Norton®

6900 PowerMatic® Low Energy Power Operator Wiring Instructions

80-9369-0901-020 (12-08)

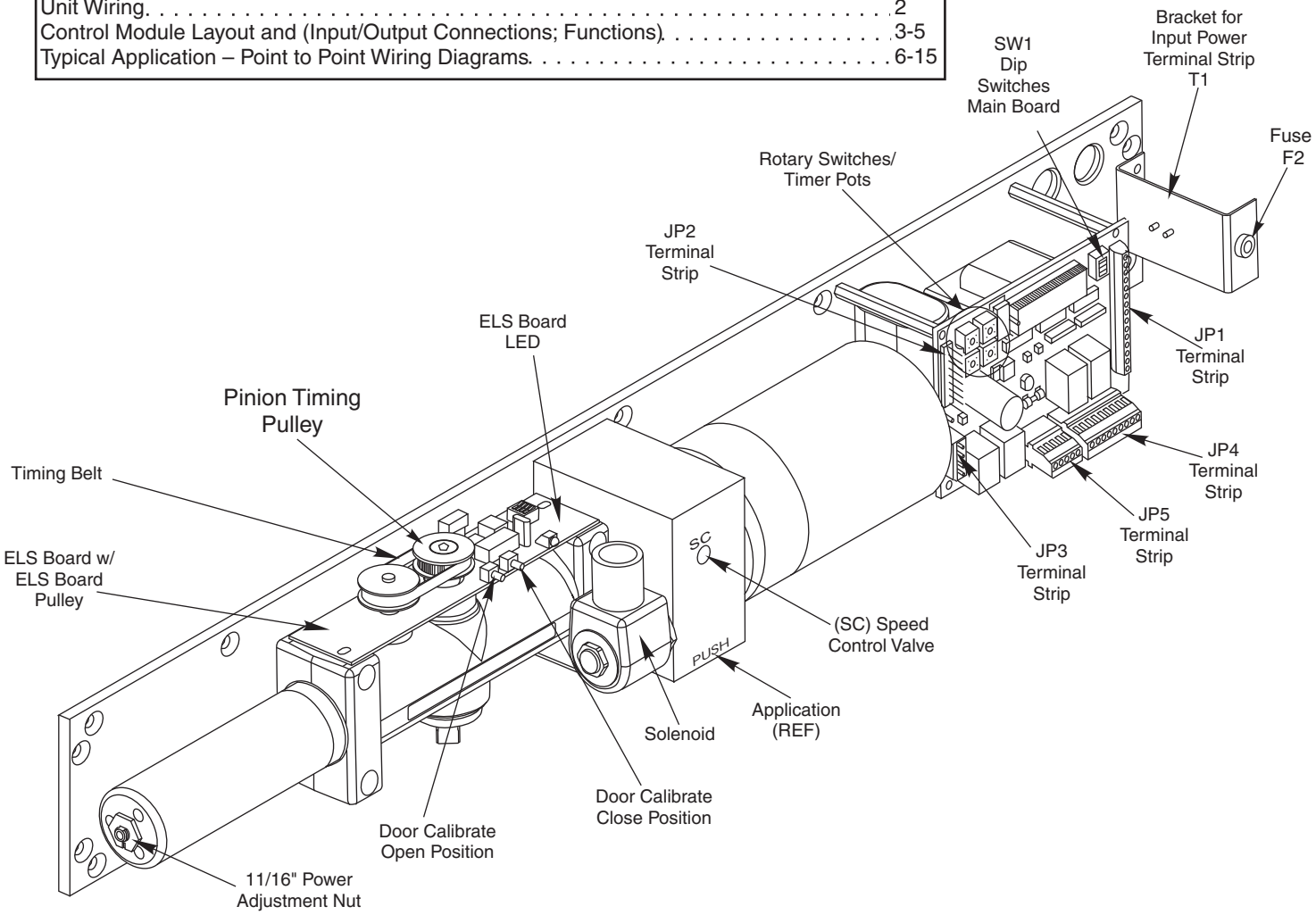
120 VOLT POTENTIAL PRESENT. MAKE SURE POWER INPUT TO UNIT IS TURNED OFF DURING INSTALLATION AND WIRING PROCEDURE.

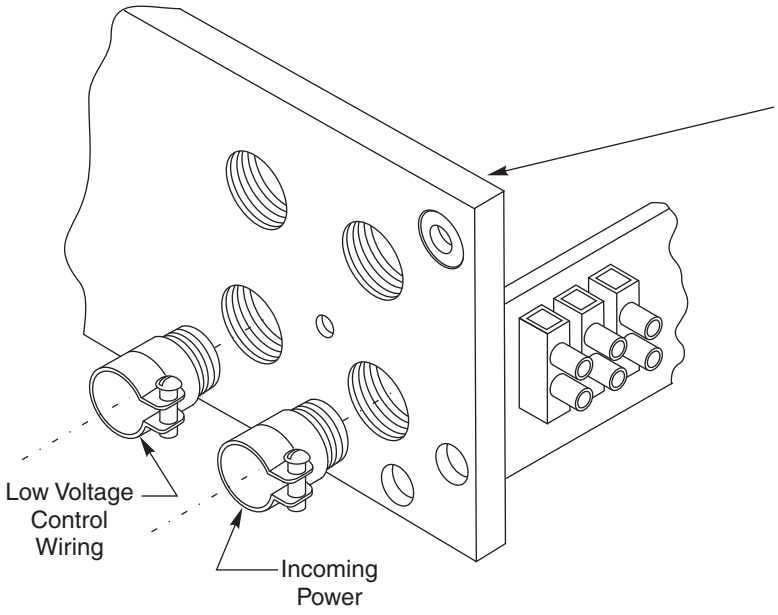
REQUIREMENTS:

- **U.L. labeled fire or smoke barrier door assemblies require that the 120VAC, 60Hz power input to the Power Door Operator be supplied through normally closed alarm contacts of the alarm system/alarm panel.**
- All wiring and connections use standard wiring practice conforming with local wiring codes.
- Power inputs at terminal strip T1 and at terminal strip JP4 must be made with copper wire only.
- Maximum wire size is:
  12 AWG at Power Input Terminal Strips
  14 AWG at Terminal Strips JP1 And JP4
  Note: No power/voltage inputs are to be made to the Door Operator unit except 120VAC, 60Hz (+10% -15%) at terminals HOT and COM of the Power Input Terminal Strip T1.
- Typical field connections for flexible conduit illustrated on page 2.
- Power input terminal strip T1 at terminals Hot and COM must be 120VAC at 60Hz (+10% -15%).
- Current draw at auxiliary contact JP4 – 2 must not exceed 0.500 amps, for auxiliary devices.

GENERAL DATA:

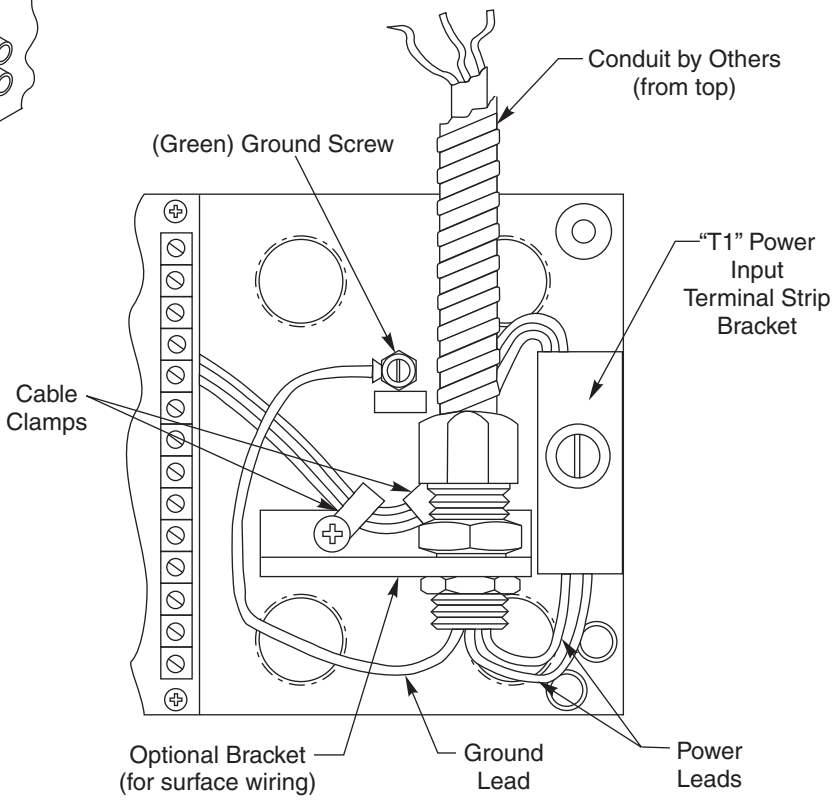
- Maximum current draw of Door Operator units without peripheral sensors or scanners is 1.5 amps when motor is operating, .050 amps in standby.
  Maximum current draw from auxiliary devices is 0.500 amps (terminals JP4 – 1 and JP4 – 2).
- Fuse “F2” protects the Electronic Control Module and Transformer circuit and is a 3 amp slow blow fuse.





CONCEALED WIRING

Thread conduit fitting(s) into backplate as shown. A second conduit fitting is required for low voltage control wiring. CHECK LOCAL CODES. Pull conduit out of header and attach to conduit fittings before mounting Operator to door frame. Attach incoming ground wire to backplate with ground screw as illustrated below.



SURFACE WIRING

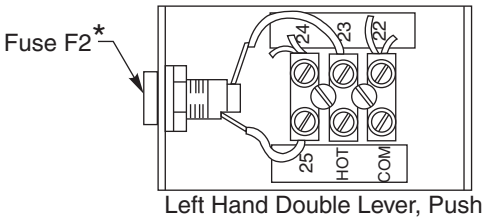
An optional bracket is provided for use with surface wiring. Remove the two cable clamps screws and slip the bracket under the cable clamps. Push the cable clamp screw through the bracket holes and tighten. ½" conduit fittings can now be installed on the bracket.

INSTALLER / USER INFORMATION

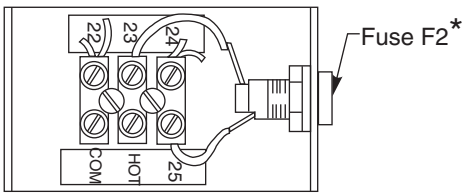
Input Power Terminal Strip – Maximum wire size 12 AWG at terminals HOT and COM. Terminals 22 through 25 are factory wired using 18AWG wire.

Ground Wire Connection – Ground wire must be secured to backplate under head of (green) ground screw nearest to "T1" Power Input Terminal Strip bracket. Screw labeled "GND".

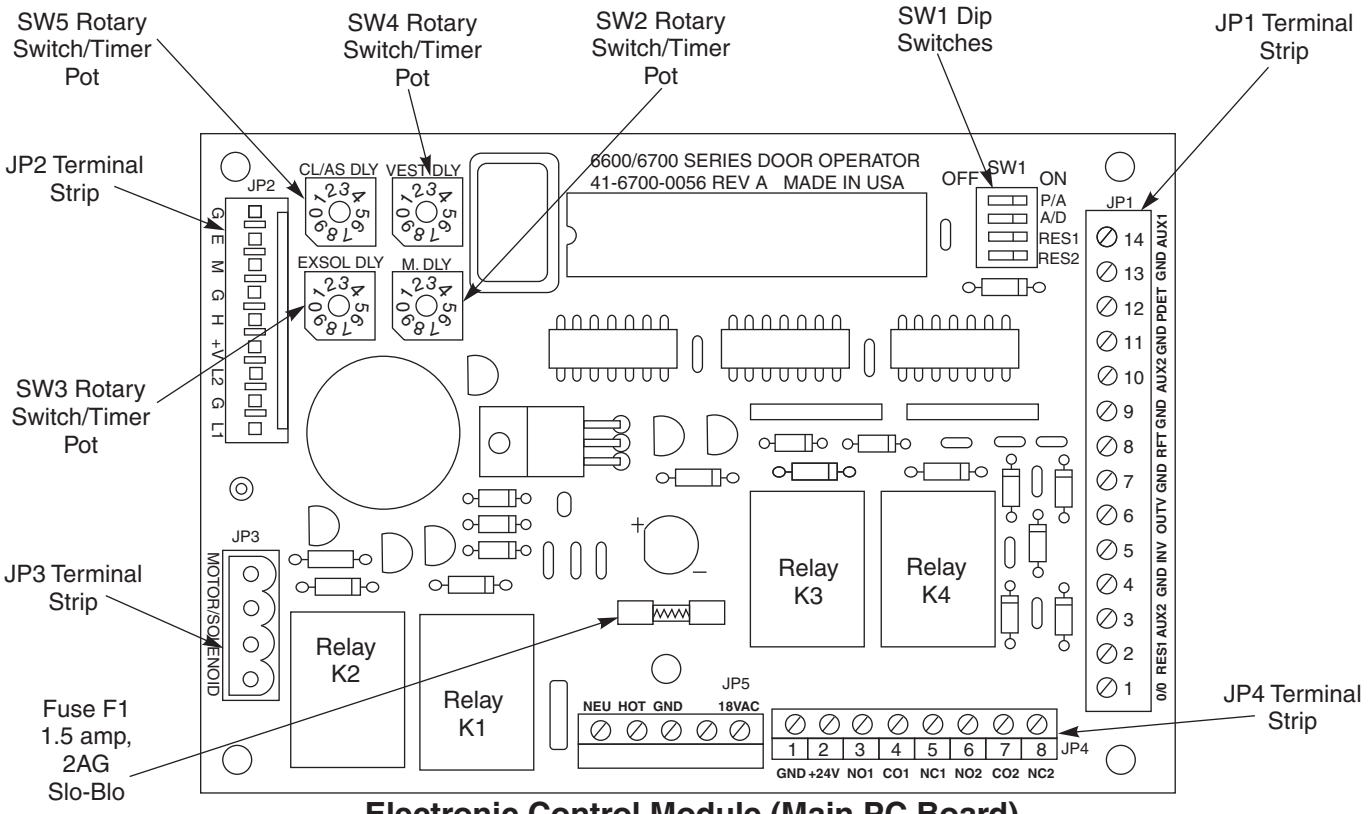
Terminal	Description
COM	Common power lead
HOT	Hot power lead
25	Fuse connection
24	Hot connection to PC board JP5 – 2 and to hot primary side of 120V / 24V transformer.
23	Fuse connection
22	Common connection to PC board JP5 – 1 and to common primary side of 120V / 24 V transformer.



Left Hand Double Lever, Push Side
Right Hand Slide Track, Pull Side



Right Hand Double Lever, Push Side
Left Hand Slide Track, Pull Side



Electronic Control Module (Main PC Board)

JP1 Terminal Strip – Maximum wire size 14AWG. For signaling only, do not make power input connections.

TERMINAL		DESCRIPTION
1	0/0	Override Open – This terminal has two possible functions that can be used together or separately. 1. Smoke Ventilation Door or Blow Open Door – Upon initiation of a closed signal from a fire/ smoke alarm panel, door will open and remain open until signal is terminated. Use with any JP1 ground. 2. Alarm Delay (30 second or 60 second time period) – Time is set with dip switch SW1 – 2 A/D. (OFF = 30 second delay, ON = 60 second delay) Use with any JP1 ground.
2	RES1	This is not an active contact.
3	AUX2	Auxiliary 2 – This is one of two secondary initiating switch contacts (JP1 – 10 is the other.) For most applications it is equivalent to AUX1 JP1 – 14. For Vestibule Function use, it is the contact for a switch located within the vestibule. Use with any JP1 ground.
4	GND	Ground
5	INV	In Vestibule – Used for Vestibule Function. This contact must be connected to the JP1 – 6 terminal from another unit to receive an initiating signal. The signal is then programed to initiate the unit by setting the VEST DLY rotary switch/timer pot of the receiving unit. Use this contact with any JP1 ground.
6	OUTV	Out Vestibule – Used for Vestibule Function. This contact must be connecter to terminal JP1 – 5 of another unit to send an initiating signal. Use with any JP1 ground.
7	GND	Ground
8	RFT	Maintain Hold Open – With the unit's 3 Position Slide Switch in the "ON" position, a signal will open the door and maintain an indefinite hold open until a second signal releases the door from hold open. Use with any JP1 ground. *This feature recommended for Power Operator Function. If using with the Power Assist Function, consult factory.*
9	GND	Ground
10	AUX2	Auxiliary 2 – Same as JP1 – 3 / AUX2 above.
11	GND	Ground
12	PDET	Presence Detector – Permits wiring of a presence detector to prevent a closed door from opening or a door that is fully open from closing. Use with any JP1 ground.
13	GND	Ground
14	AUX1	Auxiliary 1 – Primary initiating switch contact. Initiates door power cycle. For Vestibule Function, the switch at outside of vestibule is connected to this terminal. (Outside switch to outside unit's JP1 – 14. Inside switch to inside unit's JP1 – 14). Use with any JP1 ground.

JP4 Terminal Strip – Maximum wire size 14AWG.

TERMINAL		DESCRIPTION
1	GND	Ground
2	+24	24VDC **output** to a maximum current draw of 0.500 amps. Use with ground terminal JP4 – 1
3	NO1	Solenoid Control (Relay Contact Only) – Normally open contact that is switched by Relay K3 (on main board) to close. Relay K3 will remain switched for a period set by SW – 3 EXSOL DLY rotary switch / timer pot. Use with terminal JP4 – 4 CO1. Coordinate use of this terminal with delayed start of motor using rotary timer pot SW – 2 M
4	CO1	Solenoid Control (Relay Contact Only) – Common contact for use with terminals JP4 – 3 NO1 and JP4 - 5 NC1.
5	NC1	Solenoid Control (Relay Contact Only) – Normally closed contact that is switched by Relay K3 (on main board) to open. Relay K3 will remain switched for a period set by SW – 3 EXSOL DLY rotary switch / timer pot. Use with terminal JP4 – 4 CO1. Coordinate use of this terminal with delayed start of motor using rotary timer pot SW – 2 M DLY.
6	NO2	Alarm Delay (Switching Contact Only) – Normally open contact that is switched by relay K4 (on main board) to close. Relay K4 will remain switched for a period set by Dip Switch SW1 – 2 A/D (OFF = 30 second delay; ON = 60 second delay). Use with terminal JP4 – 7 CO2.
7	CO2	Alarm Delay (Switching Contact Only) – Common contact for use with terminals JP4 – 6 NO2 and JP4 – 8 NC2.
8	NC2	Alarm Delay (Switching Contact Only) – Normally closed contact that is switched by relay K4 (on main board) to open. Relay K4 will remain switched for a period set by Dip Switch SW1 – 2 A/D (OFF = 30 second delay; ON = 60 second delay). Use with terminal JP4 – 7 CO2.

Main Board Switches

DIP SWITCHES (MAIN BOARD)		DESCRIPTION
1	P/A	Door Operator Function Switch – OFF position selects the Power Operator Function. On position sets the Power Assist Function.
2	A/D	Alarm System Delay Timer – This switch is used in conjunction with terminal Jp1– 1, 0/0 for optional function 2. (OFF = 30 second delay, ON = 60 second delay).
3	RES1	DIAGNOSTIC USE. FOR FACTORY AUTHORIZED PERSONAL.
4	RES2	DIAGNOSTIC USE. FOR FACTORY AUTHORIZED PERSONAL.

ROTARY SWITCHES		DESCRIPTION
SW2	M DLY	This rotary switch or timer pot sets the length of delay for motor start up to allow for "unlocking" of exit devices, electric strikes, magnetic locks, etc. See Chart 1 for delay times.
SW3	EXSOL DLY	This rotary switch or timer pot sets the length of time that a solenoid remains either energized or de-energized to allow "unlocking". Used in conjunction with terminals JP4 – 3, JP4 – 4, JP5 – 5. See Chart 2 for length of time.
SW4	VEST DLY	This switch or timer pot sets the length of time between receipt of the "In Vestibule" signal (terminal JP1 – 5) and motor start-up. See Chart 3 for delay times.
SW5	CL/AS DLY	Controls either one of two function times: Power Operator Function – Sets length of time door holds open at fully "taught" open position. Power Assist Function – Sets length of time motor and pump will operate to reduce opening force. When time elapses, the door force reverts to full opening spring force set.

Chart 1 – SW2, M DLY

Length of Time (Seconds)	Settings
0.0	0
0.2	1
0.5	2
1.0	3
1.5	4
2.5	5
3.5	6
4.5	7

Chart 2 – SW3, EXSOL DLY

Length of Time (Seconds)	Settings
0	0
1	1
2	2
4	3
6	4
8	5
10	6
12	7

Chart 3 – SW4, VEST DLY

Length of Time (Seconds)	Settings
0	0
1	1
3	2
6	3
9	4
14	5
21	6
30	7

Chart 4 – SW5, CL/AS DLY

Length of Time (Seconds)	Settings
0	0
2	1
5	2
10	3
15	4
20	5
25	6
30	7

JP2 Terminal Strip – Factory Wired Connections.

TERMINAL	D E S C R I P T I O N
L1	White Wire – High side of L1 Input signal from ELS Board. Detects door motion to open door when door is pushed or pulled in the open direction. Movement of potentiometer on ELS Board signals L1 input.
G	Black Wire – Ground. Common connection for L1 and L2 inputs.
L2	Blue Wire – High side of L2 Input signal for ELS Board. Detects the Fully Open Position stored in the ELS Board during the teaching mode.
+V	Yellow Wire +24VDC. This terminal is used to supply power to the ELS Board.
H	Violet Wire – Hold Open contact of “OFF” “ON” “H/O” switch assembly.
G	White Wire – Ground. Common contact of “OFF” “ON” “H/O” switch assembly.
M	Orange Wire – ON contact of “OFF” “ON” “H/O” switch assembly.
E	Red Wire – Emergency Hold Open Release. This contact is used in conjunction with the ELS board to close the door immediately at any point of door opening once an obstruction on opening is encountered. It is used with terminal JP2 – G.
G	Black Wire – Ground. Use with terminal Jp2 – E for Emergency Hold Open Release.

JP5 Terminal Strip – Factory Wired Connections.

TERMINAL		D E S C R I P T I O N
1	NEU	Common 120V connection to Input Power Terminal 22.
2	HOT	Hot 120V connection to Input Power Terminal 24.
3	GND	Ground connection secured to backplate under head of (green) ground screw that is located under Main PC Board. Screw Labeled “GND”
4	18VAC	From secondary of 120V / 24V transformer.
5	18VAC	From secondary of 120V / 24V transformer.

JP3 Terminal Strip – Factory Wired Connections.

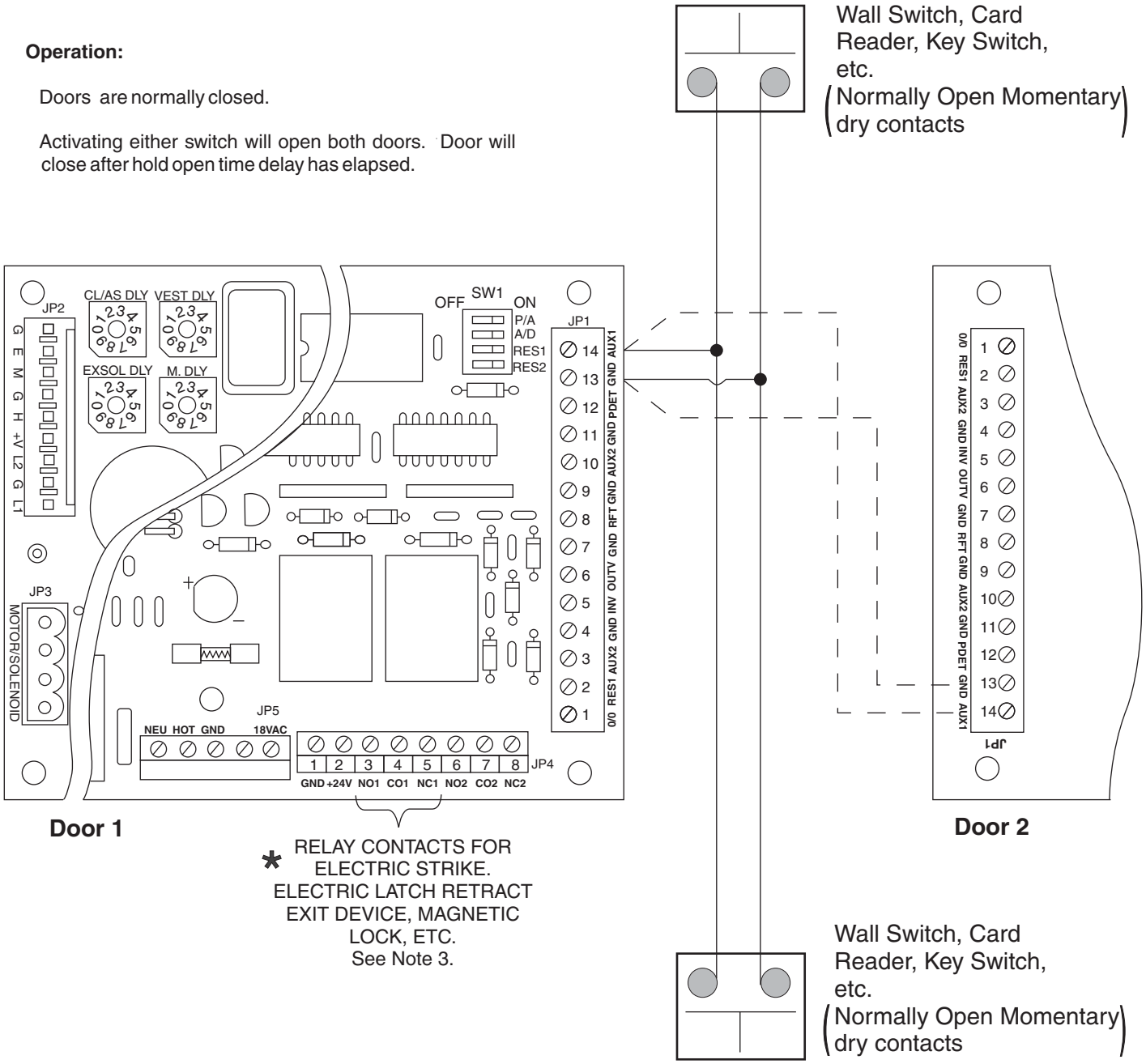
TERMINAL	D E S C R I P T I O N
MOTOR	Motor Connection.
SOLENOID	Solenoid coil connection.

Standard Function with Switches

Operation:

Doors are normally closed.

Activating either switch will open both doors. Door will close after hold open time delay has elapsed.



Notes:

1. Power input Door Operator Unit is at Power Input Terminal Strip (not shown) 120VAC 60Hz.
2. Current draw must not exceed 0.500 amps at terminal JP4 – 2.

* Note 3:
If product being connected does not have an integrated diode, one must be installed across contracts to protect relays . Suggested diode is 1N4001 or equivalent.
See pages 9 - 11 for illustration of use.

Vestibule Function

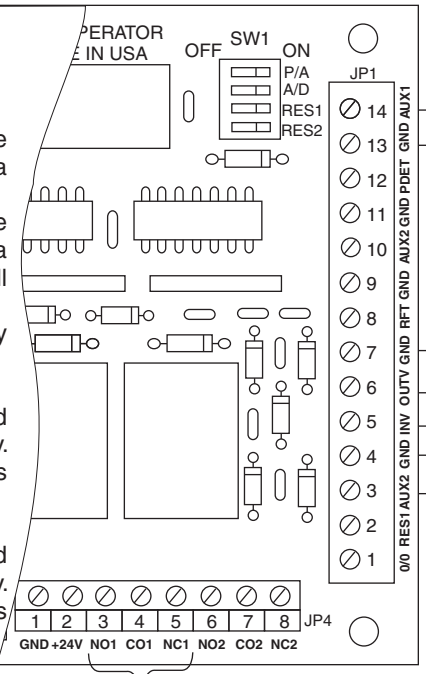
Operation:

Doors are normally closed.

Activating outside door switch will open the outside door. After the vestibule time delay has elapsed, a signal will be sent to the inside door which will open.
Activating the inside door switch will open the inside door. After the vestibule time delay has elapsed, a signal will be sent to the outside door which will open.
Both doors will close when the hold open time delay has elapsed.

Activating the optional inside door switch located with-in the corridor will open the inside door only. This door will re-close after the hold open delay has elapsed.

Activating the optional outside door switch located with-in the corridor will open the outside door only. This door will re-close after the hold open delay has elapsed.



Inside Switch

All Switches are either Wall Switches, Card Readers, Key Switches, etc.
Normally Open Momentary dry contacts

INSIDE DOOR

Optional Inside Corridor Switch

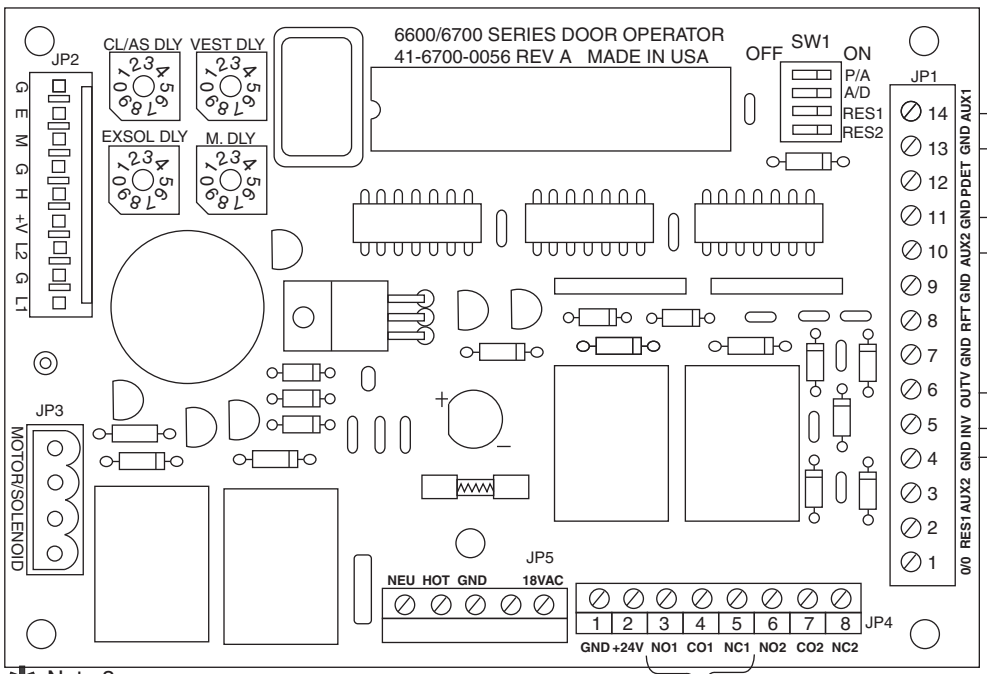
VESTIBULE

Optional Outside Corridor Switch

Outside Switch

OUTSIDE DOOR

* RELAY CONTACTS FOR ELECTRIC STRIKE. ELECTRIC LATCH RETRACT EXIT DEVICE, MAGNETIC LOCK, ETC. See Note 3.



* Note 3:
If product being connected does not have an integrated diode, one must be installed across contracts to protect relays . Suggested diode is 1N4001 or equivalent.
See pages 9 - 11 for illustration of use.

* RELAY CONTACTS FOR ELECTRIC STRIKE. ELECTRIC LATCH RETRACT EXIT DEVICE, MAGNETIC LOCK, ETC. See Note 3.

Notes:
1. Power input Door Operator Unit is at Power Input Terminal Strip (not shown) 120VAC 60Hz.

2. Current draw must not exceed 0.500 amps at terminal Jp4 – 2.

Radio Frequency Function Options

Operation:

Option1.

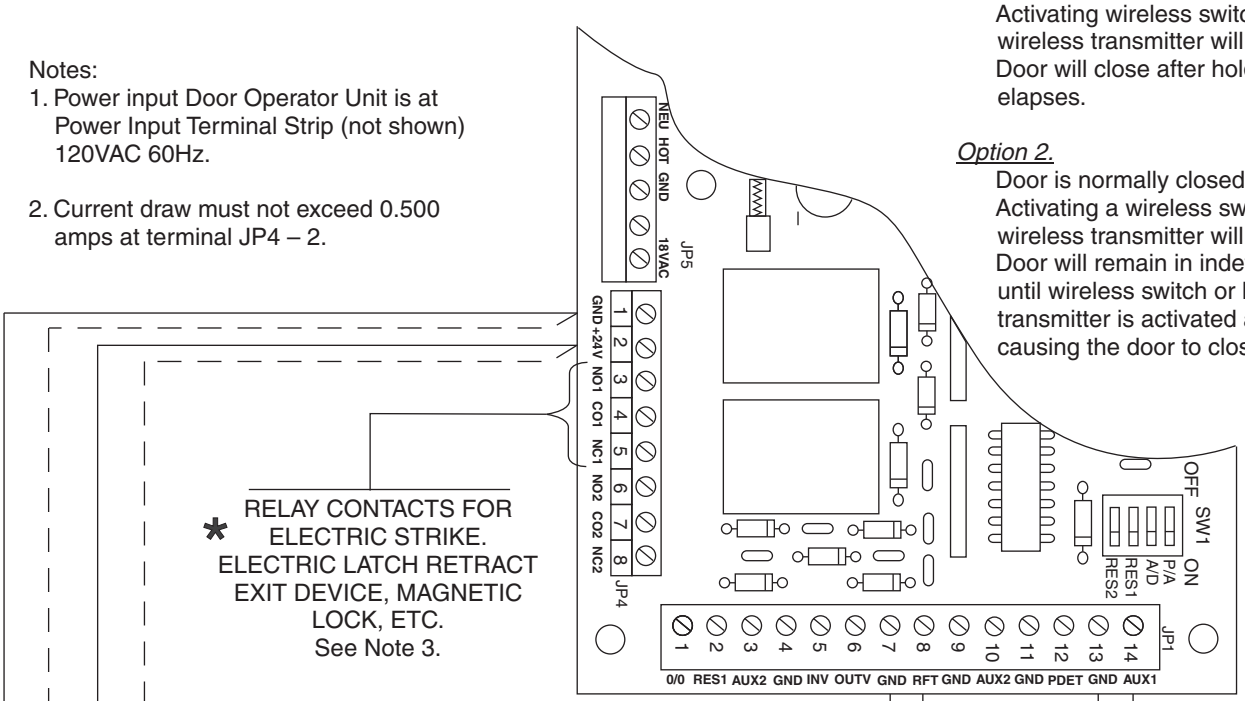
Door is normally closed.
Activating wireless switch or hand held wireless transmitter will open the door.
Door will close after hold open delay elapses.

Option 2.

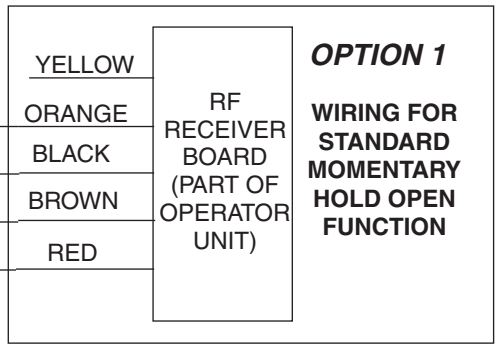
Door is normally closed.
Activating a wireless switch or hand held wireless transmitter will open the door.
Door will remain in indefinite hold open until wireless switch or hand held transmitter is activated a second time causing the door to close.

Notes:

1. Power input Door Operator Unit is at Power Input Terminal Strip (not shown) 120VAC 60Hz.
2. Current draw must not exceed 0.500 amps at terminal JP4 – 2.

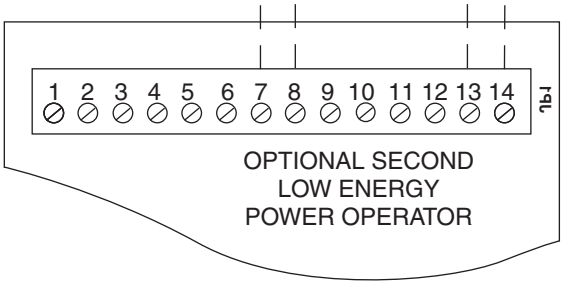


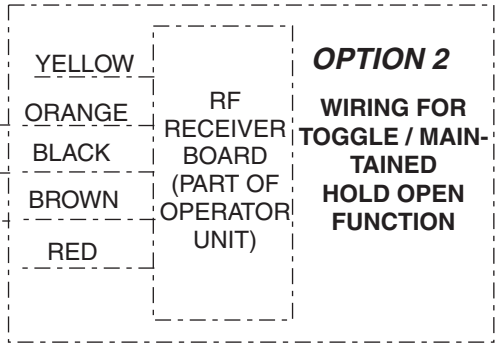
* RELAY CONTACTS FOR ELECTRIC STRIKE. ELECTRIC LATCH RETRACT EXIT DEVICE, MAGNETIC LOCK, ETC. See Note 3.



OPTION 1

WIRING FOR STANDARD MOMENTARY HOLD OPEN FUNCTION



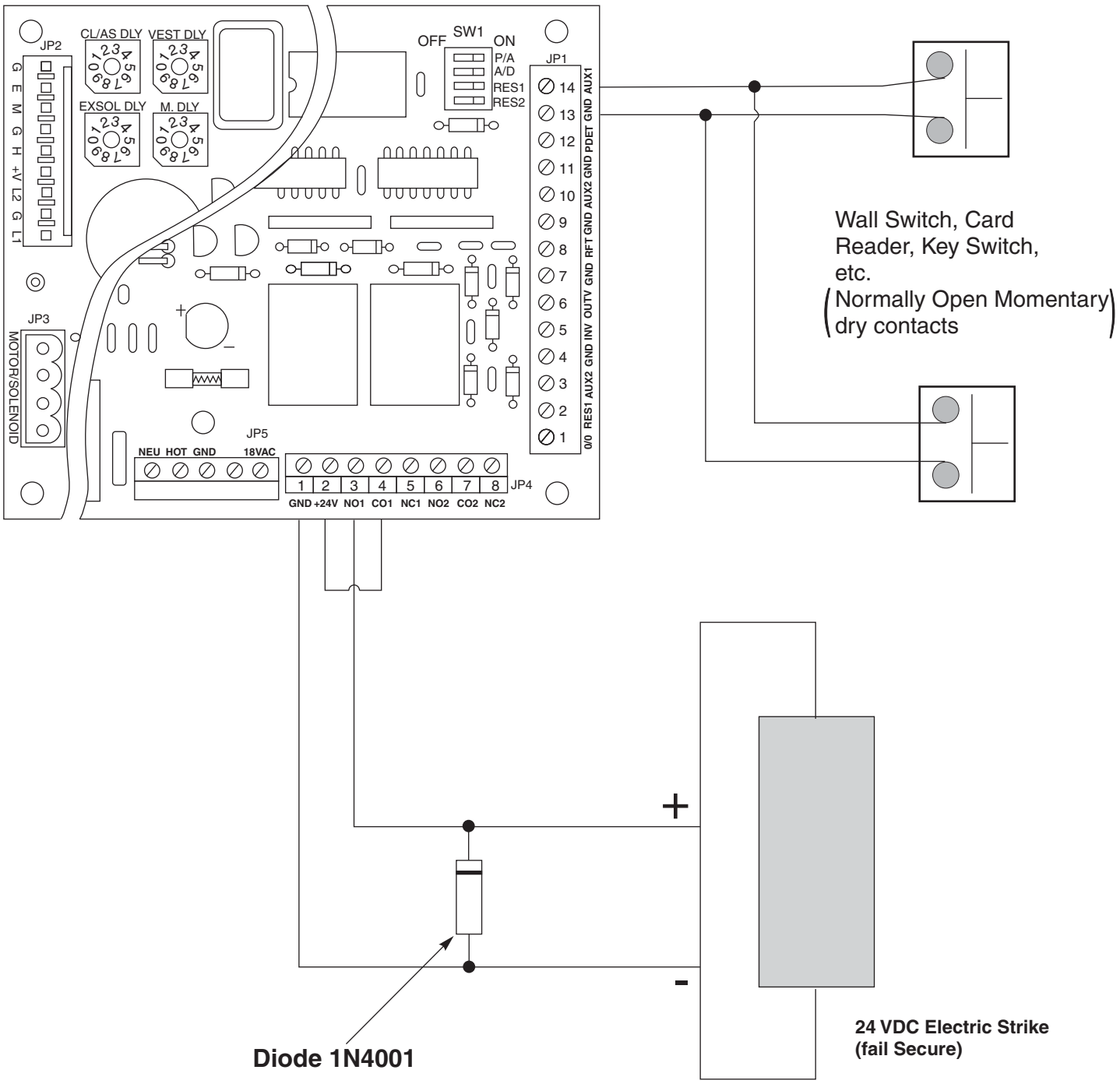


OPTION 2

WIRING FOR TOGGLE / MAINTAINED HOLD OPEN FUNCTION

* Note 3:
If product being connected does not have an integrated diode, one must be installed across contracts to protect relays . Suggested diode is 1N4001 or equivalent.
See pages 9 - 11 for illustration of use.

Fail Secure Electric Strike 24VDC Wiring



Operation:

Door is normally closed and latched.

Activating switch will unlock the electric strike and the door will automatically open. Door will close after hold open time delay has elapsed.

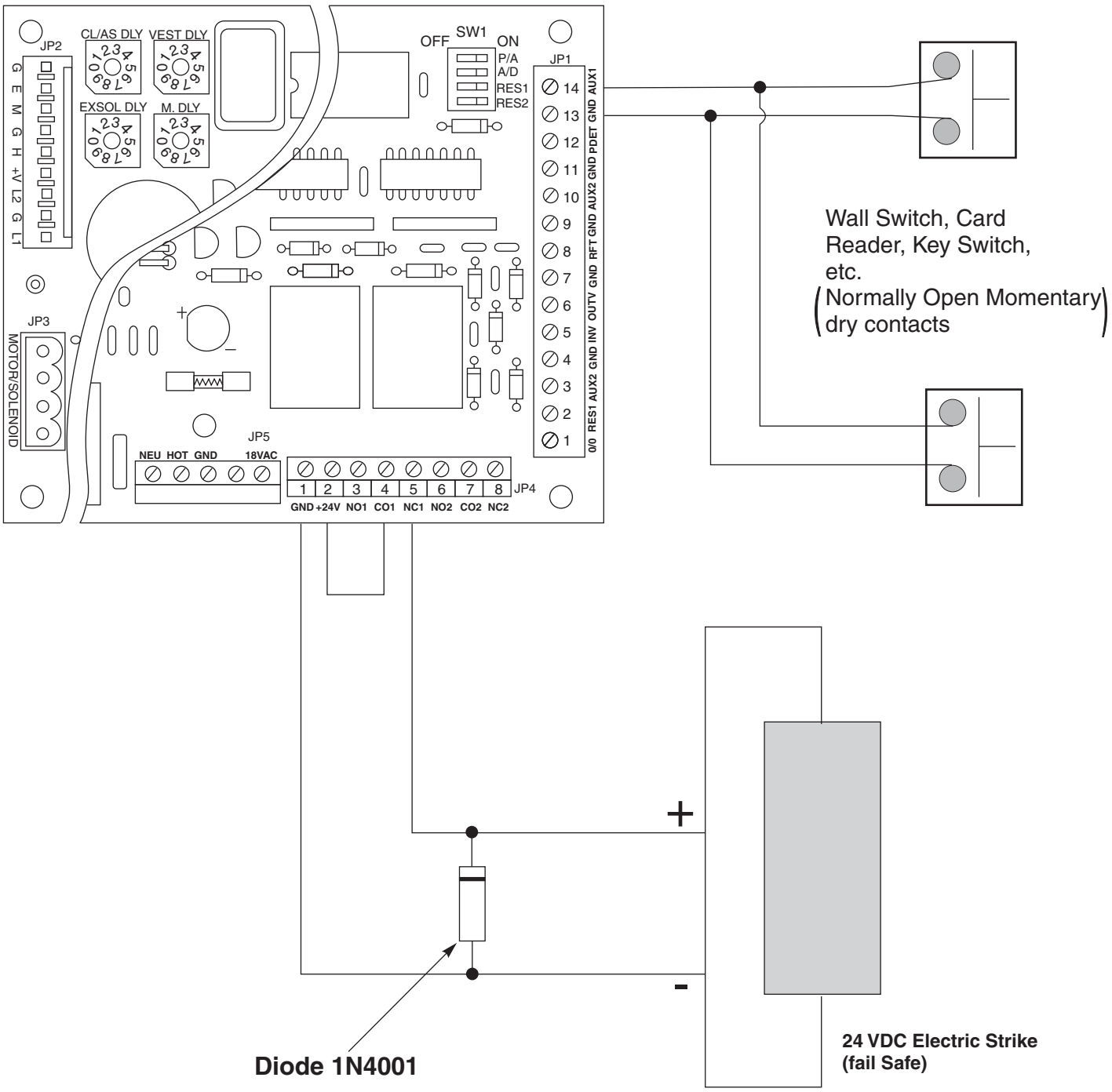
The door will remain **locked** during power failure.

Notes:

1. Power input Door Operator Unit is at Power Input Terminal Strip (not shown) 120VAC 60Hz.

2. Current draw must not exceed 0.500 amps at terminal JP4 – 2.

Fail Safe Electric Strike 24VDC Wiring



Operation:

Door is normally closed and latched.

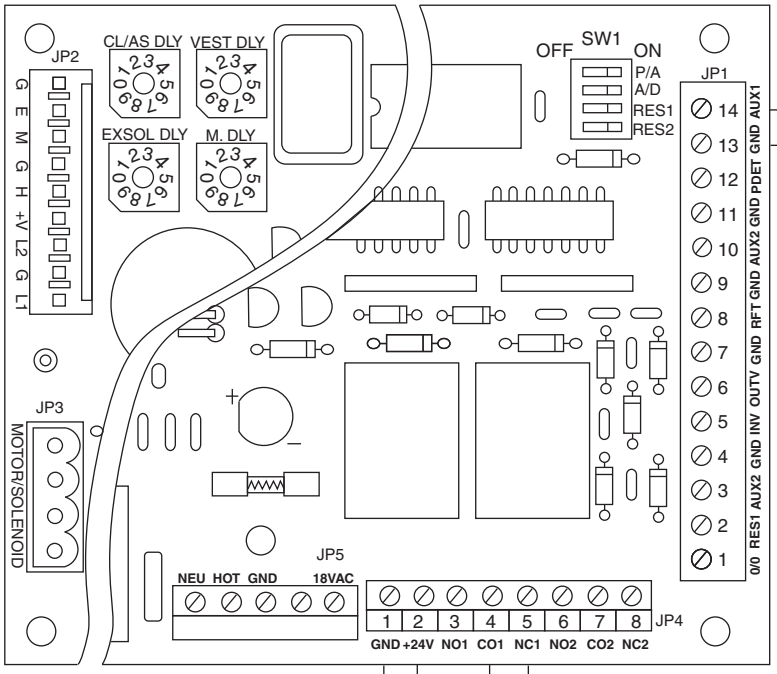
Activating switch will unlock the electric strike and the door will automatically open. Door will close after hold open time delay has elapsed.

The door will remain **unlocked** during power failure.

Notes:

1. Power input Door Operator Unit is at Power Input Terminal Strip (not shown) 120VAC 60Hz.
2. Current draw must not exceed 0.500 amps at terminal JP4 – 2.

Fail Safe Electromagnetic Lock 24VDC Wiring



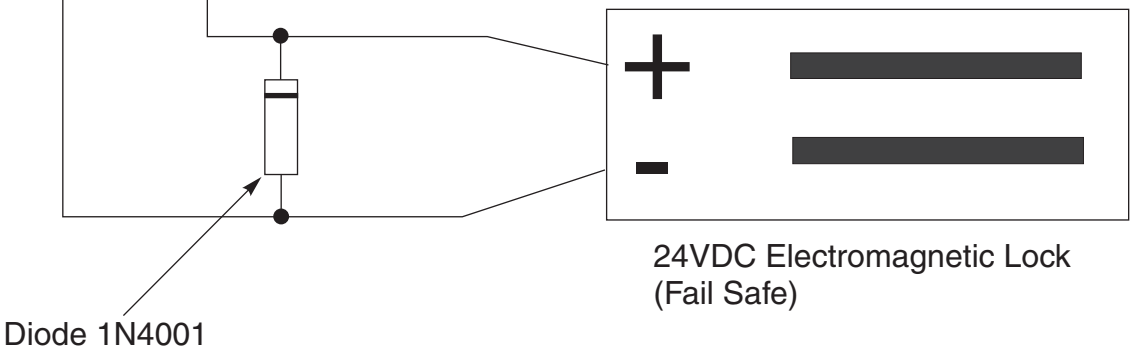
Wall Switch, Card Reader, Key Switch, etc.
(Normally Open Momentary dry contacts)

Operation:

Door is normally closed and latched.

Activating switch will unlock the maglock and the door will automatically open. Door will close after hold open time delay has elapsed.

The door will **unlock** during power failure.



24VDC Electromagnetic Lock (Fail Safe)

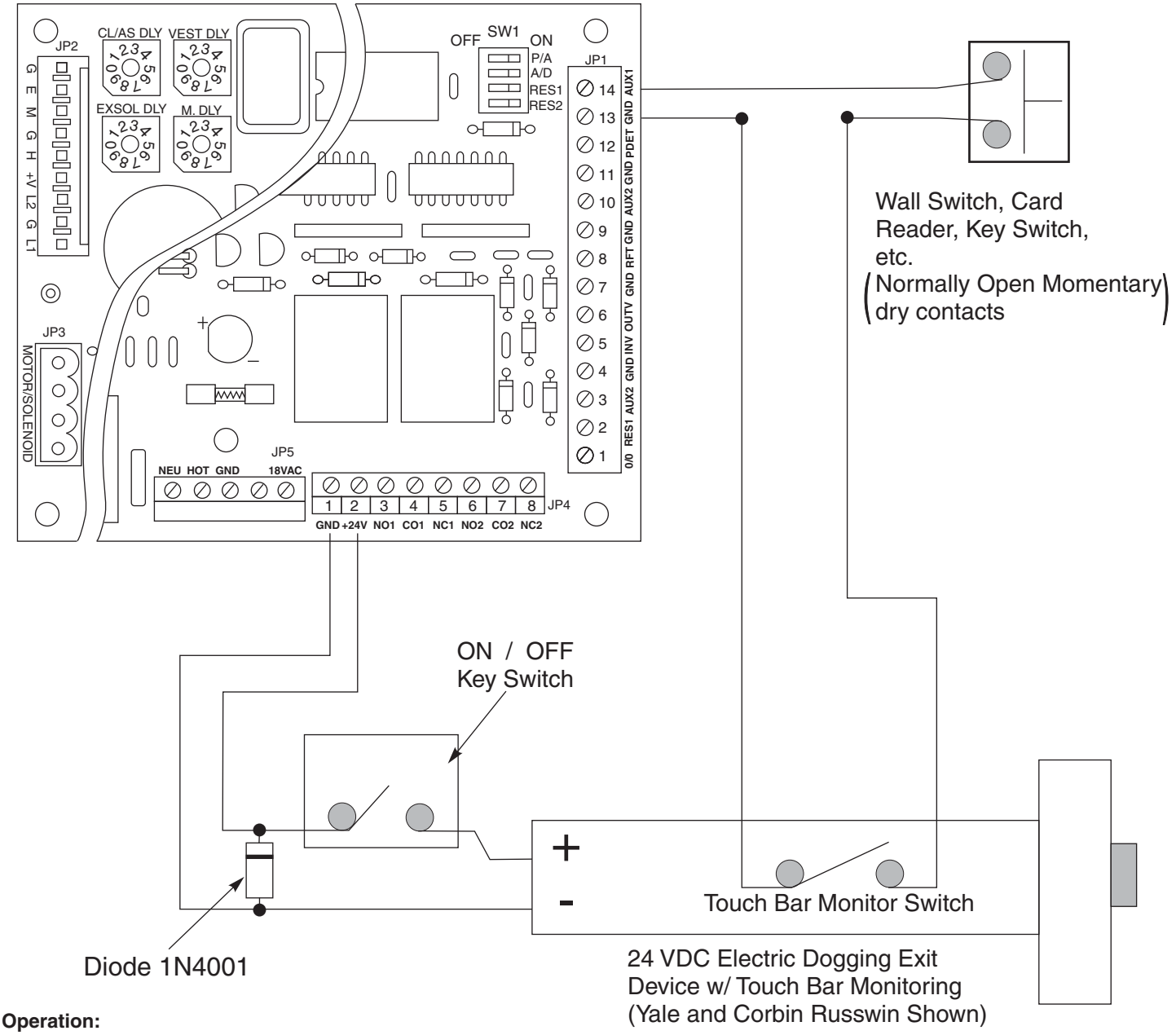
Diode 1N4001

Note:
If Maglock does not have a spike protection, it is recommend that a 1N4001 diode be added across coil.

Notes:
1. Power input Door Operator Unit is at Power Input Terminal Strip (not shown) 120VAC 60Hz.

2. Current draw must not exceed 0.500 amps at terminal JP4 – 2.

Electric Dogging Exit Device Wiring



Operation:

Door is normally closed and latched.

Turning key switch ON will apply power to the exit device.

The first depression on the device touchpad will electrically dog the device for push / pull operation.

The door will now open automatically when the wall switch is depressed.

The device will relatch during a power failure or when the keyswitch is turned off.

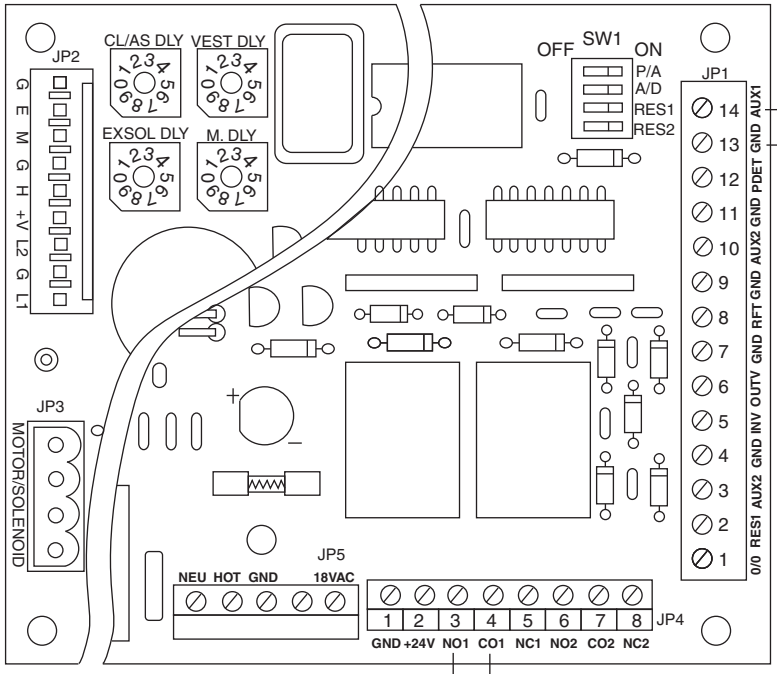
The exit device allows egress at all times. The exit device allows egress during power failures.

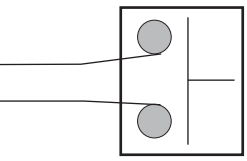
Notes:

1. Power input Door Operator Unit is at Power Input Terminal Strip (not shown) 120VAC 60Hz.

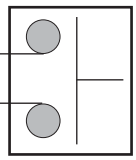
2. Current draw must not exceed 0.500 amps at terminal JP4 – 2.

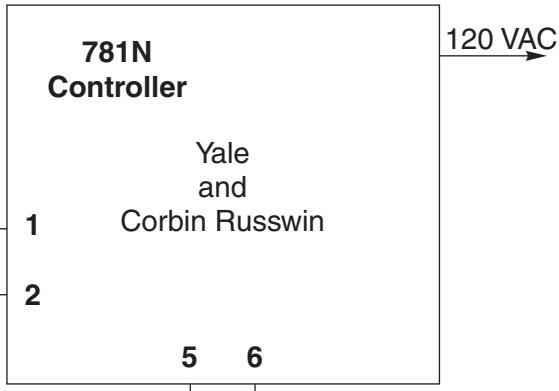
Electric Latch Retraction Exit Device Wiring





Wall Switch, Card Reader, Key Switch, etc.
(Normally Open Momentary dry contacts)





Operation:

Door is normally closed and latched.

Activating the switch will retract the exit device latchbolt and the operator will open the door.

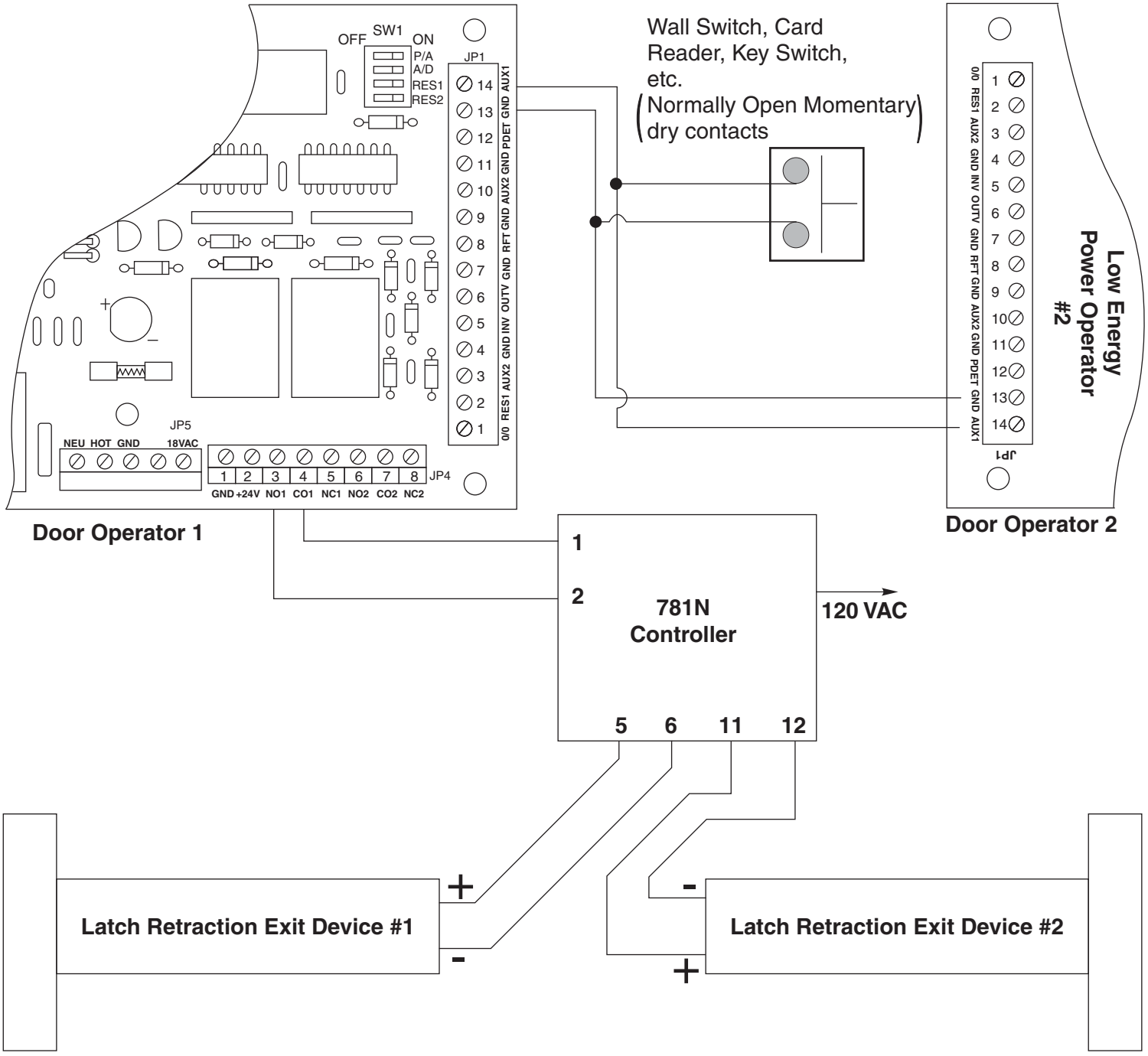
The door will close after the hold open time delay has elapsed.

Exit device allows egress at all times. Exit device allows egress during power failure.

Notes:

1. Power input Door Operator Unit is at Power Input Terminal Strip (not shown) 120VAC 60Hz.
2. Yale and Corbin Russwin Shown. Refer to Manufactures wiring instructions for Latch Retraction Devices not shown or contact Norton Technical Service for assistance.

Electric Latch Retraction Exit Device Wiring (Pair)
Yale and Corbin Russwin



Operation:

Doors are normally closed and latched.

Activating the switch will retract the exit device latchbolts and the operator will open both doors.

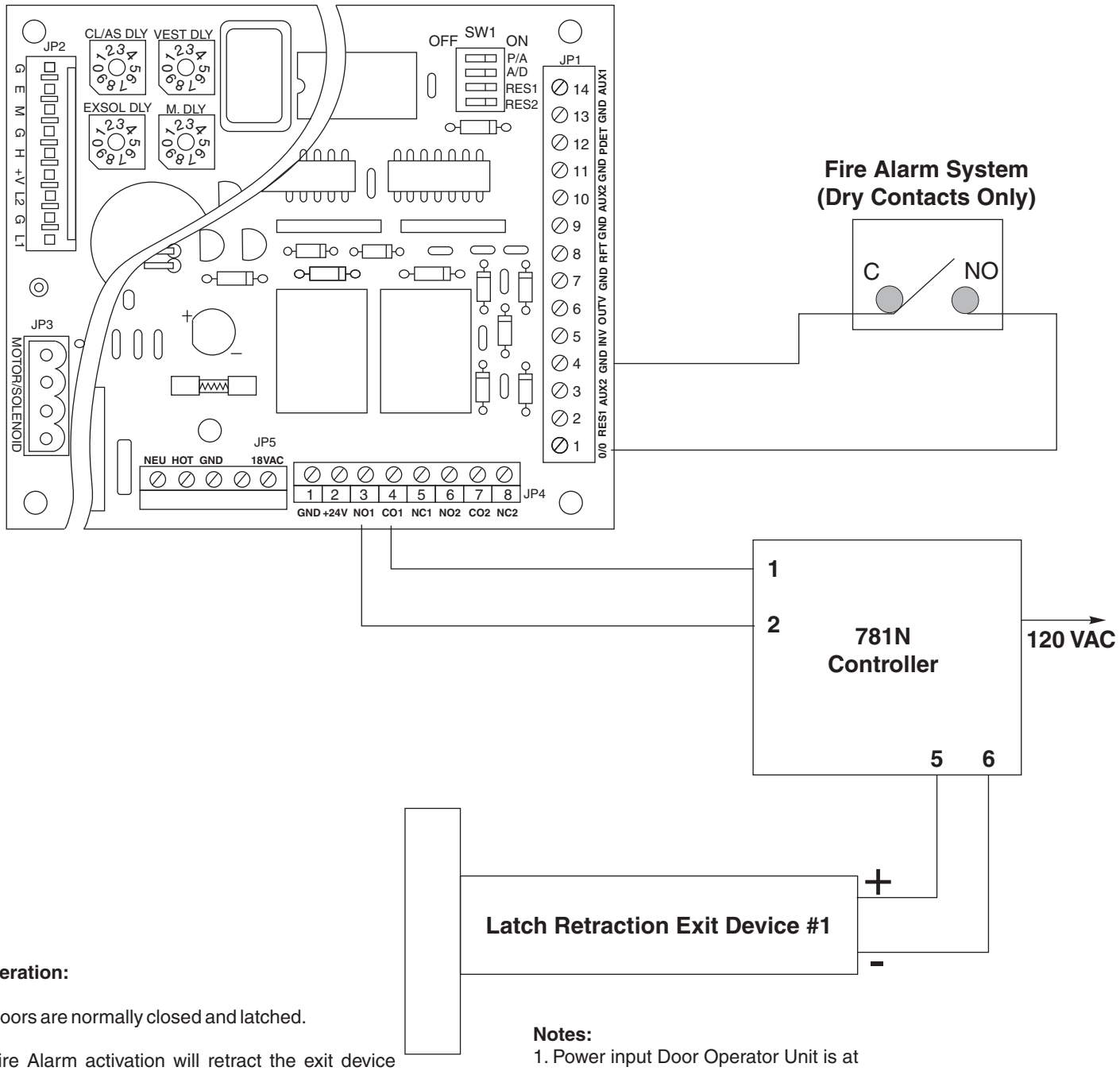
The doors will close after the hold open time delay has elapsed.

Exit device allows egress at all times. Exit device allows egress during power failure.

Notes:

1. Power input Door Operator Unit is at Power Input Terminal Strip (not shown) 120VAC 60Hz.

Electric Latch Retraction Exit Device Wiring
For Smoke Ventilation – Blow Open Function
Yale and Corbin Russwin



Operation:

Doors are normally closed and latched.

Fire Alarm activation will retract the exit device Latchbolt and the Door Operator will open the door.

The door will remain open until the Fire Alarm System has been reset.

The Door Operator's main power input must be wired into the buildings back-up power system.

Exit device allows egress at all times. Exit device allows egress during power failure.

NOTE:
This application must be approved by local (AHJ) authority having jurisdiction.

Notes:
1. Power input Door Operator Unit is at Power Input Terminal Strip (not shown) 120VAC 60Hz.

Norton

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