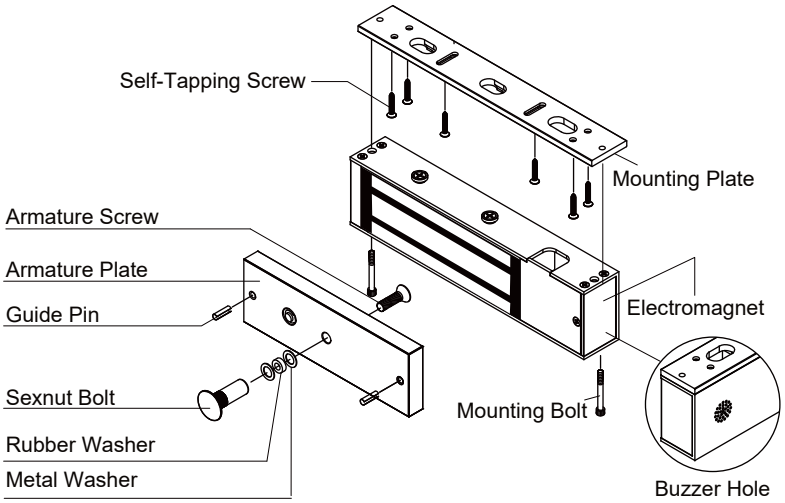
KH500DE Delayed Egress Electromagnetic Lock (Key Hole Mounting) Installation Instructions

Overview

The KH500DE Delayed Egress Electromagnetic Lock with Key Hole Mounting is designed to comply with the NFPA 101 Life Safety Code. This delayed egress locking system's principal application is for secure locking and delayed release of perimeter and emergency exit doors. The KH500DE is a self-contained, standalone unit that uses existing door exit and latching hardware, and all electronics are built into the magnet's wiring compartment for ease of installation.



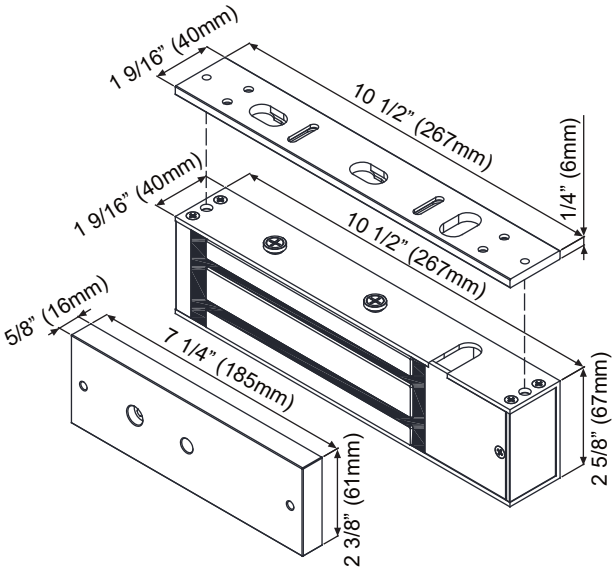
Screw Package Components:

Guide Pin 		Hexagon Key (Allen Wrench) 		Rubber Washer 	
3/16" x 5/8"	x 2	3/16"	x 1	11/32" x 19/32" x 5/32"	x 1
Allen Flat Head Screw 		Phillips Flat Head Screw 		Thru-Bolt (Hex Screw) 	
5/16"x 1 3/8"	x 1	3/16" x 1 1/4"	x 6	1/4" x 1 9/16"	x 2
Metal Washer 		Sexnut Bolt 			
5/16" x 7/8"	x 3	1/2" x 1 9/16"	x 1		

Specifications

Input voltage	Auto select 12/ 24VDC +- 10%
Current draw (Standalone operation)	500mA / 12VDC 250mA / 24VDC
Current draw (With optional slave lock)	1000mA / 12VDC 500mA / 24VDC
Alarm relay output	1A / 24VDC (Maximum)
Holding force	1200 lbs
Finish	Anodized aluminum (US28)
Internal buzzer	95 dB
LED indication	Green: Armed (exit delay) Red: Disarmed (free egress)

Dimensions



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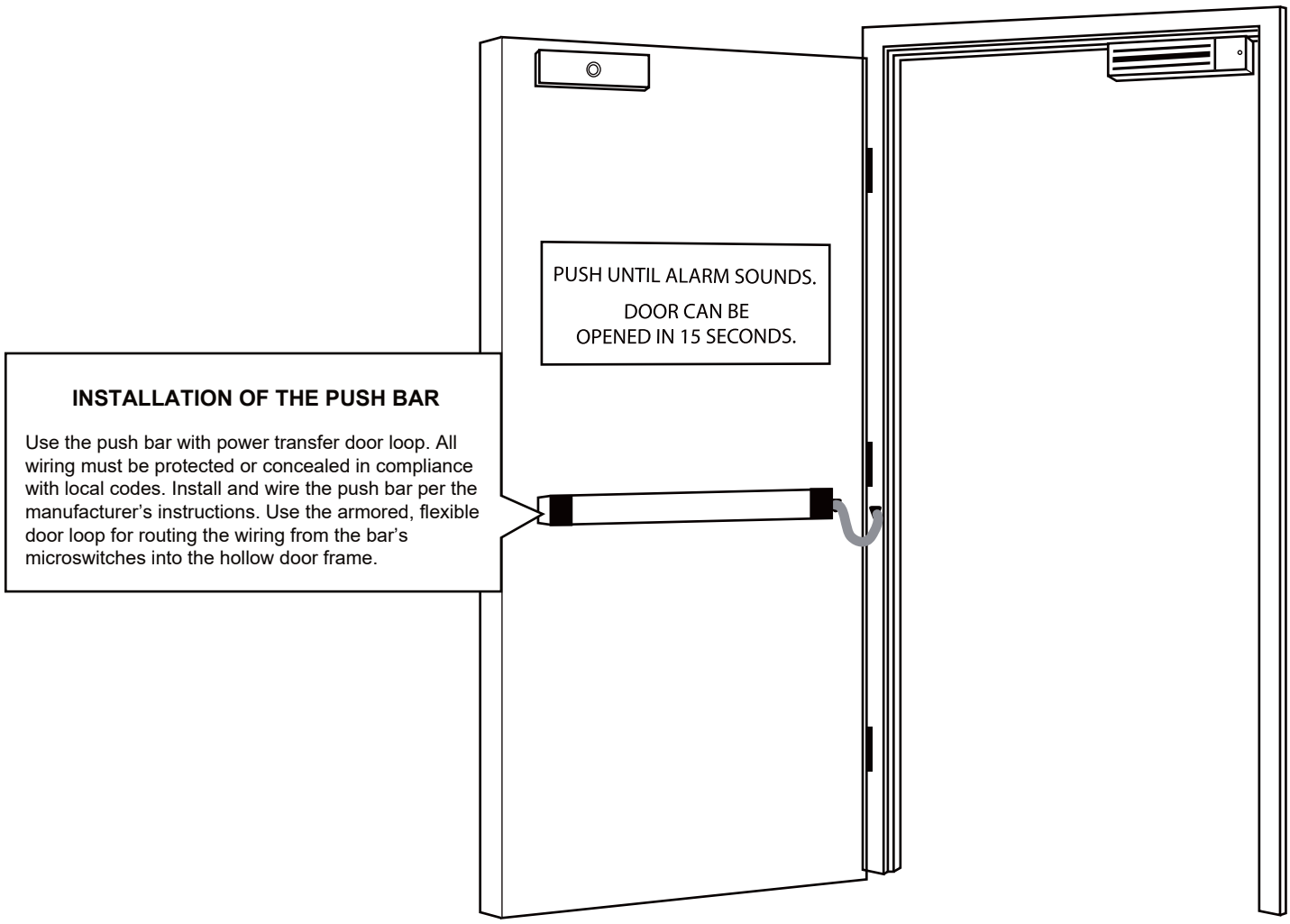
How it Works

The delayed egress system is activated by pushing on the exit push bar. The exit attempt (pushing on the exit bar) must exceed a pre-set nuisance delay of 0, 1, 2 or 3 seconds to start the delayed egress cycle. Note: the 0 second nuisance includes a 200 millisecond de-bounce delay to eliminate false triggering.

When the nuisance time is exceeded after applying a continuous pressure of 15 pounds or greater to the exit bar, an irreversible 15 or 30 second egress cycle begins. During this egress cycle, a piezo alarm beeps once for each second of the count-down. When the magnetic lock de-energizes to release the door for free egress after the delayed egress cycle, the piezo alarm sounds continuously and the door remains unlocked until reset.



*Handling Caution:

The KH500DE contains sensitive electronic components and therefore must not be dropped or abused. The circuit components are also subject to damage from high static electricity discharges and must be handled with care, especially in dry climates and in winter months. As a normal procedure during installation and adjustments, installers should always discharge themselves through a good earth before touching the lock assembly or its wires. Failure to comply with recommended procedures may result in damage to the lock and could void system warranty.

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Bench Testing

This procedure allows the installer to perform a quick bench check of the KH500DE lock and to become familiar with the lock's basic operation prior to installation.

Test Set-up

Remove the cover plate and locate the 4-position DIP-switch on the bottom circuit board. Set all 4 switches to OFF. The lock is now set for 0.2 second nuisance delay time (which requires a 0.2 second minimum bar press) and is set for 15 second delayed egress cycle. Proceed to wire the magnetic lock as follows:

1. In the lock's wiring compartment, place a a normally open switch across "FIRE" and "F/COM".

2. Ensure that the 12 VDC power supply is off and connect the "V+" and "V-" terminals.

3. Connect a normally open single pole momentary switch to the "START" and "F/COM" terminals in the lock's wiring compartment. This simulated the exit bar's micro switch.

Note: Make sure the power supply is still off; place the armature (strike) plate on the magnet face and ensure that the plate is aligned properly.

Start-up Test

Turn on (or plug in) the power. The lock should beep once on power-up. The green LED should blink once per second.

Reset Test

Two reset methods can be used:

1. Connect a normally closed switch in series with the power supply and the lock's " V+" input terminal. Momentarily opening the switch will provide a reset.

2. Place a normally open switch across "RST" and "F/COM" terminals. Momentarily closing the switch will provide a reset.

Egress Test

1.Momentarily depress the exit bar switch (at least 200 msec and then release) to simulate an egress attempt. The sounder will start beeping once per second and the blinking LED will change to solid green to indicate an egress cycle has been initiated.

2. After 15 beeps the magnet will release the armature plate. The LED will change to solid RED and the sounder will give a continuous alarm to indicate that the egress cycle is complete and that the lock will remain in the free egress alarm state until it is reset.

3.Momentarily activate the reset switch. The sounder will beep, the magnet will energize and the green LED will return to blinking once per second, indicating normal armed operation.

Fire Emergency Test

1. To simulate a fire emergency, press the normally open switch you installed in Test Set-up between the "FIRE" and " F/COM" terminals. The lock will release immediately and sound.

2. Release the normally open switch between the "FIRE" and " F/COM" terminals. The lock will release immediately and sound.

Bond Test

1. Place a business card at each end of the magnet between armature plate and magnet.

2. Apply DC power. After a 3 second delay, the bond alarm will sound a repeating pattern of 4 quick beeps, synchronous with the flashing LED.

Note: When all the testing is complete, remove all wiring connections to the lock's terminals.

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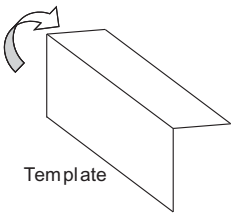
Magnetic Lock Installation for Outswing Doors

Note what type door frame header is in place and install filler plate or angle bracket as necessary. The lock must be installed on the interior, secure side of an outward swinging door, opposite the hinges and clear of any closing hardware. The door must be correctly aligned, free of mechanical binding and should close firmly against the door stop.

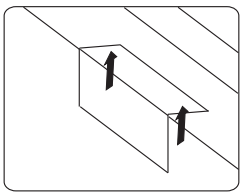
1



Find the paper installation template included with the magnet (you will need this).

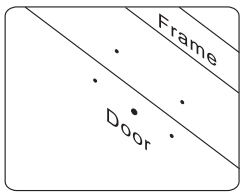
Fold it on the dotted line.

2



Place the folded template in the proper position on the door/jamb and mark the holes you will cut for your magnet and armature plate. (Using tape will help)

3

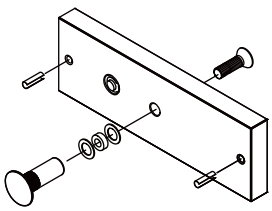


Drill the holes according to the marks you made.

(Check Twice! Drill Once!)..

4

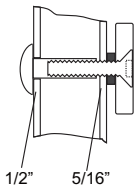
Armature Plate



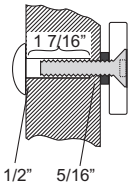
Install the armature plate as shown in the drawing to the left.

The actual dimensions of the holes are illustrated below.

Hollow Metal Door

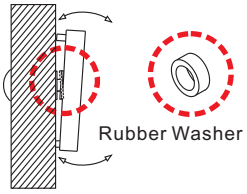


Solid Door



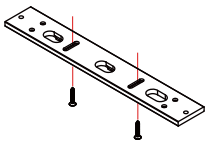
Drill a 5/16" (8mm) hole through the door for the armature side. For the sexnut side (secure side), enlarge the hole to 1/2" (12.7mm) for the width of the sexnut.
On wood doors the depth of the sexnut is 1 7/16" (36mm).

5



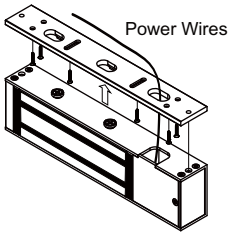
The rubber washer helps the armature plate to pivot. As it should NOT be tightened all the way to door.

6

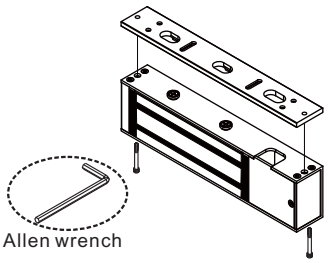


Attach the mounting plate to the jamb and tighten the mounting screws.

7

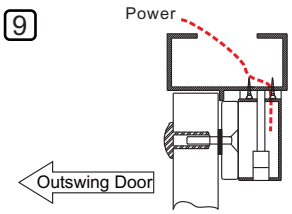


Pass the wiring through the mounting plate and into the wiring hole at the top of the magnet and into the PCB area.



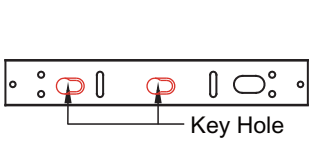
Attach the magnet to the mounting plate. Use the Allen wrench and thru-bolts to tighten the magnet to the mounting plate.

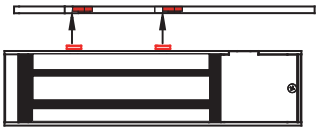
9



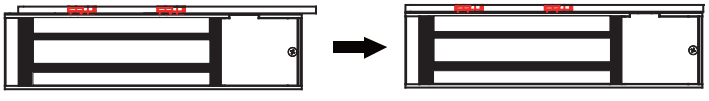
Connect the power and test the holding force. Add washers if there is still a gap between the magnet and armature plate.

Attaching Magnet to Mounting Plate





1. Align the two slotted holes and attach the magnet to the mounting plate.



2. Slide the magnet onto the mounting plate.
   Keyhole Mounting "slides Left to Right"

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Wiring the Lock

Single Door Installation

1. All wiring must be fed through the ½" access hole previously drilled into the header.

2. The magnet is a low voltage device (NEC class 2) and can be powered by a 12 Volt DC power supply rated at 1.0 amps or greater. Use 18 AWG gauge wire. The power wire run should not exceed 75 feet. Observe polarity and connect the DC power supply to "V+" and "V-" terminals.

3. Directly connect two leads from the normally open or closed dry contacts in the supervised Fire Alarm Control Panel (FACP) or other fire emergency system to the "FIRE" and "F/COM" terminals. Wire runs should not excced 1,500 feet. Use a minimum of 18 AWG gauge wire.

4. Directly connect the WHITE wire from the push bar to the "START" terminal and the BLACK wire from the push bar to the "F/COM" terminal.

5. Reset of the system can be done in two ways:
   A. connect a normally closed Form A contact switching device in series with the plus 12 volt DC power connection to terminal "V+."
   B. connect a normally open Form A contact switching device to terminals "RST" and"F/COM". Actuation of the momentary switch will result in a reset.

Connecting Optional Control and Remote Monitoring Devices

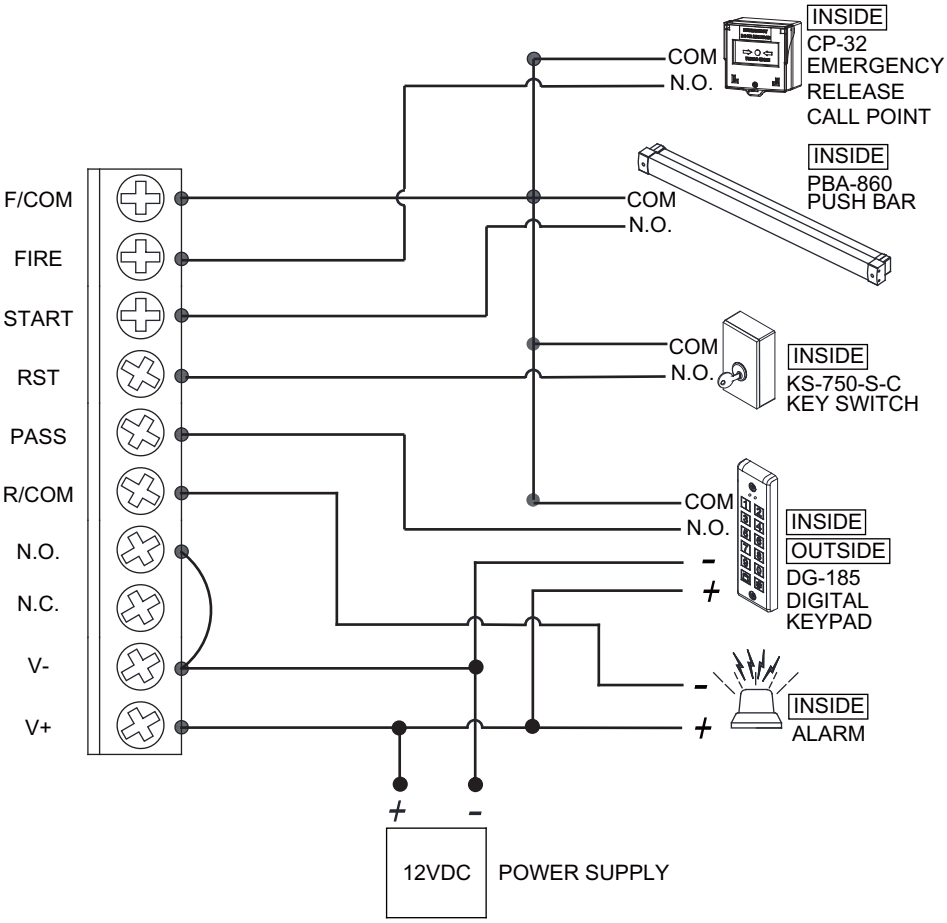
1. Form A dry relay contacts are provided for remote monitoring of the locking status. Whenever an alarm signal occurs due to a bonding violation, egress cycle or fire emergency, the output relay contacts across "R/COM " "N.O." and "N.C. will change status. Contacts are rated 1 amp at 24 VDC.

2. A proximity keypad/reader or momentary switch with normally open contacts can be installed to provide a manually controlled bypass for free egress. A contact closure across "PASS" and "F/COM" will release the lock for the duration of the maintained closure. During bypass, the LED will switch to red and will return to green when bypass is complete. The lock will also beep when the bypass is completed.

3. For 2-door (double door) operation, install a KH500 series lock on the adjacent door and connect it to terminals "V+" and V-". This slave lock will follow the operation of the master lock.

PC Board Terminal Connection

Terminal	Description
F/COM	Ground
FIRE	Emergency signal input (Door Pull /Fire panel system)
START	Activation input (Switch signal triggers PC board)
RST	Reset input (Key switch)
PASS	Connection to keypad or reader without sounder
R/COM N.O. N.C.	Relay output (for external alarm) Rating: 1A/24VDC, 0.5A/125VAC
V-	12/24 VDC (Automatic selection)
V+	



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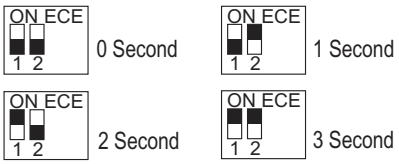
DIP Switch Settings

Nuisance Delay Setting

Setting of the Depressed Time of Micro Switch Bar
Dip Switch 1 & 2

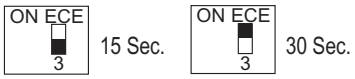
(1)



Delay Egress Setting

Dip Switch #3

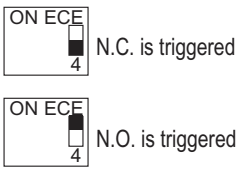
(2)



Emergency Signal Input (N.C. / N.O.)

Dip Switch 4

(3)



Operational Description

Nuisance: The nuisance delay time can be set to 0 sec, 1 sec, 2 sec, or 3 sec before triggering the piezo alarm when the door remains locked. Set up the time by moving dip switch 1 & 2.

Delay Egress: When the micro switch bar is pressed, the delay egress count-down begins and the piezo alarm will go off (based on nuisance delay settings). Adjust dip switch #3 to set delay egress to 15 or 30 seconds for locking device to release. Verify with your AHJ (Authority Having Jurisdiction) as to which time you must follow.

Emergency Release: When the emergency signal input (FIRE) is triggered under emergency circumstances, the magnetic lock on a door will be released to exit immediately. *Verify if you need this to go into NO or NC Status for Emergency and ensure it is in correct position.

Reset: The alarm beeps every single second before the delay egress ends. After the ending of delay egress, the piezo continuously sounds until a reset input is triggered by key switch or other mode of reset. *Triggering the reset input can terminate the delay egress count-down.

Authorized Bypass: The bypass function can be used with access control system to exit the door without putting the KH500DE into alarm, by using the PASS input on the PC board.

Troubleshooting

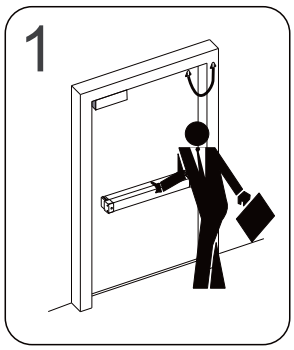
If the alarm sounds, note the sound pattern and troubleshoot as follows:

a. One beep per second indicates that the push bar is activating the egress count down cycle. Check the bar's wiring and make sure the switch is wired for normally open operation.

b. Steady on-off pattern (2 per second) indicates that the fire leads are not connected to the normally closed contacts in the FACP. Remove power and check wiring.

c. Four quick beeps indicate a bond sensing violation. Causes can be low voltage to the lock or an improperly aligned armature plate or foreign matter between magnet and armature plate.

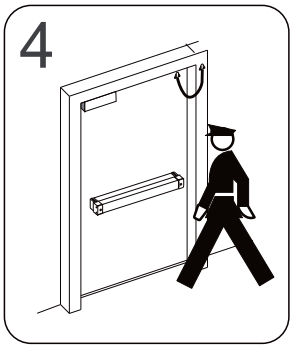
System Application 1: Delayed Egress (Standard Operation)



The KH500DE includes delayed egress function for unauthorized egress.

When the exit bar is depressed, the built-in piezo alarm immediately sounds to alert the security personnel.

After egress delay of 15 or 30 seconds, the lock releases, giving the security personnel time to respond to the unauthorized exit.

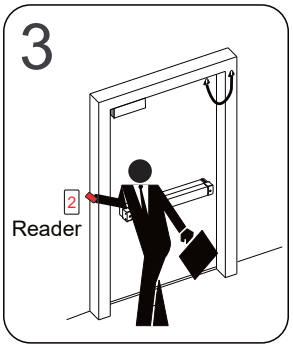


After key reset, the alarm stops, the door re-locks, and the system is back to normal operation.

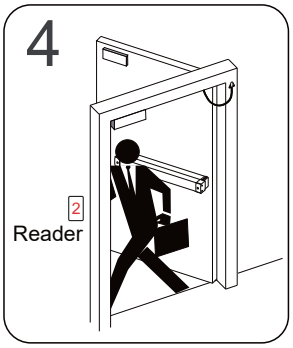
System Application 2: Authorized Access and Egress

Proximity readers or keypads are installed on both sides of door.

Authorized personnel access using a proximity card.



Authorized personnel exit using a proximity card.



Personnel exit without a delayed egress cycle.

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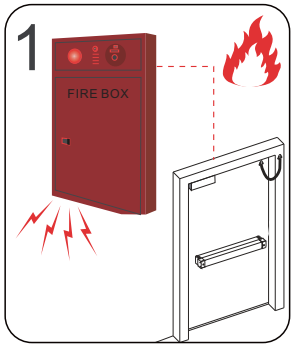
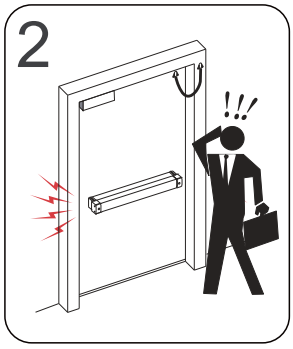
System Application 3: Emergency Exit



The fire alarm control panel connects to the emergency singal input of the delayed egress lock.

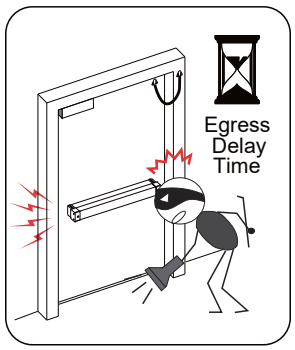


When emergency occurs, the built-in piezo alarm immediately sounds to notify personnel.

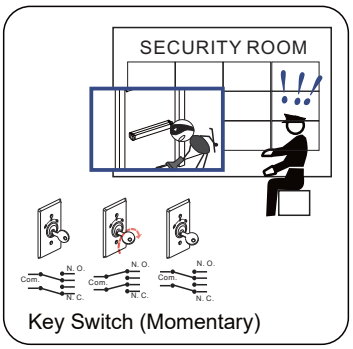
Lock releases immediately without delay time, allowing free egress.

After emergnecy is removed, the alarm stops, the door re-locks and the system is back to normal operation.

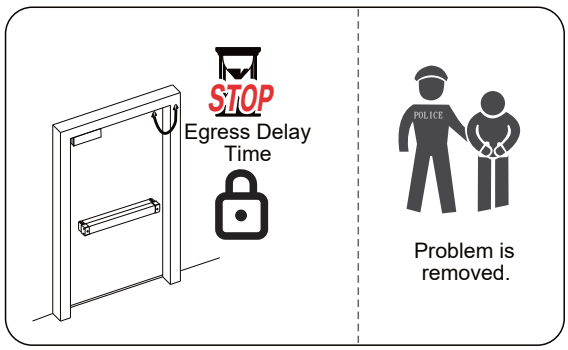
System Application 4: Security Control



When personnel attempt to exit by pressing the bar, the alarm sounds.



Alerted of unauthorized exit, the security room remotely triggers the reset input using a key switch.



The reset input is triggered to terminate egress delay time and keep the door locked, allowing the security personnel to respond to the door.

Note: If a maintained key switch is used, deactivate the alarm by turning the key to On and Off position once.

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