900-4RL Option Board

SCHLAGE

⚠ DANGER ⚠

To avoid risk of electric shock, turn off AC power to power supply before installing or wiring option board.

| 900-4RL Specifications	
Inputs I1-I4	Dry contacts required (Closed = Active)
	Connect control contacts between SC (Signal Common) and any input
Outputs O1-O4	• Form C contacts rated 30VDC, 3A (Dry) • 12/24VDC, 3A (Wet) when AC powered • 9.6-13.2VDC or 19.2-26.4VDC when battery powered • May be used with PS914 to power EL device at 24VDC, 16A, 300ms • Maximum load cannot exceed power supply ratings or 6A for outputs combined
Board Input Power	Board requires 0.18A max. of power supply output current to operate
Temperature Range	32°-120°F (0°- 49° C)
Compliance	UL 294, ULC-S318, RoHS, & FCC Part 15
Fire Alarm Input	Accepts 900-FA Fire Alarm Board (Optional)

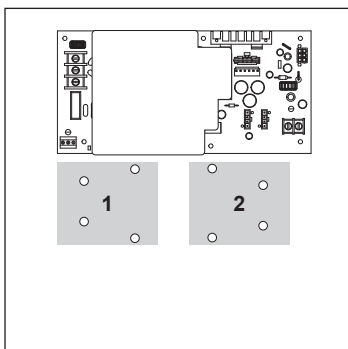**1** Install 4Rl Board(S) into Power Supply

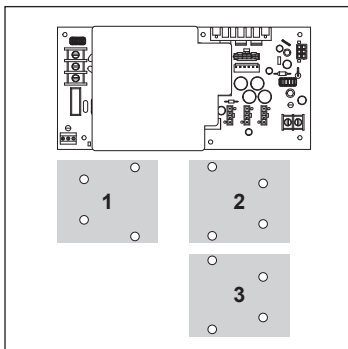**1a** Review Available 900-4RL Mounting Locations (Gray)
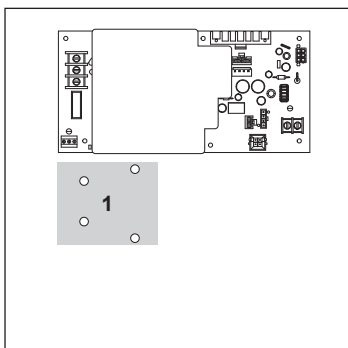
Refer to installation instructions for compatible supply models - PS902, PS904, PS906, and PS914.
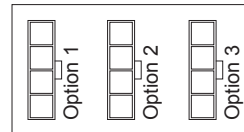
PS902
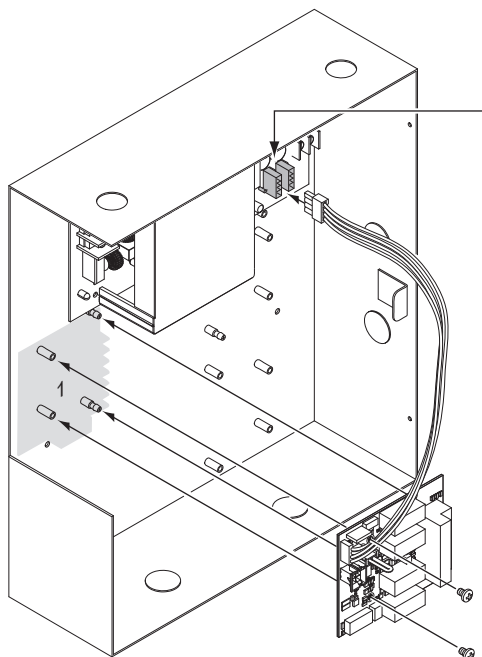
PS904
PS914

PS906

1b Plug 4RL Cable into any Available Option Connector
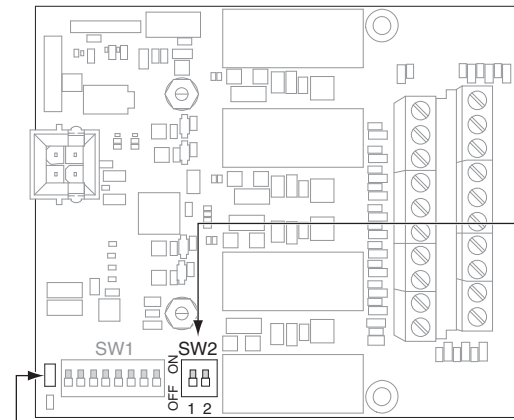
PS902
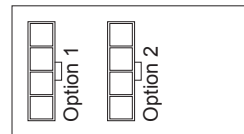
PS904, 914
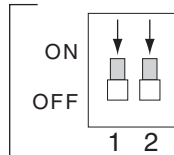
PS906

1c Secure Board(s) with Screws

NOTE

For UL listed installations, use only UL listed locks and strikes

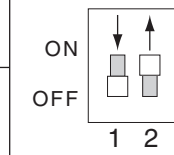## 2 Choose Function of 900-4RI Board by Setting SW2 Dip Switches
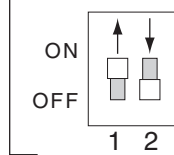
Function LED (D17)

SW1   SW2

4TD **Four Zone Controller Function (4TD):**

Controls up to four inputs and four outputs with time delay. This is the default setting.

Function LED will blink one time every 5 seconds

AO **Auto Operator Function (AO):**

Coordinates the unlocking of one or two zones with the signaling of an auto operator.

Function LED will blink two times every 5 seconds

SI **Security Interlock Function (SI):**

Controls multi-door interlocks. Two through six door systems are possible (additional boards required for three to six doors).

Function LED will blink three times every 5 seconds

3 To Complete Configuration and Wiring, go to Appropriate Section

For 4TD: Go to pages 3-4

For AO: Go to pages 5-6

For SI: Go to pages 7-8

Basic Troubleshooting: Go to page 8

(Optional) Dry Contact Configuration

Powered Outputs (Default)

By default, all outputs provide12/24VDC

Jumpers factory installed

Zone 2 — Output 2

Zone 4 — Output 4
Zone 3 — Output 3

Zone 1 — Output 1
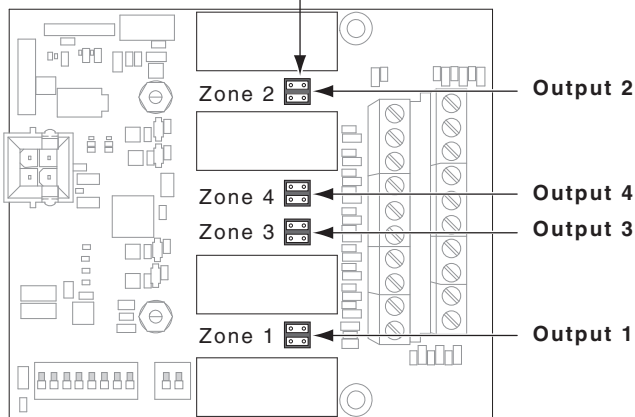
Dry Contact Outputs (Optional)

For dry contact outputs, remove appropriate jumpers and rotate 90˚, then reinstall (Zone 1 - Zone 4)

Jumper rotated 90˚

Zone 2 — Output 2

Zone 4 — Output 4
Zone 3 — Output 3

Zone 1 — Output 1
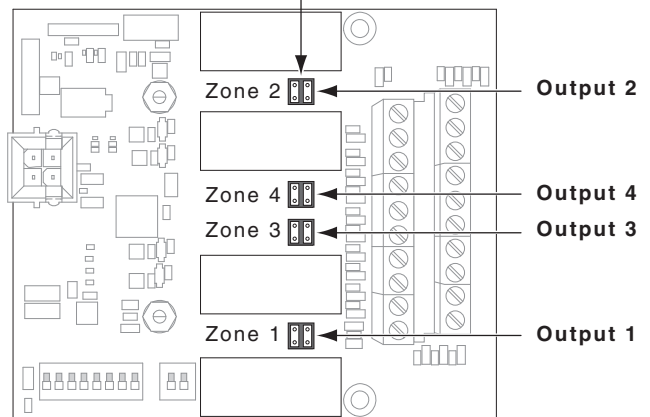
Summary of Operation
- Output turns "ON" when input is activated (closed).
- Time delay begins when input is released (opened).
- Locking Device output will remain "ON" during time delay.
- If I1-I4 inputs are wired together, outputs will sequence.

DIP switches on SW1 can be turned "ON" by moving them in the direction that the arrow is pointing. Switches below shown in "OFF" position

SW1

ON

OFF

1 2 3 4 5 6 7 8

SW1   SW2
12345678   12

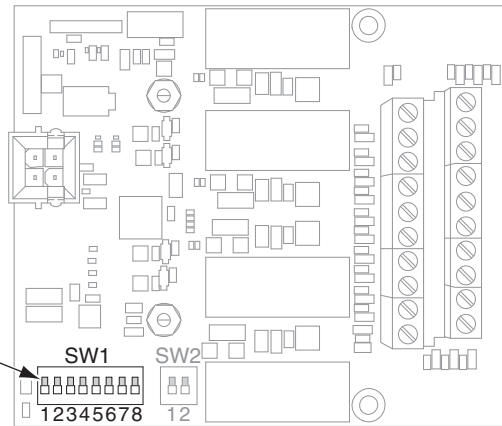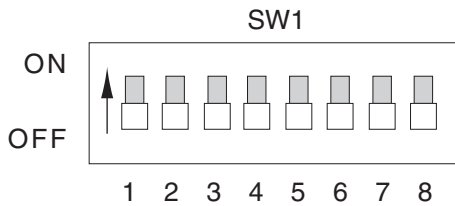|	Switch Number	4TD DIP Switch Definitions All switches shown in "OFF" position in wiring diagram
Enable Time Delay Allows you to choose which outputs will have the below time delay.	1	Turn "ON" to enable time delay for Locking Device 1
	2	Turn "ON" to enable time delay for Locking Device 2
	3	Turn "ON" to enable time delay for Locking Device 3
	4	Turn "ON" to enable time delay for Locking Device 4
Set Time Delay (0-75 seconds, 5 second increments) 0 Sec: Switches 5-8 "OFF" 75 Sec: Switches 5-8 "ON"	5	Adds 5 seconds to the time delay when "ON"
	6	Adds 10 seconds to the time delay when "ON"
	7	Adds 20 seconds to the time delay when "ON"
	8	Adds 40 seconds to the time delay when "ON"

4TD Input / Output Terminal Block Definitions	
Input 1	Access Control 1
Input 2	Access Control 2
Input 3	Access Control 3
Input 4	Access Control 4
Output 1*	Lock 1
Output 2*	Lock 2
Output 3*	Lock 3
Output 4*	Lock 4
*See page 2 for dry contacts	

4TD - Wiring Example - Fail Secure

EPT 2 or 10

EL Device 2
(not polarized)

Access
Control 2

EPT 2 or 10

EL Device 1
(not polarized)

Access
Control 1

PS914
x 4RL

120/240 VAC
50/60Hz

4RL

GND			GND
NC2			NC4
C2			C4
NO2			NO4
I2			I4
NC1			NC3
C1			C3
NO1			NO3
I1			I3
SC			SC

EPT 2 or 10

EL Device 4
(not polarized)

Access
Control 4

EPT 2 or 10

EL Device 3
(not polarized)

Access
Control 3

* 0-100 ft, use 14 gauge stranded wire

0-200 ft, use 12 gauge stranded wire

Note:
To control EL1 & EL2 with Access Control 1, jumper **I1-I2**
To control EL1 - EL4 with Access Control 1, jumper **I1-I2-I3-I4**

Note:
Fail secure output only allowed if approved
by Authority Having Jurisdiction

4TD - Wiring Example - Fail Safe
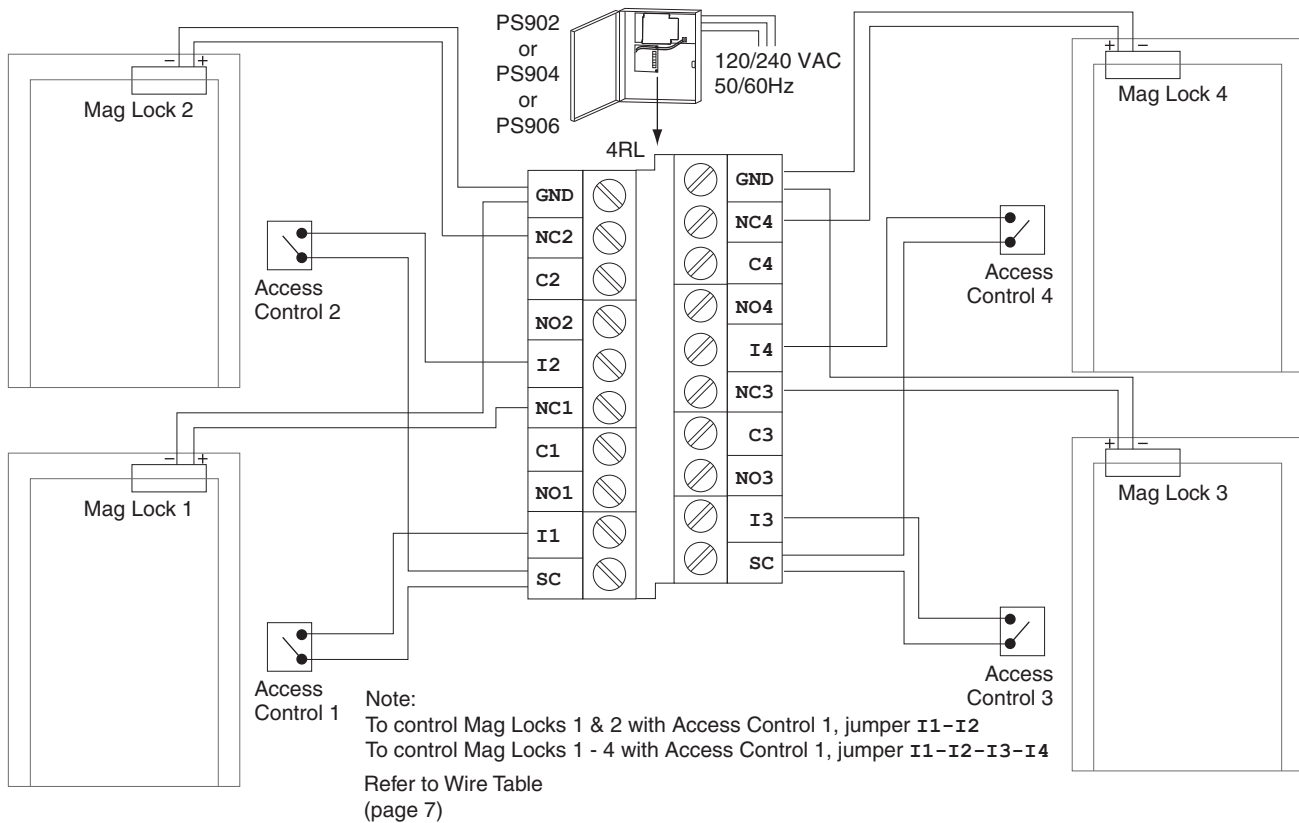
Mag Lock 2

Access
Control 2

Mag Lock 1

Access
Control 1

PS902
or
PS904
or
PS906

120/240 VAC
50/60Hz

4RL

GND			GND
NC2			NC4
C2			C4
NO2			NO4
I2			I4
NC1			NC3
C1			C3
NO1			NO3
I1			I3
SC			SC

Mag Lock 4

Access
Control 4

Mag Lock 3

Access
Control 3

Note:
To control Mag Locks 1 & 2 with Access Control 1, jumper **I1-I2**
To control Mag Locks 1 - 4 with Access Control 1, jumper **I1-I2-I3-I4**
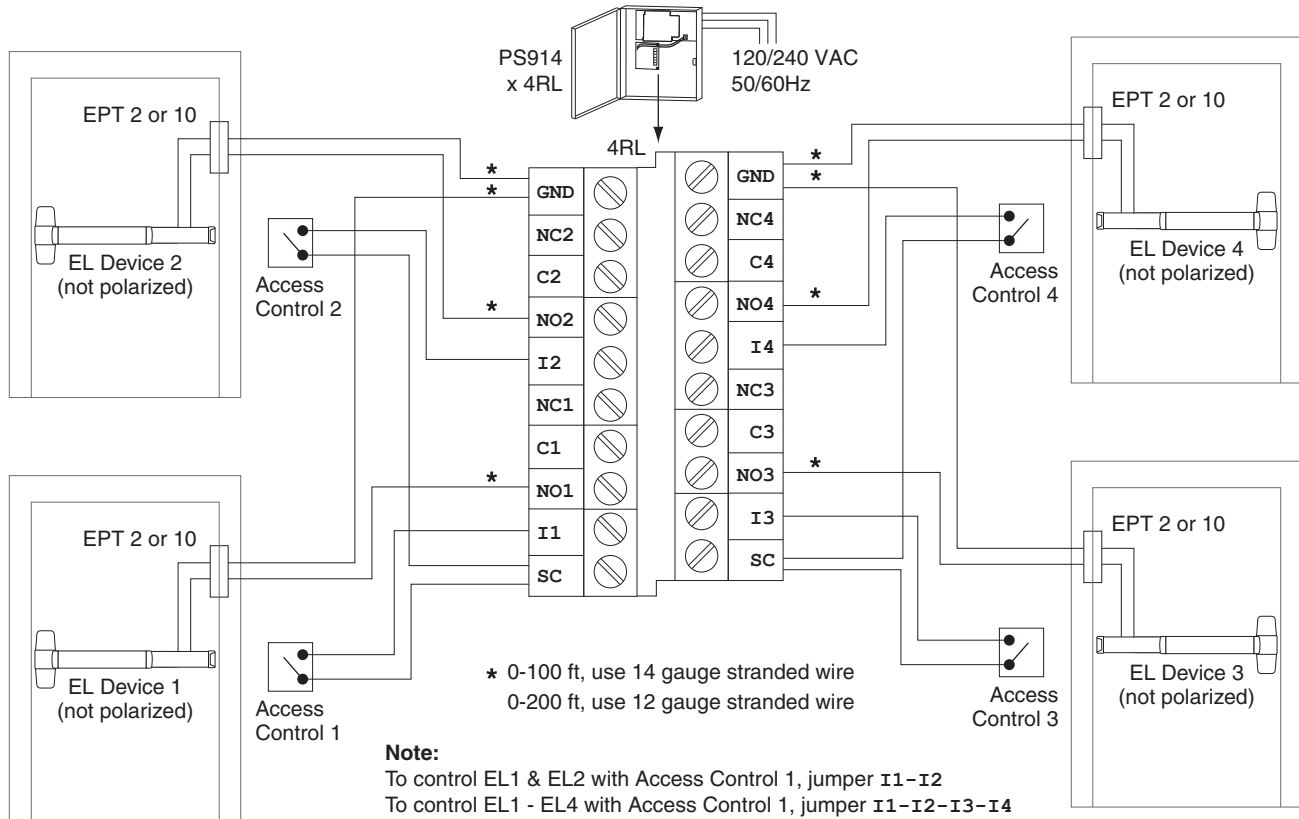
Refer to Wire Table
(page 7)

4

DIP switches on SW1 can be turned "ON" by moving them in the direction that the arrow is pointing. Switches below shown in "OFF" position

SW1

ON

OFF

1 2 3 4 5 6 7 8

SW1   SW2

12345678   12
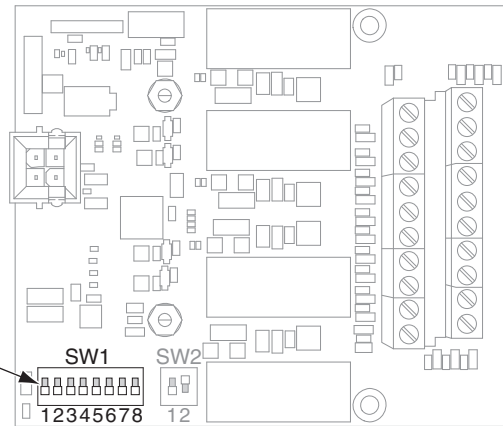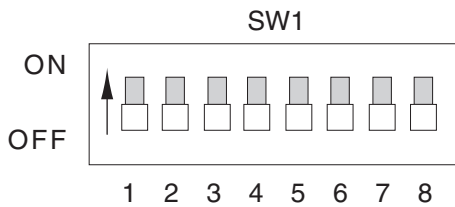
	SW1 Switch	AO DIP Switch Definitions
	Number	All switches shown in "OFF" position in wiring diagram
Set Auto Operator Signaling Option Determines when the auto operator signal will be active	1 Off 2 Off	Operator is signaled when latch monitor switch becomes active. Monitor switch required
	1 On 2 Off	Operator is signaled 0.5 seconds after control switch becomes active. No monitor switch used.
	1 Off 2 On	Operator is signaled 1.0 seconds after control switch becomes active. No monitor switch used.
	1 On 2 On	Operator is signaled 1.5 seconds after control switch becomes active. No monitor switch used.
Not Used	3	Not used
Set Individual Mode or Sequential Mode Individual Mode - One input will trigger one locking device. Sequential Mode - One input will trigger two locking devices.	4	Turn "OFF" (default) to enable Individual Mode (single doors). Turn "ON" to enable Sequential Mode (double doors).
Set Time Delay* (0-30 seconds, 2 second increments) 0 Sec: Switches 5-8 "OFF" 30 Sec: Switches 5-8 "ON"	5	Adds 2 seconds to the time delay when "ON"
	6	Adds 4 seconds to the time delay when "ON"
	7	Adds 8 seconds to the time delay when "ON"
	8	Adds 16 seconds to the time delay when "ON"
* Time Delay begins when an input is released.		

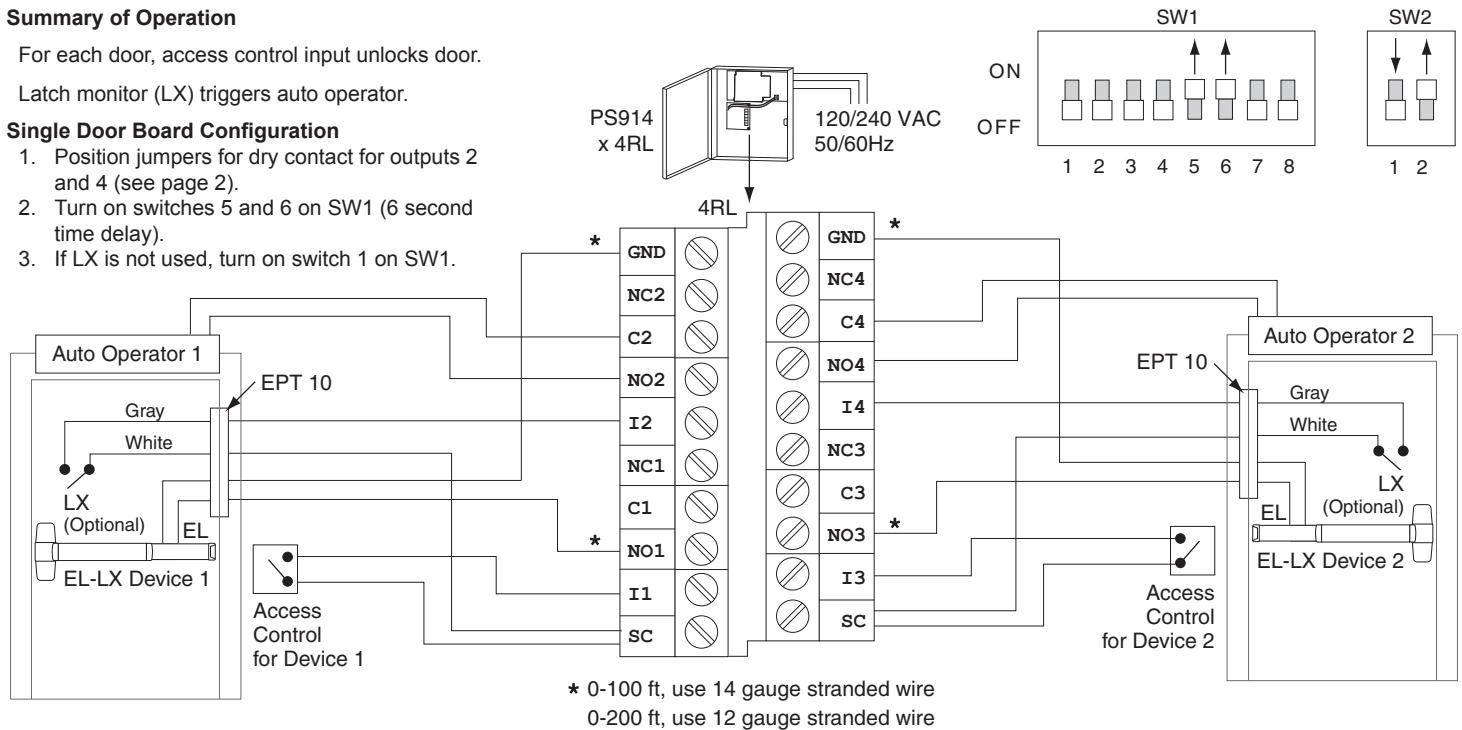| AO INPUT / OUTPUT	
TERMINAL BLOCK DEFINITIONS	
Input 1	Access Control 1
Input 2	Lock Monitor 1
Input 3	Access Control 2
Input 4	Lock Monitor 2
Output 1*	Lock 1
Output 2*	AO Signal 1
Output 3*	Lock 2
Output 4*	AO Signal 2
*See page 2 for dry contacts	

AO - Wiring Example - Two Single Doors

Summary of Operation

For each door, access control input unlocks door.

Latch monitor (LX) triggers auto operator.

Single Door Board Configuration

1. Position jumpers for dry contact for outputs 2 and 4 (see page 2).
2. Turn on switches 5 and 6 on SW1 (6 second time delay).
3. If LX is not used, turn on switch 1 on SW1.

PS914 x 4RL

120/240 VAC 50/60Hz

SW1   SW2

ON / OFF   1 2 3 4 5 6 7 8   1 2

4RL

* GND	GND *
NC2	NC4
C2	C4
NO2	NO4
I2	I4
NC1	NC3
C1	C3
* NO1	NO3 *
I1	I3
SC	SC

Auto Operator 1

EPT 10

Gray

White

LX (Optional)

EL

EL-LX Device 1

Access Control for Device 1

Auto Operator 2

EPT 10

Gray

White

LX (Optional)

EL

EL-LX Device 2

Access Control for Device 2

* 0-100 ft, use 14 gauge stranded wire
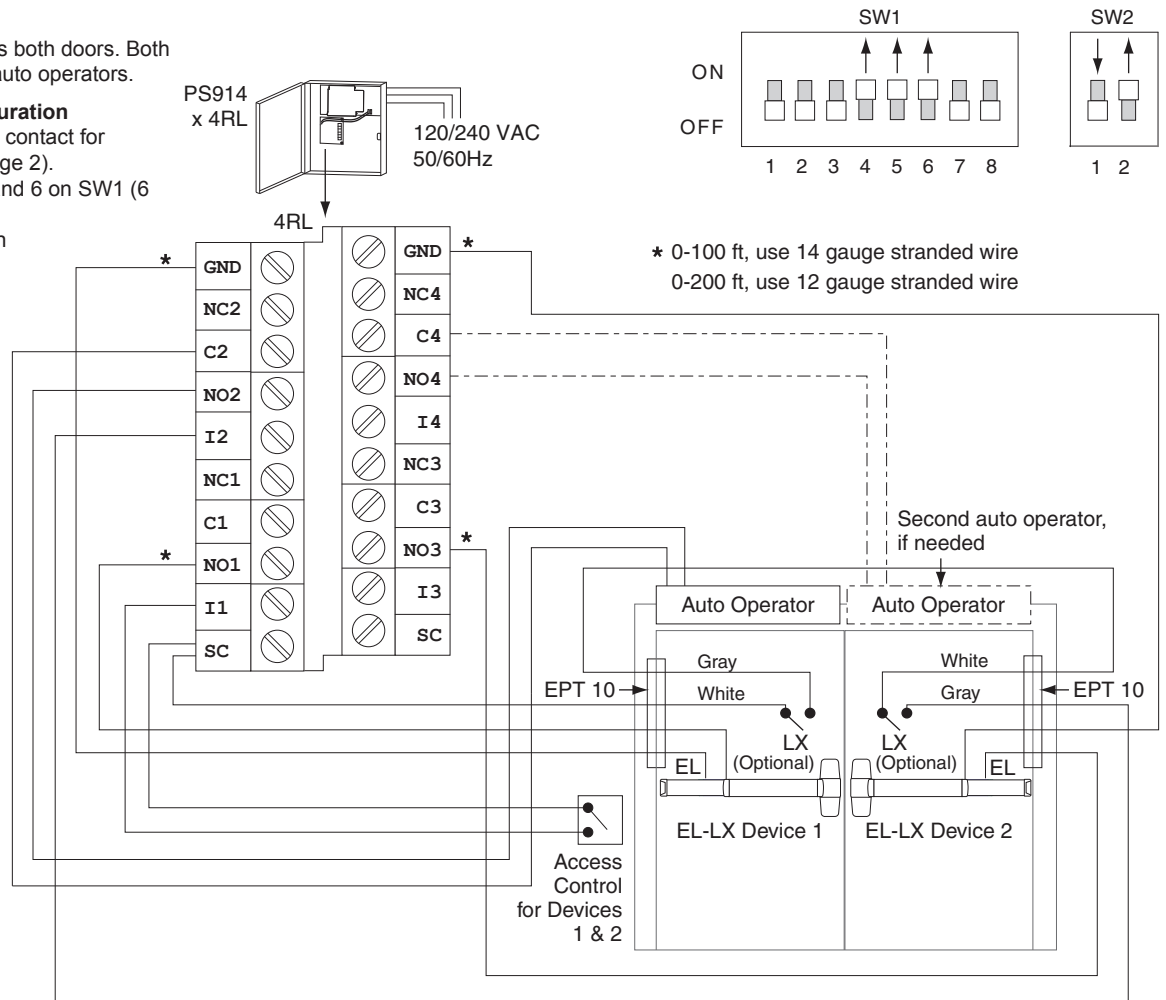0-200 ft, use 12 gauge stranded wire

AO - Wiring Example - Double Doors

Summary of Operation

Access control input unlocks both doors. Both latch monitors (LX) trigger auto operators.

Double Door Board Configuration

1. Position jumpers for dry contact for outputs 2 and 4 (see page 2).
2. Turn on switches 4, 5, and 6 on SW1 (6 second time delay).
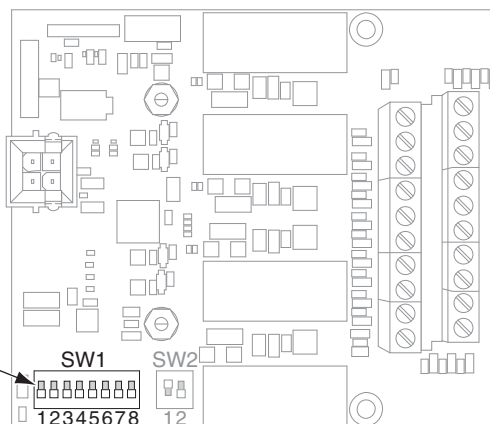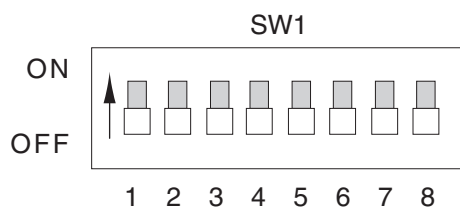3. If LX is not used, turn on switch 1 on SW1.

PS914 x 4RL

120/240 VAC 50/60Hz

SW1   SW2

ON / OFF   1 2 3 4 5 6 7 8   1 2

4RL

* GND	GND *
NC2	NC4
C2	C4
NO2	NO4
I2	I4
NC1	NC3
C1	C3
* NO1	NO3 *
I1	I3
SC	SC

* 0-100 ft, use 14 gauge stranded wire
0-200 ft, use 12 gauge stranded wire

Note:
Fail secure output only allowed if approved by Authority Having Jurisdiction

Refer to Wire Table (page 7)

Second auto operator, if needed

Auto Operator   Auto Operator

Gray   White

EPT 10 → White   Gray ← EPT 10

LX (Optional)   LX (Optional)

EL   EL

EL-LX Device 1   EL-LX Device 2

Access Control for Devices 1 & 2

6

DIP switches on SW1 can be turned "ON" by moving them in the direction that the arrow is pointing. Switches below shown in "OFF" position

SW1

ON

OFF

1 2 3 4 5 6 7 8

SW1   SW2
12345678   1 2

	Switch Number	SI DIP Switch Definitions All switches shown in "OFF" position in wiring diagram
Enable Time Delay Allows you to choose which outputs will have the below time delay.	1	Turn "ON" to enable time delay for Locking Device 1
	2	Turn "ON" to enable time delay for Locking Device 2
Enable Interlock	3	Turn "ON" to remove O2 from interlock (Allows a single independent door)
	4	Turn "ON" for global interlock (interlocks with other SI boards that have this switch "ON")
Set Time Delay (Output Active)* (0-30 seconds, 2 second increments) 0 Sec: Switches 5-8 "OFF" 30 Sec: Switches 5-8 "ON"	5	Adds 2 seconds to the time delay when "ON"
	6	Adds 4 seconds to the time delay when "ON"
	7	Adds 8 seconds to the time delay when "ON"
	8	Adds 16 seconds to the time delay when "ON"
*See page 2 for dry contacts		

SI Input / Output Terminal Block Definitions	
Input 1	Access Control 1
Input 2	Access Control 2
Input 3	Lock Monitor 1
Input 4	Lock Monitor 2
Output 1*	Lock 1
Output 2*	Lock 2
Output 3*	Follows Output 1 by .5 Sec
Output 4*	Follows Output 2 by .5 Sec
*See page 2 for dry contacts	

Global Interlock Switch Setting Examples						
SI Board #1		SI Board #2		SI Board #3		Application
SW1-3	SW1-4	SW1-3	SW1-4	SW1-3	SW1-4	
Off	Off	Off	Off	Off	Off	Each SI board is a standalone, 2-door interlock.
Off	On	Off	On	Off	On	6-door interlock by setting all boards "global".
Off	On	On	On			A three-door interlock, plus an additional independent door on output 2 of SI Board #2.
Off	On	Off	On	Off	Off	4-Door interlock (SI Board #1,2) and a standalone 2-door interlock (SI Board #3).

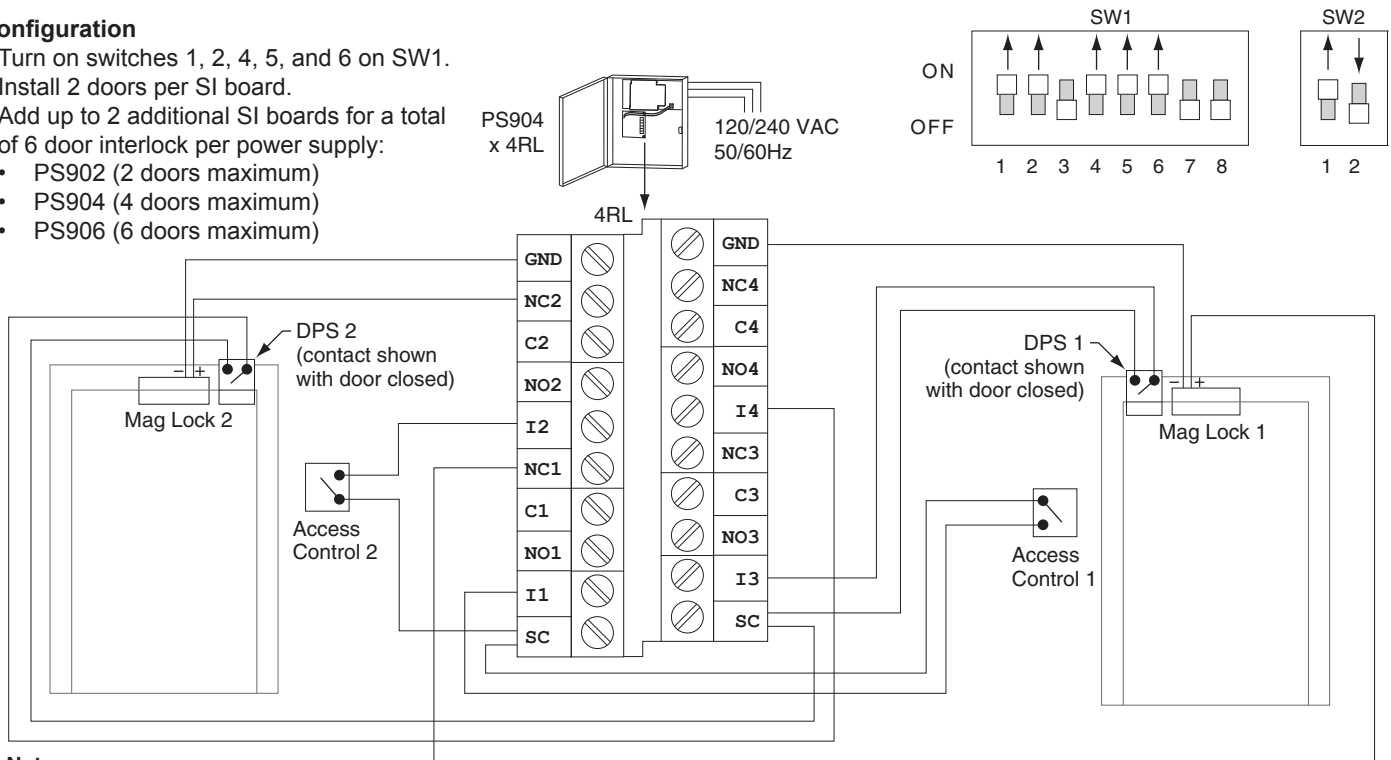| Wire table (suggested maximum)				
Wire Ga (AWG)	Device Current (Amps DC)	Output* (max. ft)	Input (max. ft)
14	0.3	850	
	0.5	500	
18	0.3	340	1200
	0.5	200	
12	Using EL device with EPT or Door Loop	200	
14	(PS914 required)	100	
12	Using EL device with Electric Hinge/Pivot	150	
14	(PS914 required)	75	

*Wiring allows for 10% voltage drop at device current at 12 or 24VDC

Max. ft = one way distance between power supply and device

SI Configuration

1. Turn on switches 1, 2, 4, 5, and 6 on SW1.
2. Install 2 doors per SI board.
3. Add up to 2 additional SI boards for a total of 6 door interlock per power supply:
   • PS902 (2 doors maximum)
   • PS904 (4 doors maximum)
   • PS906 (6 doors maximum)

PS904 x 4RL

120/240 VAC 50/60Hz

SW1

SW2

ON

OFF

1 2 3 4 5 6 7 8

1 2

4RL

GND	GND
NC2	NC4
C2	C4
NO2	NO4
I2	I4
NC1	NC3
C1	C3
NO1	NO3
I1	I3
SC	SC

DPS 2 (contact shown with door closed)

Mag Lock 2

Access Control 2

DPS 1 (contact shown with door closed)

Mag Lock 1

Access Control 1

Note:
Fail secure output only allowed if approved by Authority Having Jurisdiction

Refer to Wire Table (page 7)

Basic Troubleshooting for All Functions

Symptom	Check
900-4RL Function LED (yellow) is not blinking, and inputs and outputs are inactive	Verify 900-4RL cable is plugged into an "option" connector on the main board.
	Check AC wiring and AC breaker.
	Check PS-900 main board F1 fuse.
	Use voltmeter to verify 12 VDC or 24 VDC output on PS-900 main board.
900-4RL Function LED (yellow) is blinking, but inputs and outputs are inactive	If 900-FA option is installed onto 900-4RL, verify fire alarm contacts are closed across FA1 and FA2.
	If 900-FA option is not installed, then verify jumper wire is installed into FA-JMPR connector on the 4RL board.
Inputs and outputs behaving incorrectly.	Verify 2-position DIP switch is set for proper function.
	Watch yellow LED to confirm 4RL function setting .
	See page 2. (Verify each DIP switch is pushed into its fully-on or fully-off position.)
	Verify 8-position DIP switch is set properly for your application. If you are unsure of proper settings, contact Technical Services for assistance. (Verify each DIP switch is pushed into its fully-on or fully-off position.)
	Verify wiring for all input and output hardware is connected to proper terminals. (Reminder: If 900-4RL is mounted in location 1, top terminals will be GND. If 900-4RL mounted in location 2 or 3, top terminals will be SC.)

NOTE
When installation is complete, secure enclosure door with screws or keylock.
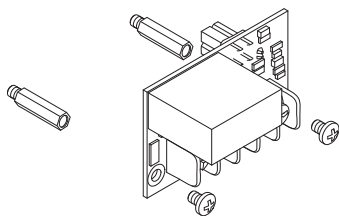
ALLEGION

900-FA Fire Alarm Input

SCHLAGE

44487072

Input (Fire Alarm)	Dry contacts required (Closed = no fire alarm) Connect control contacts between FA1 and FA2
Output (Supervision)	30VDC, 1A resistive dry contact
Board Input Power	Board requires 0.05A max. of power supply output current to operate
Temperature Range	32°-120° F (0°- 49° C)
Compliance	UL 294, ULC-S318, RoHS, & FCC Part 15

The 900-FA Fire Alarm board can be installed on any one of the following power supply or option boards (refer to installation instructions):

WARNING

To avoid risk of electric shock, turn off AC power to power supply before installing or wiring 900-FA board. In the event a fire alarm is active, this board will remove power from the PS902 DC output and any 900-series option board output.
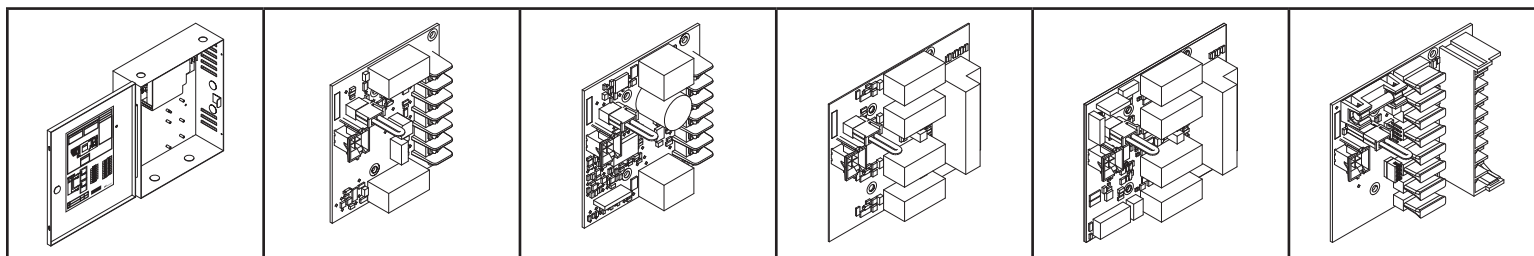
PS902 Power Supply | 900 2RS (2 relay) | 900-2Q (2 Relay w/com) | 900-4R (4 Relay) | 900-4RL (4 Relay w/logic) | 900-8F (8 Zone, Distribution-fuse) 900-8P (8 Zone, Distribution-PTC)

- **If 900-FA was factory installed, go to step 2**
- **If installing to option board, go to 1a**
- **If installing to PS902 main board, go to 1b**
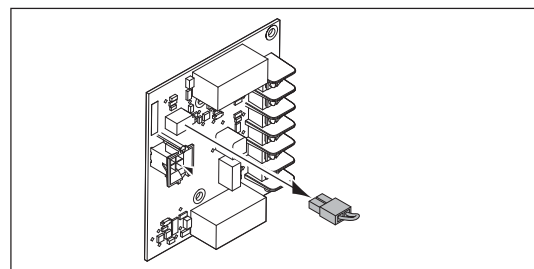
1a If installing to option board

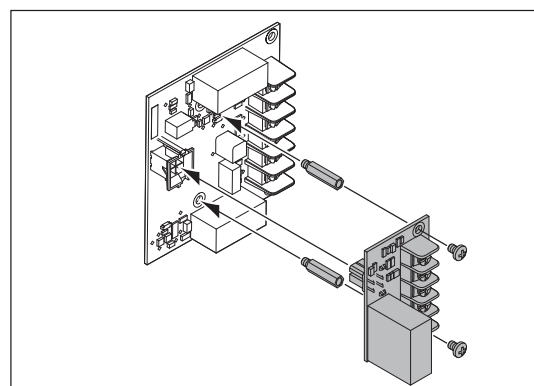**Choose Option Board where 900-FA is to be Installed**

Remove Jumper from Option Board

Note:
If using battery backup, location 3 is not available.
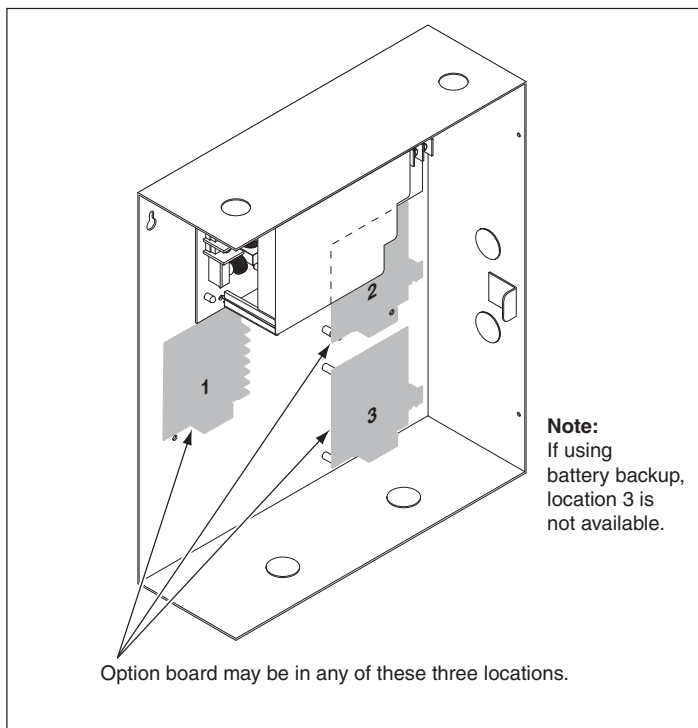
Option board may be in any of these three locations.

Install 900-FA to Option Board

Customer Service
1-877-671-7011   www.allegion.com
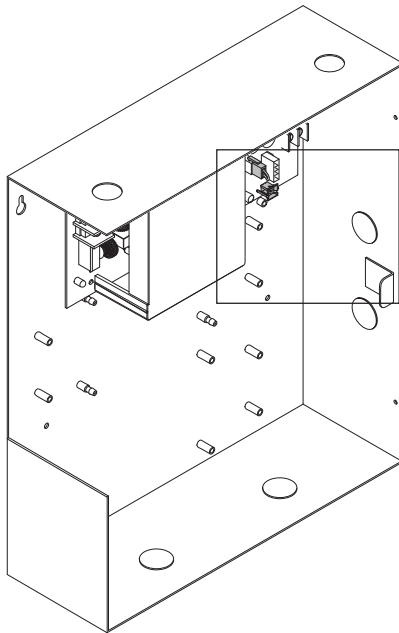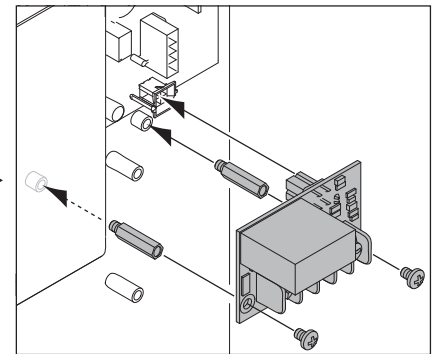
Remove Jumper
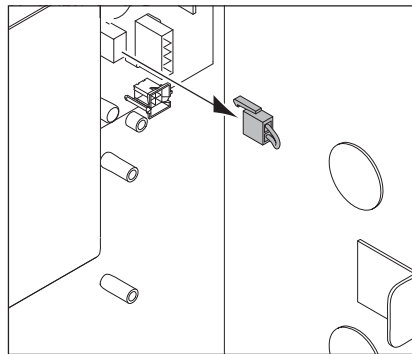
Install 900-FA Here

Note: Complete power failure shall result in a fail safe operation. When connected to a fire alarm releasing control unit, total loss of power for the locking mechanisms shall be configured for a fail safe operation.
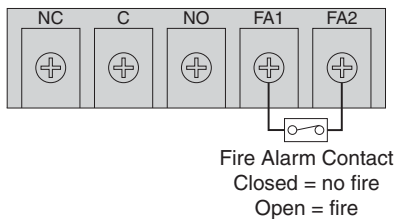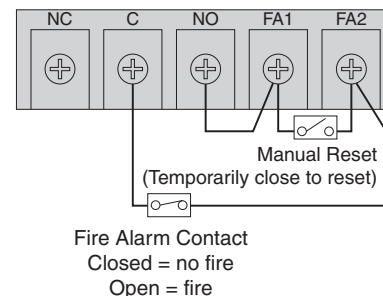
2 900-FA wiring

Terminal Definitions

NC	C	NO	FA1	FA2

Supervision Output
Contacts Shown FA Active (open)

Fire Alarm Input
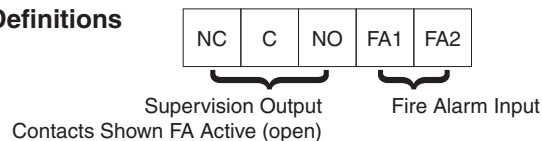
Note: Use 18 gauge wire for all wiring. Wire length dependent on physical layout.

One 900-FA Board - Automatic Reset
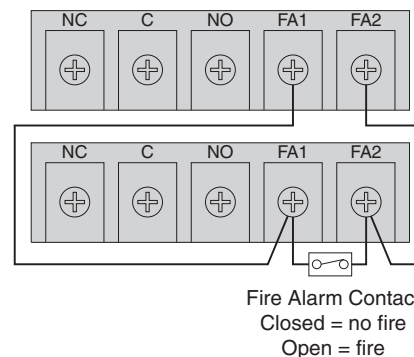
NC	C	NO	FA1	FA2

Fire Alarm Contact
Closed = no fire
Open = fire

One 900-FA Board - Manual Reset

NC	C	NO	FA1	FA2

Manual Reset
(Temporarily close to reset)

Fire Alarm Contact
Closed = no fire
Open = fire

Two 900-FA Boards on one power supply Automatic Reset

NC	C	NO	FA1	FA2

NC	C	NO	FA1	FA2

Fire Alarm Contact
Closed = no fire
Open = fire
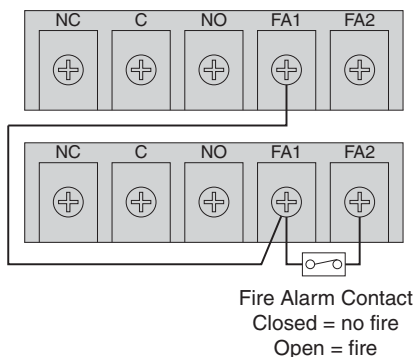
Two 900-FA Boards on two power supplies Automatic Reset

NC	C	NO	FA1	FA2

NC	C	NO	FA1	FA2

Fire Alarm Contact
Closed = no fire
Open = fire

NOTE: WHEN INSTALLATION IS COMPLETE, SECURE ENCLOSURE DOOR WITH SCREWS OR KEYLOCK

ALLEGION