 Jumper Settings

1. The 8310-845 contains two (2) sets of jumpers. Both sets deal with configuring Relay 1 options:

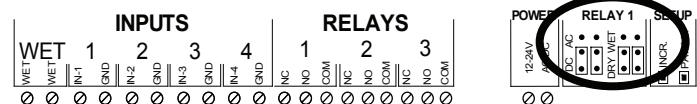
Jumper set 1 configures whether or not to output AC or DC voltage if the 'WET' output is selected. Jumper set 2 configures whether or not the Relay 1 output is 'WET' or 'DRY'. The 'WET' voltage output means that the module will supply a voltage output of up to 1 Amp on Relay 1 to power electric strikes and magnetic locks without the need for an external power supply. This feature can greatly simplify the installation (as long as the power supply powering the 8310-845 is rated for 1 Amp).

The 'WET' output can also be set using jumpers to output DC if the 8310-845 is supplied with AC, otherwise it will just pass the AC voltage that is supplied. Similarly if powered by DC, the 'WET' output will only output DC.

- To set Relay 1 to output DC (if 'WET') move **both** shunts (2) on Jumper Set 1, to the two (2) lower pins.
- To set Relay 1 to output AC (if 'WET' and powered with AC) move **both** shunts (2) on Jumper Set 1, to the two (2) upper pins.
- To set Relay 1 to output 'DRY' (Jumper Set 1 becomes unused), move **both** shunts (2) on Jumper Set 2, to the two (2) lower pins.
- To set Relay 1 to output 'WET', move **both** shunts (2) on Jumper Set 2, to the two (2) upper pins.

CAUTION: RELAY 1 WET OUTPUT OPTION IS ACTIVE FOR ALL FUNCTIONS.

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NOTE: Default jumper settings make Relay 1 output 'DRY' only. All four jumpers set to lower pins.

4 Jumper Settings (Continued)

PRECAUTIONS TO OBSERVE WHEN USING A 'WET' OUTPUT

- ❑ Never change the switch settings when the module has power connected to it or when a load is applied.
- ❑ Never allow 2 different voltage sources to be connected to the load (electric strike for example) at the same time. This can result in serious damage to equipment.
- ❑ Always move **both** shunts when changing a jumper set.
- ❑ If an EL device is being powered by a separate power source, DO NOT select the 'WET' output option on the 8310-845. If 'WET' is selected, the next activation of the module will send a voltage to the load and if there is already a voltage being applied from another source, the 8310-845 and possibly the load will be permanently damaged.
- ❑ When using the 'WET' output option on the 8310-845, set all desired switch positions ('WET' – 'DRY' and AC – DC) before the module is powered and before any loads are applied.
- ❑ When DC 'WET' output is selected, COM terminal is positive(+) and the ground(-) is switched between NO and NC.
- ❑ Ensure there is no other voltage connected to the load. Whatever the Input voltage is at the 8310-845, the output will correspond. The following can also be observed:
 1. If voltage Input at the 8310-845 is AC, then output selection can be AC or DC.
 2. If voltage Input at the 8310-845 is DC, then output selection can only be DC.
 3. The maximum load applied to Relay 1 should never exceed 1A. If more than one device is to be connected, add the consumption values together for a total value. If current is excessive, damage to equipment can result.
 4. On the 8310-845, the 'WET' output is only available at Relay 1.
- ❑ When supplying 8310-845 with AC input voltage, and selecting 'WET' output on relay **with** DC conversion, you actually get rectified AC voltage, which is identical to applying a bridge rectifier to any AC voltage.

CAUTION: Relay 1 'WET' OPTION IS ACTIVE FOR ALL FUNCTIONS!

5 Selecting the Function

The following steps are to program the 8310-845 to select and configure the desired function.

1. When there is no function set, as is the case on an initial power on, or if you desire to change the function, the user must first press and hold both push buttons (INCR & PARAM) for three (3) seconds to activate the display. At this point the display will toggle between FF and 00 every one (1) second for five (5) seconds after the last button has been pressed.
2. By pressing on the INCR button, the user can toggle through each function to select the function. A display of $i0$ corresponds to function MC10, $\#$ corresponds to function MC11, etc. Once you reach the last function, 75 , the list will rollover to the beginning.

NOTE: Selecting 00 disables the module.

3. After selecting the function, the user can then press the PARAM button to cycle through and set the parameters defined for that particular function, if applicable. If there are any function parameters, the display will toggle between the parameter and its current value every one (1) second for five (5) seconds after the last button has been pressed. If there are no parameters, n^P and -- will be displayed as a parameter and its value for five (5) seconds.

NOTE: Once the PARAM button has been pressed as to set the function's respective parameters and values, the user will not be able to go back and select a different function until the display goes inactive and the user repeats the above process starting with Step 1. This prevents the user from inadvertently changing functions or selecting variables from different functions.

4. After selecting the function's parameter to change, the user can press the INCR button to increment the parameter's value. A single press of the INCR button will increment the value by one, but holding the increment button will allow for a rapid increment of the value.
5. Once all parameters for the function are set, wait the five (5) seconds for the display to go inactive and the 8310-845 to save the updated parameters. The 8310-845 is now programmed. As long as no relays are active, the display will show the function selected, otherwise it will show those relays. Once the values are changed, they are only saved after the display goes inactive again (5 seconds).

NOTE: Remember that the INCR push button always increments the value of the parameter that you are looking at, and the PARAM push button toggles through the available parameters.

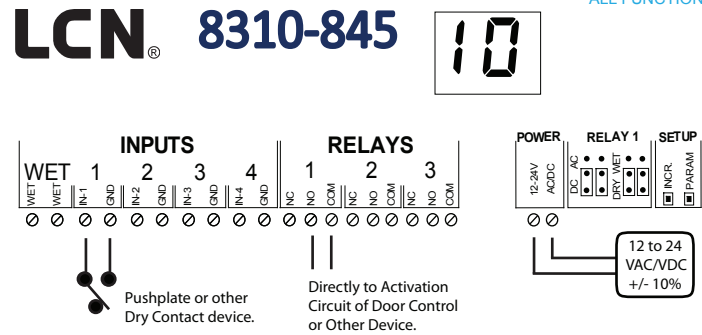
NOTE: To change only the value of a parameter under the function, start the process with Step 3.

6A Function $\overline{1}$ - Timer Module (MC10)

CAUTION: RELAY 1 WET OUTPUT OPTION IS ACTIVE FOR ALL FUNCTIONS.

The MC10 provides an activation of Relay 1 triggered by Input 1. The function also provides an option for reverse-logic for the activation of Input 1. Adjustable parameters include hI for activation hold time of Relay 1 and rL for reverse logic for Input 1. A re-activation of Input 1 will re-start the hold timer and keep the relay active. A maintained Input 1 will freeze the hold timer thus keeping its relay active until the Input is released, which will allow the hold timer to expire and deactivate the relay normally. A reverse logic version of the timer function is also offered in which the logic on Input 1 is reversed, thus to activate the timer, the input must be opened.

A typical application is to have a push-plate to activate a door controller. For this scenario the push-plate would be wired to Input 1 and the door controller would be wired to Relay 1. An example wiring diagram for this scenario is shown.



MC10 SETUP

1. Wire the 8310-845 accordingly.
2. Select the MC10 as the function according to the steps outlined in Section 5 – Selecting the Function.
 - Press and hold both push buttons (INCR & PARAM) for three (3) seconds to activate the display.
 - Press the INCR button to toggle through each function and select $\overline{1}$.
3. Set the MC10 parameters according to the steps outlined in Section 5 – Selecting the Function.
 - Press PARAM button to cycle through and set the parameters.
 - Press the INCR button to increment the parameter's value.

Parameters for the MC10 function are shown in the chart. Set the parameters as needed for the application, and wait for the display to become inactive to save the configuration.

PARAMETER (PARAM Button)	DESCRIPTION	POSSIBLE VALUES (INCR Button)
hI	Relay 1 hold time	'00' through '50'. Relay 1 hold time will not begin counting down until the release of Input 1.
rL	Activation Logic Input	'00' = Normal Logic: The activation device at Input 1 must be normally opened and close its contacts to trigger the timer. '01' = Reverse Logic: The activation device at Input 1 must be normally closed and open its contacts to trigger the timer.

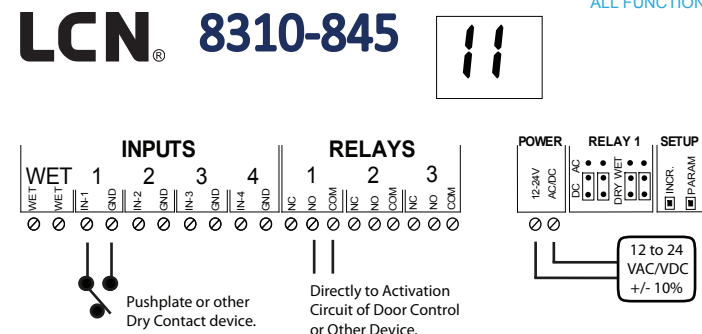
4. Once programming is complete, test the 8310-845. Trigger the timer via Input 1. Ensure that Relay 1 activates and its hold time is as programmed. The display will show rI when Relay 1 is energized and $t0$ when de-energized.
5. Upon completion of the above steps, walk test the door to ensure all functions, timers, sensors, etc. are working as intended, and that the system is in compliance with all applicable standards (i.e. ANSI A156.10, A156.19).

6B Function $\#$ - Ratchet (MC11)

CAUTION: RELAY 1 WET OUTPUT OPTION IS ACTIVE FOR ALL FUNCTIONS.

The MC11 function provides a ratcheting of Relay 1 triggered by Input 1. Each trigger by Input 1 will change the state of Relay 1. MC11 has NO adjustable parameters. If Input 1 is maintained, Relay 1 will only change state once. Input 1 must then be opened and re-closed for a relay change of state.

A typical application is to have a set of push-to-open and push-to-close push-plates connected to a door in the instance that a single hold time will not suit all users of the door. For this scenario the push-to-open push-plate would be wired in parallel with the push-to-close push-plate to Input 1 and the door controller would be wired to Relay 1. An example wiring diagram for this scenario is shown.



MC11 SETUP

1. Wire the 8310-845 accordingly.
2. Select the MC11 as the function according to the steps outlined in Section 5 – Selecting the Function.
 - Press and hold both push buttons (INCR & PARAM) for three (3) seconds to activate the display.
 - Press the INCR button to toggle through each function and select $\#$.
3. There are NO parameters to set for the MC11 as the state of Relay 1 is not based on time, so just wait for the display to become inactive to save the configuration.
4. Once programming is complete, test the 8310-845. Trigger the ratchet via Input 1. Ensure that Relay 1 changes state and that it is maintained. The display will show rI when Relay 1 is energized. Trigger the ratchet again via Input 1 and ensure Relay 1 changes state again. The display will show $\#$ when Relay 1 is de-energized.
5. Upon completion of the above steps, walk test the door to ensure all functions, timers, sensors, etc. are working as intended, and that the system is in compliance with all applicable standards (i.e. ANSI A 156.10, A156.19).

6C Function 21 - Inhibitor (LE21)

CAUTION: RELAY 1 WET OUTPUT OPTION IS ACTIVE FOR ALL FUNCTIONS.

The LE21 function provides activation of Relay 1 with an inhibitor of activation for Input 1 until Input 2, Input 3 or 'WET' Input is triggered, which all activate Relay 1. Additionally Input 4 provides a door position switch input for which closing it will re-inhibit Input 1. Adjustable parameters include *hi* for activation hold time of Relay 1.

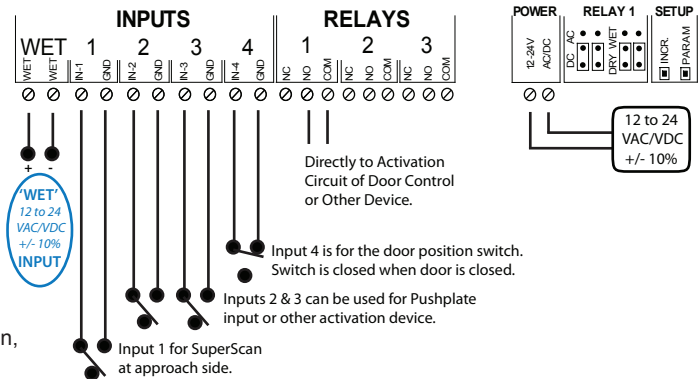
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NOTE: The door position switch must have a closed contact when the door is closed and an opened contact when it is not.

A typical application is a 'Low-Energy' situation in which you have only 'Knowing-Act' activation devices such as push-plates, a re-activation device, such as a SuperScan, on the door for safety and a door position switch. For this scenario the push-plates would be wired to Inputs 2 and/or 3, the SuperScan would be wired to Input 1, a door position switch on Input 4 and the door controller on Relay 1. When the door position switch on Input 4 is closed, the SuperScan Input is ignored (inhibited) and only becomes a re-activation device (uninhibited) after an activation on Input 2 or Input 3. The SuperScan on Input 1 will remain uninhibited until the door is closed again, closing Input 4. An example wiring diagram for this scenario is shown.

NOTE: While the 'WET' Input is not involved in our typical application, it will still function as Input 2 and Input 3.



LE21 SETUP

- Wire the 8310-845 accordingly.
- Select the LE21 as the function according to the steps outlined in Section 5 – Selecting the Function.
 - Press and hold both push buttons (INCR & PARAM) for three (3) seconds to activate the display.
 - Press the INCR button to toggle through each function and select 21.
- Set the lone LE21 parameter according to the steps outlined in Section 5 – Selecting the Function.
 - Press PARAM button to cycle through and set the parameters.
 - Press the INCR button to increment the parameter's value.

The single parameter for the LE21 function is shown in the chart. Set it as needed for the application, and wait for the display to become inactive to save the configuration

PARAMETER (PARAM Button)	DESCRIPTION	POSSIBLE VALUES (INCR Button)
<i>hi</i>	Relay 1 hold time	'00' through '50'. Relay 1 hold time will not begin counting down until the release of an activation input.

- Once programming is complete, test the 8310-845. Attempt to trigger the timer via the re-activation device tied to Input 1. Ensure that Relay 1 does NOT energize as it should be inhibited. The display should still show 21 since Relay 1 is de-energized. Now trigger the timer via Input 2, Input 3 or 'WET' Input. Ensure that Relay 1 activates and its hold time and is as programmed. The display will show *ri* when Relay 1 is energized. Before the door closes attempt to re-activate the timer via the device tied to Input 1. The door should re-open and the timer should restart. Once again observe the relay hold time and ensure that it is as programmed. Let the door close to close Input 4 via the door position switch. Once again attempt to trigger the timer via the re-activation device tied to Input 1. Ensure that Relay 1 does NOT energize as it should be re-inhibited.
- Upon completion of the above steps, walk test the door to ensure all functions, timers, sensors, etc. are working as intended, and that the system is in compliance with all applicable standards (i.e. ANSI A156.10, A156.19).

6D Function 22 - 2 Relay Sequence w/Inhibitor (LE22)

CAUTION: RELAY 1 WET OUTPUT OPTION IS ACTIVE FOR ALL FUNCTIONS.

The LE22 function provides a sequence for Relay 1 and/or Relay 2 with an inhibitor of activation for Input 1 until Input 2, Input 3 or 'WET' Input is triggered, which all activate the sequence. Additionally Input 4 provides a door position switch input for which closing it will re-inhibit Input 1. Simply put this function is a combination between a LE21 and MC25. Adjustable parameters include *h1* for activation hold time of Relay 1, *h2* for activation hold time of Relay 2 and *d1* for delay between activation of Relay 1 to Relay 2. A re-activation of the sequence before it expires will re-start both hold timers and keep the relays active. A maintained input will freeze both hold timers, thus keeping their relays active until the input is released, which will allow the hold timers to expire and deactivate the relays normally.

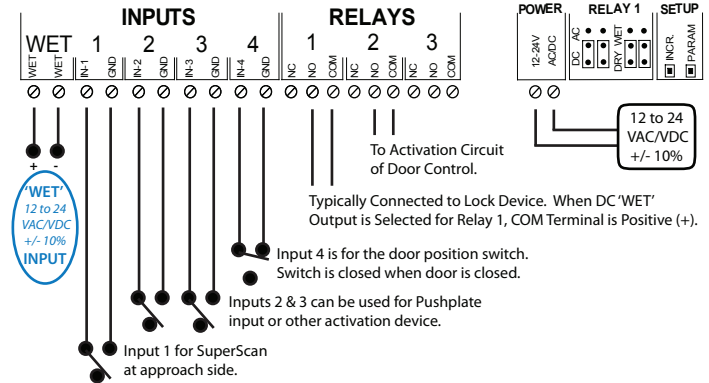
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NOTE: The delay timer will only fire one time during initial activation or maintained input.

NOTE: The door position switch must have a closed contact when the door is closed and an opened contact when it is not.

A typical application is a 'Low-Energy' situation, which needs security, in which you have only 'Knowing-Act' activation devices such as push-plates and a re-activation device, such as a SuperScan, on the door for safety and a door position switch. For this scenario the push-plates would be wired to Inputs 2 and/or 3, the SuperScan would be wired to Input 1, a door position switch on Input 4, a security device such as a Maglock or electric strike on Relay 1 and the door controller on Relay 2. When the door position switch on Input 4 is closed, the SuperScan input is ignored (inhibited) and only becomes a re-activation device (uninhibited) after an activation on Input 2 or Input 3. The SuperScan on Input 1 will remain uninhibited until the door is closed again closing Input 4. An example wiring diagram for this scenario is shown.



NOTE: While the 'WET' Input is not involved in our typical application, it will still function as Input 2 and Input 3 do if used.

LE22 SETUP

1. Wire the 8310-845 accordingly.
2. Select the LE22 as the function according to the steps outlined in Section 5 – Selecting the Function.
 - Press and hold both push buttons (INCR & PARAM) for three (3) seconds to activate the display.
 - Press the INCR button to toggle through each function and select 22.
3. Set the LE22 parameters according to the steps outlined in Section 5 – Selecting the Function.
 - Press PARAM button to cycle through and set the parameters.
 - Press the INCR button to increment the parameter's value.

Parameters for the LE22 function are shown in the chart. Set the parameters as needed for the application and wait for the display to become inactive to save the configuration.

PARAMETER (PARAM Button)	DESCRIPTION	POSSIBLE VALUES (INCR Button)
<i>h1</i>	Relay 1 hold time	'00' through '50'. Relay 1 hold time will not begin counting down until the release of Input 1.
<i>h2</i>	Relay 2 hold time	'00' through '50'. Relay 2 hold time will not begin counting down until the delay between Relay 1 and Relay 2 expires.
<i>d1</i>	Delay between Relay 1 and Relay 2	'00', '1' (1/4), '2' (1/2), '3' (3/4), '0' through '50' seconds. The delay time will begin counting down with activation of sequence.

4. Once programming is complete, test the 8310-845. Attempt to trigger the sequence via the re-activation device tied to Input 1. Ensure that the sequence does NOT start as it should be inhibited. The display should still show 22 since Relay 1 is de-energized. Now trigger the sequence via Input 2, Input 3 or 'WET' Input. Ensure that the sequence runs and the Relays activate and the timers are as programmed. The display will show r1 when Relay 1 is energized, r2 when both Relay 1 and Relay 2 are energized at the same time. Before the door closes attempt to re-activate the sequence via the device tied to Input 1. The door should re-open immediately and the relay hold timers should restart. Once again observe the relay hold times and ensure that it is as programmed. Let the door close and trigger Input 4 via the door position switch. Once again attempt to trigger the sequence via the re-activation device tied to Input 1. Ensure that sequence does NOT start as it should be re-inhibited.
5. Upon completion of the above steps, walk test the door to ensure all functions, timers, sensors, etc. are working as intended, and that the system is in compliance with all applicable standards (i.e. ANSI A156.10, A156.19).

6E Function 25 - 2 Relay Sequence (MC25)

The MC25 function provides a sequence for Relay 1 and/ or Relay 2 triggered by Input 1 or 'WET' Input. Adjustable parameters include *h1* for activation hold time of Relay 1, *h2* for activation hold time of Relay 2 and *d1* for delay between activation of Relay 1 to Relay 2. A re-activation of Input 1 or 'WET' Input before the sequence expires will re-start both hold timers and keep the relays active. A maintained input will freeze both hold timers, thus keeping their relays active until the input is released, which will allow the hold timers to expire and deactivate the relays normally.

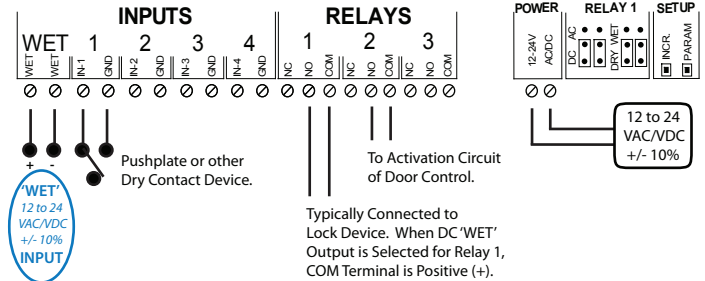
CAUTION: RELAY 1 WET OUTPUT OPTION IS ACTIVE FOR ALL FUNCTIONS.



NOTE: The delay timer will only fire one time during initial activation or maintained input.

NOTE: The functionality for MC25 has changed slightly in this version as it will also check the 'WET' Input.

A typical application is a security door in which you have a push-plate to start the sequence to unlock the security device, such as a Maglock or electric strike and then activate the door controller. For this scenario the push-plate would be wired to Input 1, the security device would be wired to Relay 1 and the door controller would be wired to Relay 2. An example wiring diagram for this scenario is shown.



NOTE: While the 'WET' Input is not involved in our typical application, it will still function as Input 1 does if used

MC25 SETUP

1. Wire the 8310-845 accordingly.
2. Select the MC25 as the function according to the steps outlined in Section 5 – Selecting the Function.
 - Press and hold both push buttons (INCR & PARAM) for three (3) seconds to activate the display.
 - Press the INCR button to toggle through each function and select 25.
3. Set the MC25 parameters according to the steps outlined in Section 5 – Selecting the Function.
 - Press PARAM button to cycle through and set the parameters.
 - Press the INCR button to increment the parameter's value.

Parameters for the MC25 function are shown in the chart. Set the parameters as needed for the application, and wait for the display to become inactive to save the configuration.

PARAMETER (PARAM Button)	DESCRIPTION	POSSIBLE VALUES (INCR Button)
<i>h1</i>	Relay 1 hold time	'00' through '50' - Relay 1 hold time will not begin counting down until the release of Input 1 or 'WET' Input.
<i>h2</i>	Relay 2 hold time	'00' through '50' - Relay 2 hold time will not begin counting down until the delay between Relay 1 and Relay 2 expires.
<i>d1</i>	Delay between Relay 1 and Relay 2	'00', '1' (1/4), '2' (1/2), '3' (3/4), '0' through '50' seconds. The delay time will begin counting down with the activation of the sequence.

4. Once programming is complete, test the 8310-845. Trigger the sequence via Input 1 or 'WET' Input. Ensure that the sequence runs and the relays activate and the timers are as programmed. The display will show *r1* when Relay 1 is energized, *r2* when Relay 2 is energized and *r:* when both Relay 1 and Relay 2 are energized at the same time.
5. Upon completion of the above steps, walk test the door to ensure all functions, timers, sensors, etc. are working as intended, and that the system is in compliance with all applicable standards (i.e. ANSI A156.10, A156.19).

6F Function 28 - 2 Relay Sequence w/Position Input (MC28)

The MC28 function provides a sequence for Relay 1 and/or Relay 2 triggered by Input 1 or 'WET' Input. Additionally Input 2 provides a door position switch input which allows the delay to run when Input 2 is opened, but not run when closed. Simply put, this function is an MC25 with a normally opened door position switch input to determine if the delay should run. Adjustable parameters include *h1* for activation hold time of Relay 1, *h2* for activation hold time of Relay 2 and *d1* for delay between activation of Relay 1 to Relay 2. A maintained input will freeze both hold timers, thus keeping their relays active until the input is released, which will allow the hold timers to expire and deactivate the relays normally.

CAUTION: RELAY 1 WET OUTPUT OPTION IS ACTIVE FOR ALL FUNCTIONS.

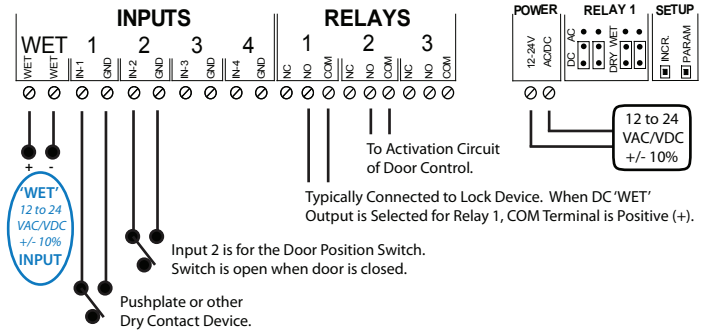
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NOTE: The delay timer will only fire when Input 2 is opened.

NOTE: The door position switch must have an opened contact when the door is closed, and a closed contact when it is not. (Position switch logic is different than 21, 22, 50 and 55.)

A typical application is a security door in which you have a push-plate to start the sequence to unlock the security device, such as a Maglock or electric strike and then activate the door controller and an additional door position switch. For this scenario the push-plate would be wired to Input 1, the position switch would be wired to Input 2, the security device would be wired to Relay 1 and the door controller would be wired to Relay 2. An example wiring diagram for this scenario is shown.



NOTE: While the 'WET' Input is not involved in our typical application, it will still function as Input 1 does if used.

MC28 SETUP

1. Wire the 8310-845 accordingly.
2. Select the MC28 as the function according to the steps outlined in Section 5 – Selecting the Function.
 - Press and hold both push buttons (INCR & PARAM) for three (3) seconds to activate the display.
 - Press the INCR button to toggle through each function and select 28.
3. Set the MC28 parameters according to the steps outlined in Section 5 – Selecting the Function.
 - Press PARAM button to cycle through and set the parameters.
 - Press the INCR button to increment the parameter's value.
 Parameters for the MC28 function are shown in the chart. Set the parameters as needed for the application, and wait for the display to become inactive to save the configuration.

PARAMETER (PARAM Button)	DESCRIPTION	POSSIBLE VALUES (INCR Button)
<i>h1</i>	Relay 1 hold time	'00' through '50' - Relay 1 hold time will not begin counting down until the release of Input 1 or 'WET' Input.
<i>h2</i>	Relay 2 hold time	'00' through '50' - Relay 2 hold time will not begin counting down until the delay between Relay 1 and Relay 2 expires.
<i>d1</i>	Delay between Relay 1 and Relay 2	'00', '_1' (1/4), '_2' (1/2), '_3' (3/4), '01' through '50' seconds. The delay time will begin counting down with the activation of the sequence.

4. Once programming is complete, test the 8310-845. Trigger the sequence via Input 1 or 'WET' Input. Ensure that the sequence runs and the relays activate and the timers are as programmed. The display will show *r1* when Relay 1 is energized, *r2* when Relay 2 is energized and *r-* when both Relay 1 and Relay 2 are energized at the same time. Ensure that the delay between Relay 1 and Relay 2 runs when the sequence starts from the door closed position. Now, re-run the sequence; however this time before the door reaches the closed position, reactivate the door and ensure that the door reactivates immediately as the delay between timer, *d1* does NOT run.
5. Upon completion of the above steps, walk test the door to ensure all functions, timers, sensors, etc. are working as intended and that the system is in compliance with all applicable standards (i.e. ANSI A156.10, A156.19).

6G Function 29 - Relay 1 Deactivation Timer (MC29)

CAUTION: RELAY 1 WET OUTPUT OPTION IS ACTIVE FOR ALL FUNCTIONS.

The MC29 function provides a sequence for Relay 1 and/or Relay 2 triggered by Input 1 or 'WET' Input. Additionally Input 2 provides a door position switch input which allows the Relay 1 to deactivate once Input 2 is opened after the sequence has run. Input 2 also allows the delay to run when Input 2 is opened, but not run when closed, as in the MC28. Input 3 provides an input to disable the sequence whose logic is also selectable. Simply put Relay 1 will be active the entire time until the normally opened door position switch signifies that the door has come closed again. Adjustable parameters include *h1* for activation hold time of Relay 1 after the door position switch has closed, *h2* for activation hold time of Relay 2, *d1* for delay between activation of Relay 1 to Relay 2 and *rL* for reverse logic for Input 3.

NOTE: The delay timer will only fire one time during initial activation or maintained input.

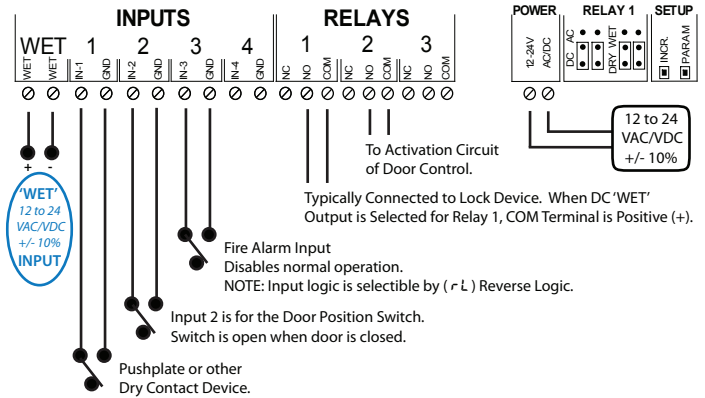
NOTE: The door position switch must have an opened contact when the door is closed, and a closed contact when it is not. (Position switch logic is different than 21, 22, 50 and 55.)

A typical application is a security door in which you have a pushplate to start the sequence to unlock the Maglock, which you would want unlocked for the entire sequence until the door becomes closed again, then activate the door controller and an additional door position switch. For this scenario the push-plate would be wired to Input 1, the position switch would be wired to Input 2, the Maglock would be wired to Relay 1 and the door controller would be wired to Relay 2. An example wiring diagram for this scenario is shown.

NOTE: While the 'WET' Input is not involved in our typical application, it will still function as Input 1 does if used.

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MC29 SETUP

- Wire the 8310-845 accordingly.
- Select the MC29 as the function according to the steps outlined in Section 5 – Selecting the Function.
 - Press and hold both push buttons (INCR & PARAM) for three (3) seconds to activate the display.
 - Press the INCR button to toggle through each function and select 29.
- Set the MC29 parameters according to the steps outlined in Section 5 – Selecting the Function.
 - Press PARAM button to cycle through and set the parameters.
 - Press the INCR button to increment the parameter's value.

Parameters for the MC29 function are shown in the chart. Set the parameters as needed for the application, and wait for the display to become inactive to save the configuration.

PARAMETER (PARAM Button)	DESCRIPTION	POSSIBLE VALUES (INCR Button)
<i>h1</i>	Relay 1 hold time	'00' through '50' - Relay 1 hold time will not begin counting down until the release of Input 2.
<i>h2</i>	Relay 2 hold time	'00' through '50' - Relay 2 hold time will not begin counting down until the delay between Relay 1 and Relay 2 expires.
<i>d1</i>	Delay between Relay 1 and Relay 2	'00', '_1' (1/4), '_2' (1/2), '_3' (3/4), '01' through '50' seconds. The delay time will begin counting down with the activation of the sequence.
<i>rL</i>	Input 3 Logic	'00' = Normal Logic: The activation device at Input 3 must be normally opened and close it's contacts to disable the sequence. '01' = Reverse Logic: The activation device at Input 3 must be normally closed and open it's contacts to disable the sequence.

- Once programming is complete, test the 8310-845. Trigger the sequence via Input 1 or 'WET' Input. Ensure that the sequence runs and the relays activate and the timers are as programmed. The display will show *r1* when Relay 1 is energized, *r2* when Relay 2 is energized and *r=* when both Relay 1 and Relay 2 are energized at the same time. Ensure that the delay between Relay 1 and Relay 2 runs when the sequence starts from the door closed position. Ensure that Relay 1 stays active the entire time until the door returns to the closed position. Now, re-run the sequence; however this time before the door reaches the closed position, reactivate the door and ensure that the door reactivates immediately as the delay between timer, *d1* does NOT run. Finally check the sequence disabling feature by triggering Input 3, while at the same time attempting to run the sequence by triggering Input 1 or 'WET' Input. The sequence should NOT run again until Input 3 is released.
- Upon completion of the above steps, walk test the door to ensure all functions, timers, sensors, etc. are working as intended and that the system is in compliance with all applicable standards (i.e. ANSI A156.10, A156.19).

6H Function 35 - 3 Relay Sequence (MC35)

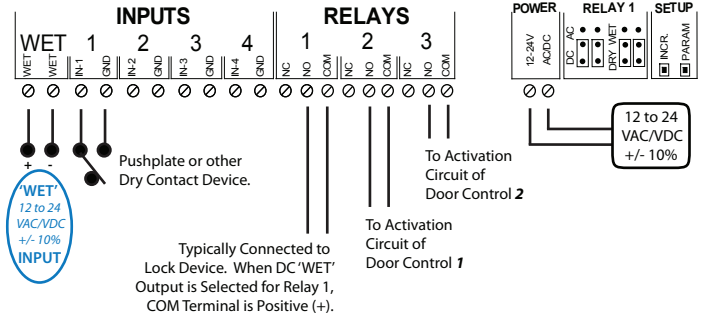
The MC35 function provides a sequence for Relay 1 and/or Relay 2 and/or Relay 3 triggered by Input 1 or 'WET' Input. Simply put this function is a MC25 with three relays instead of two. Adjustable parameters include *h1* for activation hold time of Relay 1, *h2* for activation hold time of Relay 2, *h3* for activation hold time of Relay 3, *d1* for delay between activation of Relay 1 to Relay 2 and *d2* for delay between activation of Relay 1 to Relay 3. A re-activation of Input 1 or 'WET' Input before the sequence expires will re-start all hold timers and keep the relays active. A maintained input will freeze all hold timers thus keeping their relays active until the input is released, which will allow the hold timers to expire and deactivate the relays normally.

CAUTION: RELAY 1 WET OUTPUT OPTION IS ACTIVE FOR ALL FUNCTIONS.



NOTE: The delay timer will only fire one time during initial activation or maintained input.

A typical application is a secure pair of doors with flush bolts in which you have a push-plate to start the sequence to unlock the security device, such as a Maglock or electric strike, then activate the first door controller and then activate the second door controller. For this scenario the push-plate would be wired to Input 1, the security device would be wired to Relay 1, the first door controller would be wired to Relay 2 and the second door controller would be wired to Relay 3.



NOTE: While the 'WET' Input is not involved in our typical application, it will still function as Input 1 does if used.

MC35 SETUP

1. Wire the 8310-845 accordingly.
2. Select the MC35 as the function according to the steps outlined in Section 5 – Selecting the Function.
 - Press and hold both push buttons (INCR & PARAM) for three (3) seconds to activate the display.
 - Press the INCR button to toggle through each function and select 35.
3. Set the MC35 parameters according to the steps outlined in Section 5 – Selecting the Function.
 - Press PARAM button to cycle through and set the parameters.
 - Press the INCR button to increment the parameter's value.

Parameters for the MC35 function are shown in the chart. Set the parameters as needed for the application, and wait for the display to become inactive to save the configuration.

PARAMETER (PARAM Button)	DESCRIPTION	POSSIBLE VALUES (INCR Button)
<i>h1</i>	Relay 1 hold time	'00' through '50' - Relay 1 hold time will not begin counting down until the release of Input 1 or 'WET' Input.
<i>h2</i>	Relay 2 hold time	'00' through '50' - Relay 2 hold time will not begin counting down until the delay between Relay 1 and Relay 2 expires.
<i>h3</i>	Relay 3 hold time	'00' through '50' - Relay 3 hold time will not begin counting down until the delay between Relay 1 and Relay 3 expires.
<i>d1</i>	Delay between Relay 1 and Relay 2	'00', '1' (1/4), '2' (1/2), '3' (3/4), '0' through '50' seconds. The delay time will begin counting down with the activation of the sequence.
<i>d2</i>	Delay between Relay 1 and Relay 3	'00', '1' (1/4), '2' (1/2), '3' (3/4), '0' through '50' seconds. The delay time will begin counting down with the activation of the sequence.

4. Once programming is complete, test the 8310-845. Trigger the sequence via Input 1 or 'WET' Input. Ensure that the sequence runs and the relays activate and the timers are as programmed. The display will show *r1* when Relay 1 is energized, *r2* when Relay 2 is energized, *r3* when Relay 3 is energized, *r=* when Relay 1 and Relay 2 are energized at the same time, *r≡* when all three relays are energized or *r-* when Relay 1 and Relay 3 are energized at the same time.
5. Upon completion of the above steps, walk test the door to ensure all functions, timers, sensors, etc. are working as intended and that the system is in compliance with all applicable standards (i.e. ANSI A156.10, A156.19).

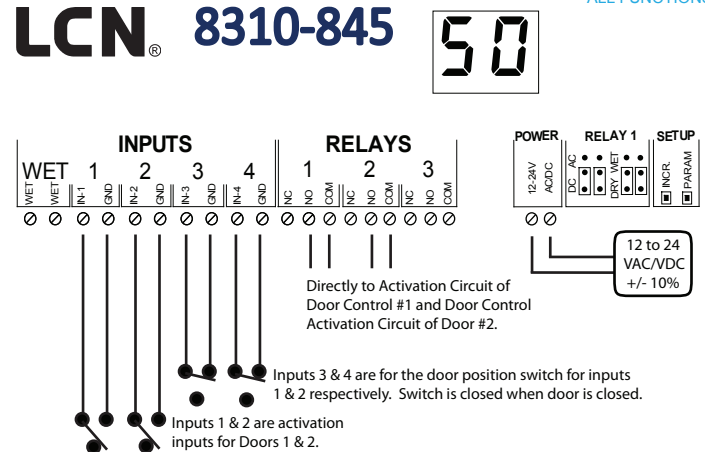
6I Function 50 - Interlock Timer (MC50)

CAUTION: RELAY 1 WET OUTPUT OPTION IS ACTIVE FOR ALL FUNCTIONS.

The MC50 function provides an interlock of Relay 1 and Relay 2 triggered by Inputs 1 and 2, with door position switch inputs on Input 3 for Input 1 and Input 4 for Input 2. Only one relay will be allowed to operate at a time thus making the two relays interlocked or mutually exclusive. In order to activate a relay, its corresponding position switch input must be closed. Adjustable parameters include $h1$ for activation hold time of Relay 1 and $h2$ for activation hold time of Relay 2. A re-activation or maintaining of an input while its respective relay is activated will restart the hold timer and keep the relay active.

NOTE: The door position switch must have a closed contact when the door is closed and an opened contact when it is not.

A typical application is to have a pair of doors on a clean room in which only one door can be opened at a time. Each door would have a push-plate and a door position switch. For this scenario each door's push-plate would be wired to Input 1 and Input 2, with the door position switches wired to Input 3 and Input 4 respectively, door controller 1 would be wired to Relay 1 and door controller 2 would be wired to Relay 2. An example wiring diagram for this scenario is shown.



MC50 SETUP

1. Wire the 8310-845 accordingly.
2. Select the MC50 as the function according to the steps outlined in Section 5 – Selecting the Function.
 - Press and hold both push buttons (INCR & PARAM) for three (3) seconds to activate the display.
 - Press the INCR button to toggle through each function and select 50.
3. Set the MC50 parameters according to the steps outlined in Section 5 – Selecting the Function.
 - Press PARAM button to cycle through and set the parameters.
 - Press the INCR button to increment the parameter's value.

Parameters for the MC50 function are shown in the chart. Set the parameters as needed for the application, and wait for the display to become inactive to save the configuration.

PARAMETER (PARAM Button)	DESCRIPTION	POSSIBLE VALUES (INCR Button)
$h1$	Relay 1 hold time	'00' through '50'. Relay 1 hold time will not begin counting down until the release of Input 1.
$h2$	Relay 2 hold time	'00' through '50'. Relay 2 hold time will not begin counting down until the release of Input 2.

4. Once programming is complete, test the 8310-845. Wait until both doors are closed then trigger Relay 1 via Input 1. Ensure that Relay 1 changes state and its hold time and is as programmed. The display will show $r1$ when Relay 1 is energized. Test the interlock by attempting to trigger Relay 2 via Input 2 while door 1 is still open. Relay 2 should NOT activate due to the first position switch being opened. Let Relay 1 timeout and the door to close. The display will show 50 when Relay 1 is de-energized. Once the first position switch is closed trigger Relay 2 via Input 2. Ensure that Relay 2 changes state and its hold time and is as programmed. The display will show $r2$ when Relay 2 is energized. Test the interlock by attempting to trigger Relay 1 via Input 1 while door 2 is still open. Relay 1 should NOT activate due to the second position switch being opened. The display will show 50 when Relay 2 is de-energized.
5. Upon completion of the above steps, walk test the door to ensure all functions, timers, sensors, etc. are working as intended, and that the system is in compliance with all applicable standards (i.e. ANSI A156.10, A156.19).

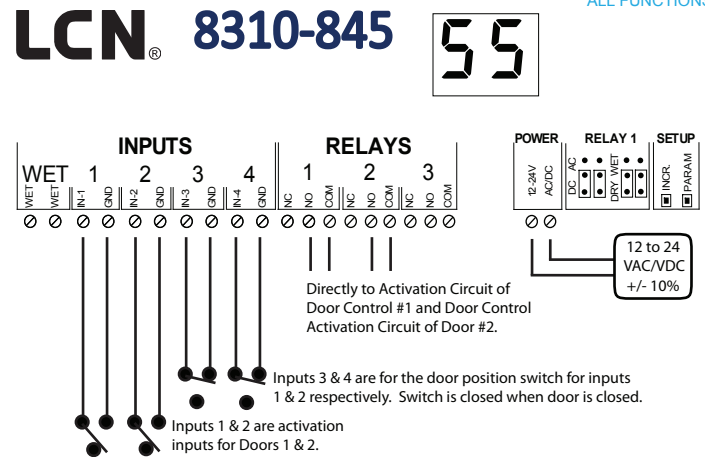
6J Function 55 - Interlock Ratchet (MC55)

The MC55 function provides an interlock ratchet of Relay 1 and Relay 2 triggered by Inputs 1 and 2, with door position switch inputs on Input 3 for Input 1 and Input 4 for Input 2. Only one relay will be allowed to operate at a time thus making the two relays interlocked or mutually exclusive. In order to activate a relay, its corresponding position switch input must be closed. Each trigger of an input will change the state of its respective relay. MC55 has NO adjustable parameters. If the input is maintained, its relay will only change state once. The input must then be opened and re-closed for a change of state.

NOTE: The door position switch must have a closed contact when the door is closed and an opened contact when it is not.

A typical application is to have a pair of doors on a clean room in which only one door can be opened at a time. Each door would have a set of push-plates connected to it in the instance that a single hold time will not suit all users of the door. Each door would also have a door position switch. For this scenario door number 1 and 2 push plates shall be wired in parallel to inputs 1 and 2 respectively, with the door position switches wired to Input 3 and Input 4 respectively, door controller 1 would be wired to Relay 1 and door controller 2 would be wired to Relay 2. An example wiring diagram for this scenario is shown below.

CAUTION: RELAY 1 WET OUTPUT OPTION IS ACTIVE FOR ALL FUNCTIONS.



MC55 SETUP

1. Wire the 8310-845 accordingly.
2. Select the MC55 as the function according to the steps outlined in Section 5 – Selecting the Function.
 - Press and hold both push buttons (INCR & PARAM) for three (3) seconds to activate the display.
 - Press the INCR button to toggle through each function and select 55.
3. There are NO parameters to set for the MC55 as the state of Relay 1 and Relay 2 are not based on time, so just wait for the display to become inactive to save the configuration.
4. Once programming is complete, test the 8310-845. Wait until both doors are closed then trigger Relay 1 via Input 1. Ensure that Relay 1 changes state and that is maintained. The display will show $r1$ when Relay 1 is energized. Test the interlock by attempting to trigger Relay 2 via Input 2. Relay 2 should NOT activate due to the first position switch being opened. Now trigger Relay 1 again via Input 1 and ensure Relay 1 changes state again. The display will show 55 when Relay 1 is de-energized. Once the first position switch is closed trigger Relay 2 via Input 2. Ensure that Relay 2 changes state and that is maintained. The display will show $r2$ when Relay 2 is energized. Test the interlock by attempting to trigger Relay 1 via Input 1. Relay 1 should NOT activate due to the second position switch being opened. Now trigger Relay 2 again via Input 2 and ensure Relay 2 changes state again. The display will show 55 when Relay 2 is de-energized.
5. Upon completion of the above steps, walk test the door to ensure all functions, timers, sensors, etc. are working as intended, and that the system is in compliance with all applicable standards (i.e. ANSI A156.10, A156.19).

6K Function 55 - 2 Way, 2 Relay Sequence (MC65)

The MC65 function provides a two-way sequencer to sequence Relay 1 and/or Relay 2 triggered by Input 1. Similarly, it also provides a sequence in the opposite direction to sequence Relay 2 and/or Relay 1 triggered by Input 2. Inputs 3 and 4 also trigger Relays 1 and 2 individually (non-sequenced). Adjustable parameters include h_1 for activation hold time of Relay 1, h_2 for activation hold time of Relay 2, d_1 for delay between activation of Relay 1 to Relay 2 and d_2 for delay between activation of Relay 2 to Relay 1. A re-activation of Input 1 or Input 2 before the sequence expires will re-start both hold timers and keep the relays active. A maintained input will freeze both hold timers, thus keeping their relays active until the input is released, which will allow the hold timers to expire and deactivate the relays normally.

NOTE: The delay timer will only fire one time during initial activation or maintained input.

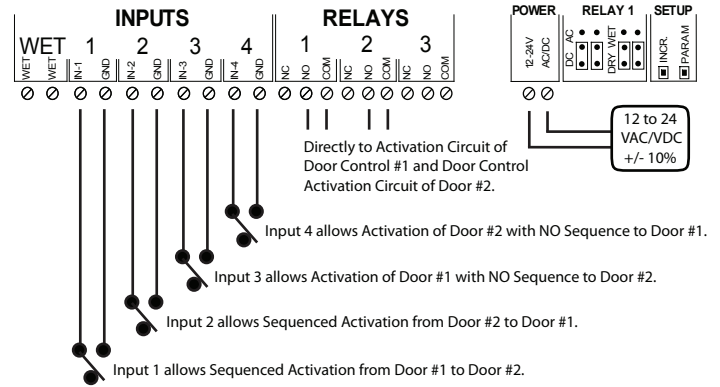
NOTE: The functionality for MC65 has changed slightly in this version as you no longer have to wait for a sequence to complete before running another sequence.

A typical application is an unsecured two door sequence vestibule that allows two-way traffic in which you have a push-plate at the entrance of each door to start the sequence and two push-plates between the doors to activate the doors individually in case of entrapment. For this scenario the push-plate for in-bound traffic would be wired to Input 1, the push-plate for out-bound traffic would be wired to Input 2, a push-plate for entrapment release of door 1 would be wired to Input 3, a push-plate for entrapment release of door 2 would be wired to Input 4, Relay 1 would be wired to door controller 1 and Relay 2 would be wired to door controller 2. An example wiring diagram for this scenario is shown.

CAUTION: RELAY 1 WET OUTPUT OPTION IS ACTIVE FOR ALL FUNCTIONS.

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MC65 SETUP

1. Wire the 8310-845 accordingly.
2. Select the MC65 as the function according to the steps outlined in Section 5 – Selecting the Function.
 - Press and hold both push buttons (INCR & PARAM) for three (3) seconds to activate the display.
 - Press the INCR button to toggle through each function and select 55.
3. Set the MC65 parameters according to the steps outlined in Section 5 – Selecting the Function.
 - Press PARAM button to cycle through and set the parameters.
 - Press the INCR button to increment the parameter's value.

Parameters for the MC65 function are shown in the chart. Set the parameters as needed for the application, and wait for the display to become inactive to save the configuration.

PARAMETER (PARAM Button)	DESCRIPTION	POSSIBLE VALUES (INCR Button)
h_1	Relay 1 hold time	'00' through '50' - Relay 1 hold time will not begin counting down until the release of Input 1 for inbound or until the delay between Relay 2 and Relay 1 expires for outbound or until the release of Input 3.
h_2	Relay 2 hold time	'00' through '50' - Relay 2 hold time will not begin counting down until the release of Input 2 for outbound or until the delay between Relay 1 and Relay 2 expires for inbound or until the release of Input 4.
d_1	Delay between Relay 1 and Relay 2	'00', '_1' (1/4), '_2' (1/2), '_3' (3/4), '01' through '50' seconds. The delay time will begin counting down with the activation of the sequence.
d_2	Delay between Relay 2 and Relay 1	'00', '_1' (1/4), '_2' (1/2), '_3' (3/4), '01' through '50' seconds. The delay time will begin counting down with the activation of the sequence.

4. Once programming is complete, test the 8310-845. Trigger the sequence via Input 1. Ensure that the in-bound sequence runs and the relays activate and the timers are as programmed. The display will show r_1 when Relay 1 is energized, r_2 when Relay 2 is energized and r_2 when both Relay 1 and Relay 2 are energized at the same time. Trigger the sequence via Input 2. Ensure that the out-bound sequence runs and the relays activate and the timers are as programmed. Trigger only door 1 via Input 3. Trigger only door 2 via Input 4.
5. Upon completion of the above steps, walk test the door to ensure all functions, timers, sensors, etc. are working as intended and that the system is in compliance with all applicable standards (i.e. ANSI A156.10, A156.19).

6L Function 75 - 2 Relay Sequence (MC75)

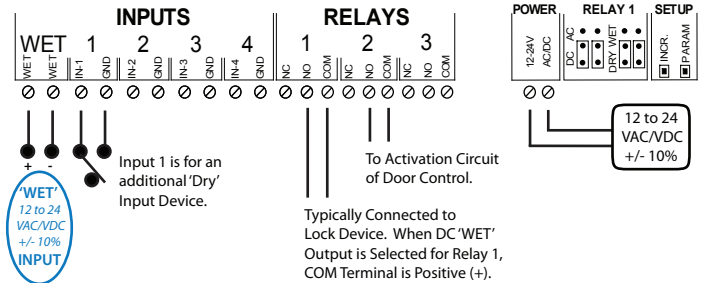
The MC75 function provides a sequence for Relay 1 and/ or Relay 2 triggered by Input 1 or 'WET' Input. Adjustable parameters include $h1$ for activation hold time of Relay 1, $h2$ for activation hold time of Relay 2 and $d1$ for delay between activation of Relay 1 to Relay 2. A re-activation of Input 1 or 'WET' Input before the sequence expires will re-start both hold timers and keep the relays active. A maintained input will freeze both hold timers, thus keeping their relays active until the input is released, which will allow the hold timers to expire and deactivate the relays normally.

CAUTION: RELAY 1 WET OUTPUT OPTION IS ACTIVE FOR ALL FUNCTIONS.



NOTE: The delay timer will only fire one time during initial activation or maintained input.

A typical application is a security door in which you have a card-reader that supplies an output voltage to start the sequence to unlock the security device, such as a Maglock or electric strike and then activate the door controller. For this scenario the card-reader would be wired to 'WET' Input, the security device would be wired to Relay 1 and the door controller would be wired to Relay 2. An example wiring diagram for this scenario is shown below. An example wiring diagram for this scenario is shown below.



NOTE: While the Input 1 is not involved in our typical application, it will still function as 'WET' Input does if used.

MC75 SETUP

1. Wire the 8310-845 accordingly.
2. Select the MC75 as the function according to the steps outlined in Section 5 – Selecting the Function.
 - Press and hold both push buttons (INCR & PARAM) for three (3) seconds to activate the display.
 - Press the INCR button to toggle through each function and select 75.
3. Set the MC75 parameters according to the steps outlined in Section 5 – Selecting the Function.
 - Press PARAM button to cycle through and set the parameters.
 - Press the INCR button to increment the parameter's value.
 Parameters for the MC75 function are shown in the chart. Set the parameters as needed for the application, and wait for the display to become inactive to save the configuration.

PARAMETER (PARAM Button)	DESCRIPTION	POSSIBLE VALUES (INCR Button)
$h1$	Relay 1 hold time	'00' through '50' - Relay 1 hold time will not begin counting down until the release of Input 1 or 'WET' Input.
$h2$	Relay 2 hold time	'00' through '50' - Relay 2 hold time will not begin counting down until the delay between Relay 1 and Relay 2 expires.
$d1$	Delay between Relay 1 and Relay 2	'00', '_1' (1/4), '_2' (1/2), '_3' (3/4), '0' through '50' seconds. The delay time will begin counting down with the activation of the sequence.

4. Once programming is complete, test the 8310-845. Trigger the sequence via Input 1 or 'WET' Input. Ensure that the sequence runs and the relays activate and the timers are as programmed. The display will show $r1$ when Relay 1 is energized, $r2$ when Relay 2 is energized and $r=$ when both Relay 1 and Relay 2 are energized at the same time.
5. Upon completion of the above steps, walk test the door to ensure all functions, timers, sensors, etc. are working as intended and that the system is in compliance with all applicable standards (i.e. ANSI A156.10, A156.19).

7 Documentation

1. Document all work. For future reference, be sure to record the 8310-845 Serial Number on your Work Order.
2. Educate the Owner / Manager as to the proper operation of the door and sensor system, and what to do to ensure safe use of the door in the event of discovering a malfunction. Show the Owner / Manager how to perform a daily safety check of the system. You may also wish to provide the owner/Manager a copy of an owners manual provided by AAADM for the type of door selected.
3. Be sure to obtain signatures on your work order for all work accomplished.

8 Troubleshooting

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Module will NOT react to any input.	<ol style="list-style-type: none">1. Incorrect 8310-845 power2. Module not programmed3. Incorrect wiring4. Faulty module	<ol style="list-style-type: none">1. Check the 8310-845's power. It should be 12 to 24 volts AC or DC +/- 10%. Ensure that input power is applied at the correct terminals.2. Ensure a function has been programmed. If '00' is showing in the display, the 8310-845 will need to be programmed.3. Jumper an active Input and ensure that the fault is not within the wiring. If module works when jumped, trace wiring from Inputs / relays.4. Replace module.
Module reacts to input but has no output.	<ol style="list-style-type: none">1. Wrong outputs are connected2. Incorrect wiring3. Incorrect jumper settings4. Faulty module	<ol style="list-style-type: none">1. Check to ensure that the proper outputs are connected per the function selected.2. Trace all wiring to ensure correct termination points.3. Check that the jumpers are configured correctly for the application.4. Replace module

9 Company Contact



Do not leave problems unresolved. If a satisfactory solution cannot be achieved after troubleshooting a problem, please contact LCN at 1-800-526-2400. If you must wait for the following workday to call LCN, 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. For more information, visit www.lcn.ingersollrand.com.