workforceaccess®

Installation Manual

Model WAC-2D Controller

workforceaccess®

Package Contents

- ❑ Enclosure with mounted WAC-2D controller and power supply board
- ❑ 12VDC Lead Acid Battery
- ❑ One or more readers with mounting kits
- ❑ 2 SN-1 surge suppressors
- ❑ AC adaptor for power supply board
- ❑ Manual

Product Description

The workforceaccess model WAC-2D is a 2 door controller and a 12VDC, 1.75A output power supply board, housed in a metal enclosure. The 12VDC power supply board receives its input power from a 16.5VAC, 45VA plug-in transformer. The controller supports two readers and 27000 cardholder assignments per reader. It communicates on a computer network via its 10/100 Mbps, TCP/IP port. Communications are done in on-line mode. In the event that communications are interrupted, the controller will continue to validate badge swipes. The controller firmware is flash upgradable and all transactions are held intact in the event of a total loss of power.

On each side of the WAC-2D controller board is a reader connection port, lock relay contacts, Door Position Switch Input, (DPS) and a Request to Exit Input, (RTE). The Door Position Switch input allows one to connect a door switch to the DPS and GND terminals. If one chooses to install a switch on a particular door, the workforceaccess software is capable of monitoring its status. The software will report and/or notify personnel if a door is Held Open or Forced Open.

When a Door Position Switch is used, a Request to Exit (RTE) device must also be installed to the RTE and GND terminals. An example of a Request to Exit device would be a "Push To Exit" wall switch, motion detector, push bar or touch sense bar. This RTE device would tell the workforceaccess software that an individual is leaving the unsecured side of the door. Once the RTE is triggered and the door is opened, the door would have to be closed within a set amount of time before a Held Open condition occured. If someone forced a door open from the secured side of the door, the software would report a "Door Forced Open" condition. The RTS is configurable in the workforceaccess application to signal to the system that one is exiting or signal that one is exiting and automatically unlock the door.

The controller reader port allows for the connection of either a barcode reader, magnetic reader, proximity reader, (both 125 kHz and 13.56 MHz), or any other Weigand output device. The reader is capable of being up to 500 ft away from the WAC-2D controller.

The controller is shipped with a 12VDC, 5Ah lead acid battery. When two readers are connected to the controller, the controller and readers will fully function for over 8 hours.

It is important to understand that this document is to be used as a guide only. It is up to the end user to ensure that the system is installed in accordance to the National Electric Code, the NFPA 101 Life Safety Code or local authority.

Table of Contents

1.0 System Features and Specifications
1.1 System Features with the workforceaccess Software 7
1.2 Specifications 8
2.0 Installation
2.1 Inspect Package Contents 9
2.2 Mounting the Enclosure 9
2.3 Install AC Adaptor 10
2.4 Mount Battery. 10
2.5 Reader Install 11
2.6.1 Wiring a 12VDC Electric Strike 12
2.6.2 Wiring a 12VDC Maglock. 13
2.6.3 Wiring a 24VDC Electric Strike 14
2.6.4 Wiring a 24VDC Maglock. 15
2.7 Door Position Switch (DPS) 16
2.8 Request to Exit (RTE). 16
2.9 Motion Sensor 17
2.10 Ethernet Cable 17
2.11 Configure IP Address. 18
2.12 Software Test 18

3.0 Controller Diagrams

3.1 Controller Diagram 19
3.2 Power Connection 20
3.3 Door Position Switch Connections 21
3.4 Request to Exit/Motion Sense Connections. 22
3.5 Relay Connections 23

Illustrations

Fig. 1 - Controller Enclosure as shipped 9
Fig. 2 - AC Adaptor 10
Fig. 3 - Battery Connections. 10
Fig. 4 - Reader Connections 11
Fig. 5 - Electric Strike wiring, 12VDC. 12
Fig. 6 - Maglock wiring, 12VDC 13
Fig. 7 - Electric wiring, 24VDC. 14
Fig. 8 - Maglock wiring, 24VDC 15
Fig. 9 - Door Position Switch wiring 16
Fig. 10 - Request to Exit wiring 16
Fig. 11 - Motion Sensor wiring 17
Fig. 12 - Ethernet cable connection 17

Section 1:
System Features and Specifications

1.1 System Features with the workforceaccess Software

Feature	Description/Details
2 Door Control	Capable of controlling two independent door locks
Users	27,000 per reader
Memory	8MB non volatile
Audit Trail	12403 Events
First-In Auto-Unlock	Requires a valid badge swipe during a door schedule
Cardholder Schedules	Enforces cardholder access based on defined schedules
Door Open Schedules	Capable of unlocking and locking doors at scheduled times
Restrictions	Able to prevent door passage based upon an Employee or Door Schedule
Employee Off Days	Disables cardholders entry based on one's day off
Holiday Shut Down	Disables door entry based on holidays set
Card Expiration	Disables card holders passage based on a defined date and time
Traffic Flow	Control the path of one's entry
Forced Lock Down	Secures door, disables badge swipes and displays visual warning light at badge reader. A dedicated WAC-2D is required.
Forced Lock Down Override	Allows the ability of certain personnel to enter a door during a Forced Lock Down
Emergency Door Release	Allows the ability to have all doors unlock. A dedicated WAC-2D is required.
Door Monitoring	Monitors the status of the door position if a door switch is installed
Request to Exit	Unlocks door and signals or just signals the system of a valid Exit
Badge Swipe Limits	Can limit the number of times a badge is swiped in a day or by total
Multiple Door Relay Durations	Different Door Unlock durations can be set for certain cardholders to allow them more time to pass through a secured door
On-Line Mode	Communications are done in real time. Continues to validate employee schedules if in Off-Line Mode.
Battery Backup	Continues to keep the controller, readers and lock fully functional for a set amount of time
Muster List	Maintains a full Muster List while in On-Line Mode

1.2 Specifications

Electrical	
Power Supply Board	Input 16.5VAC .45 VA Class 2 Transformer; output power 12VDC, 1.75A Max
WAC-2D Controller Board	12VDC, 300mA
MMHBar, MMHMag or MMHProx Reader	12VDC, 90mA typical, 140mA Max, Weatherproofed
Lock Relays	2 Form C, 12-24VAC/DC, 1A Max
Request to Exit	Dry Contact input only
Door Position Switch	Dry Contact input only
Wiring	
MMHBar, MMHMag, MMHProx	#18AWG Stranded 6 conductor shielded cable w/ground.. Readers will function on existing 4 conductor shielded cable w/ground.
WAC-2D Controller Communications	#24AWG Category 5E cable
Communications	
TCP/IP	10/100 Mbps
Readers	
MMHBar	Barcode readers capable of reading badges up to 20 digits in length. Supported symbologies include Code 39, 2 of 5, I 2 of 5, Code128, Codabar, EAN13, UPCA
MMHMag	Magnetic Track 1 or Track 2 readers capable of reading badges up to 20 digits length
MMHProx	Proximity readers, up to 64 bit; Iclass readers can also be used
Battery Backup	
Lead Acid Battery	12VDC, 5AH
Mechanical	
Enclosure	Surface mount
Length	12.25”
Width	9.75”
Depth	3.40”
Environmental	
Temperature	-20f to 130F (-28C to 54C)
Recommended Use	Indoor use only

Section 2: Installation

2.1 Inspect Package Contents

The package contains 1 WAC-2D controller and 1 12VDC power supply board mounted in an enclosure , 1 battery, 1 AC adaptor , 2 SN-1 voltage suppressors, and 1 or 2 readers.

2.2 Mount Enclosure

The WAC-2D enclosure contains pre-mounted controller and power supply boards. The battery will be placed inside the enclosure once the enclosure is mounted and power applied. The power supply board is pre-wired with wires for connecting an AC adaptor and the battery. The controller board power connection is also pre-wired into the power supply.

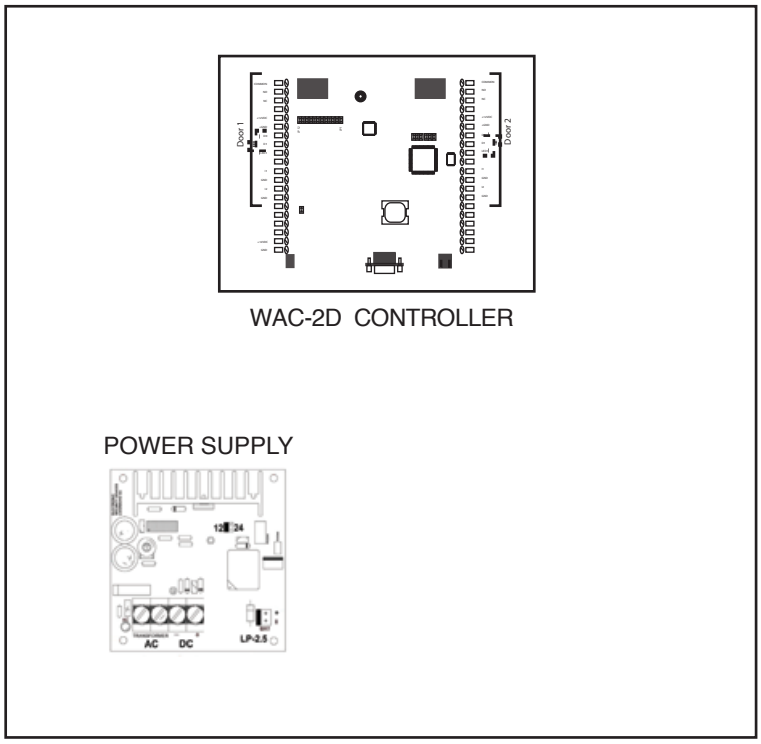


Figure 1 Controller Enclosure (as shipped)

2.3 Install AC Adaptor

Connect 16.5VAC adaptor to power cord. The power cord is pre-wired to the power supply board in the enclosure. Each black wire connects to an AC terminal screw. The green wire connects to the GND terminal screw. Upon completing the connections, plug the AC transformer into a 110VAC receptacle.

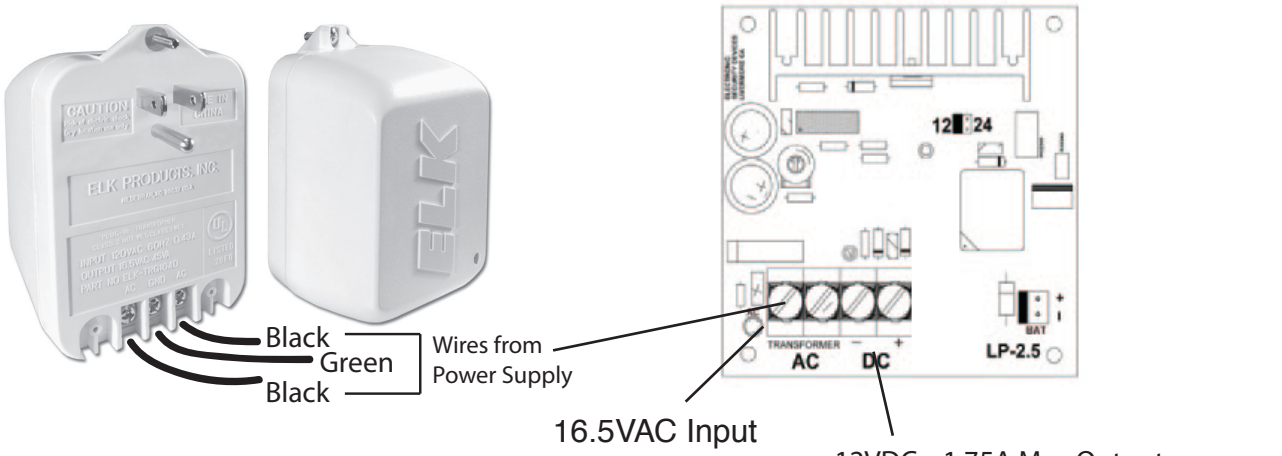


Figure 2 AC Adaptor Installation

2.4 Mount Battery

Place battery inside enclosure. Connect the red wire to positive (+) on the battery terminal and connect the black wire to negative (-) on the battery terminal.

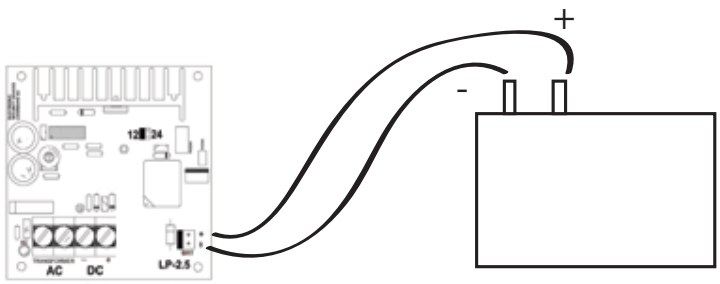


Figure 3 Battery Install

2.5 Connect Readers

The MMHbar, MMHmag, and MMHprox readers require only 4 wires for installation. The yellow and green wires in the reader cable must be connected together before connecting to the drop wire from the controller. Slide the reader cable through the mounting plate first then connect the reader wires to the feed wires coming from the controller.

If wire colors do not match, carefully mark down how the wires are so you can match them at the controller side.

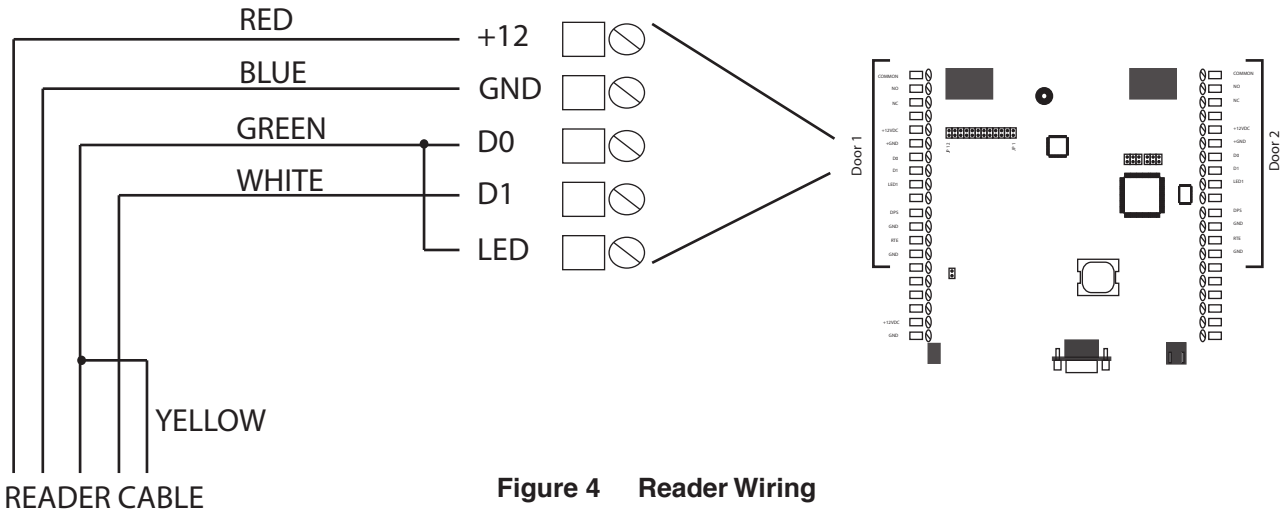
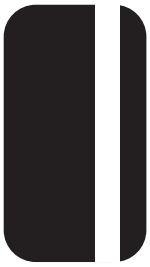


Figure 4 Reader Wiring



Connect the reader wires at the controller as shown above. The reader wires to be connected are power, ground, Data 0, and Data 1. Place a shunt wire between Led1 and Data0 at the controller side.

2.6.1 Wiring a 12VDC Electric Strike (Fail Secure) using the system power supply

Wire the positive connection on the strike to the NO (normally open) screw terminal on the controller. Wire the negative connection on the strike directly to the negative on the power supply. Wire the + connection on the power supply to the COM connection on the controller board.

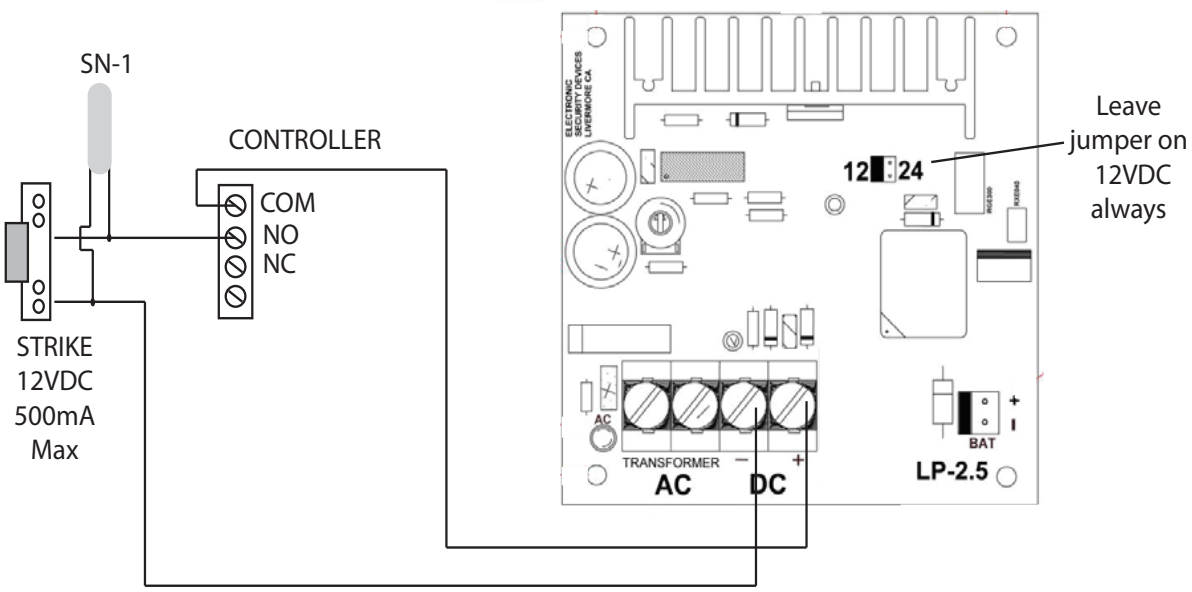


Figure 5 12VDC Strike Wiring

Using wire nuts, wire the supplied SN-1 suppressor across the + and - connections near the strike. The SN-1 helps to suppress voltage kickback from harming the controller.

Do not use an electric strike which draws more than 500mA when using the system power supply.

You may use an electric strike that draws up to 750 mA when using an external 12VDC power supply.

2.6.2 Wiring a 12VDC Maglock (Fail Safe) using the system power supply

Wire the positive connection on the maglock to the NC (normally closed) screw terminal on the controller. Wire the negative connection on the maglock directly to the negative on the power supply. Wire the + connection on the power supply to the COM connection on the controller board.

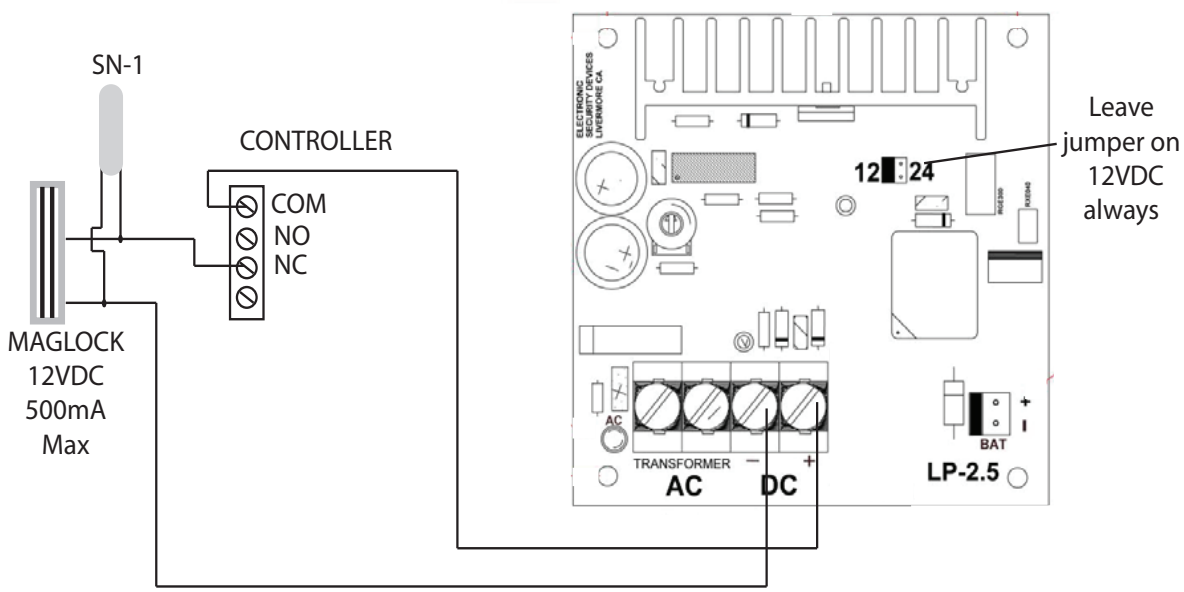


Figure 6 12VDC Maglock Wiring

Using wire nuts, wire the supplied SN-1 suppressor across the + and - connections near the maglock. The SN-1 helps to suppress voltage kickback from harming the controller.

Do not use a maglock which draws more than 500mA when using the system power supply.

You may use a maglock that draws up to 750mA when using an external 12VDC power supply.

2.6.3 Wiring a 24VDC Strike (Fail Secure)

Using a 24VDC strike requires the use of an external 24VDC power supply. Wire the positive connection on the strike to the NO (normally open) screw terminal on the controller. Wire the negative connection on the strike to the negative connection on the 24VDC power supply. Wire the positive connection on the 24VDC power supply to the COM connection on the controller board.

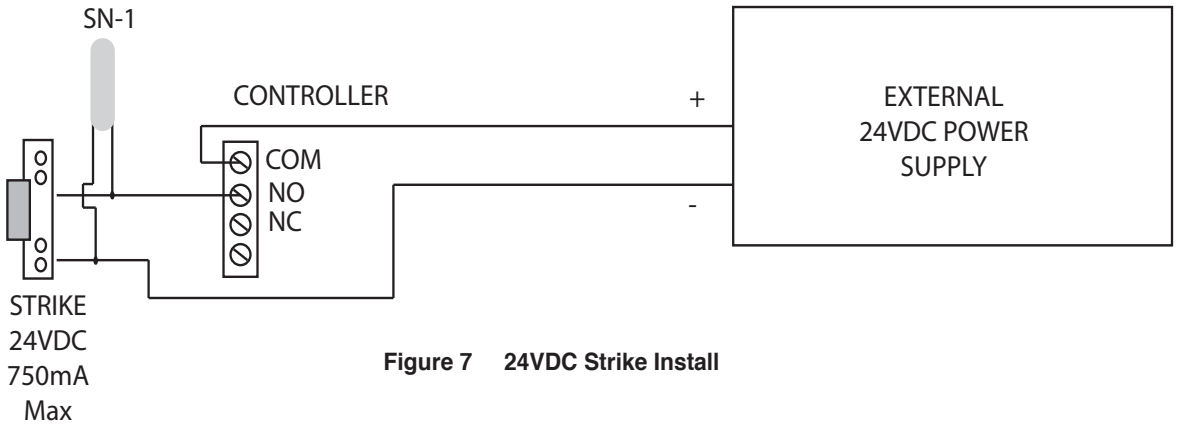


Figure 7 24VDC Strike Install

Using wire nuts, wire the supplied SN-1 suppressor across the + and - connections near the strike. The SN-1 helps to suppress voltage kickback from harming the controller.

Do not use an electric strike which draws more than 750mA.

2.6.4 Wiring a 24VDC Maglock (Fail Safe)

Using a 24VDC maglock requires the use of an external 24VDC power supply. Wire the positive connection on the maglock to the NC (normally closed) screw terminal on the controller. Wire the negative connection on the maglock to the negative connection on the 24VDC power supply. Wire the positive connection on the 24VDC power supply to the COM connection on the controller board.

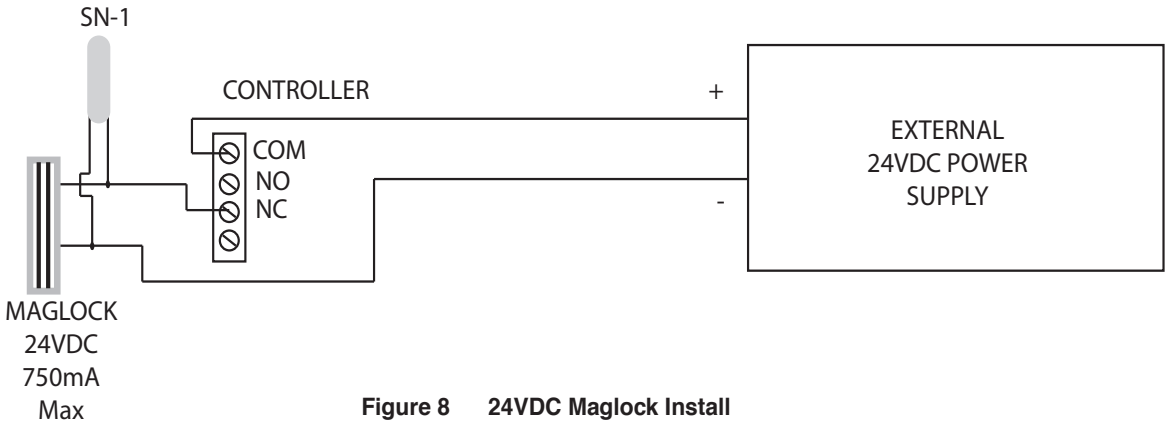


Figure 8 24VDC Maglock Install

Using wire nuts, wire the supplied SN-1 suppressor across the + and - connections near the strike. The SN-1 helps to suppress voltage kickback from harming the controller.

Do not use a maglock which draws more than 750mA.

2.7 Connect The Door Position Switch (DPS) if used

If you are using a Door Position Switch (DPS) , remove the jumper wire across the DPS and GND terminals, and connect one wire from the DPS to the terminal block labeled DPS on the controller. Connect the other wire from the DPS to the terminal labeled GND on the controller which is directly below the DPS terminal.

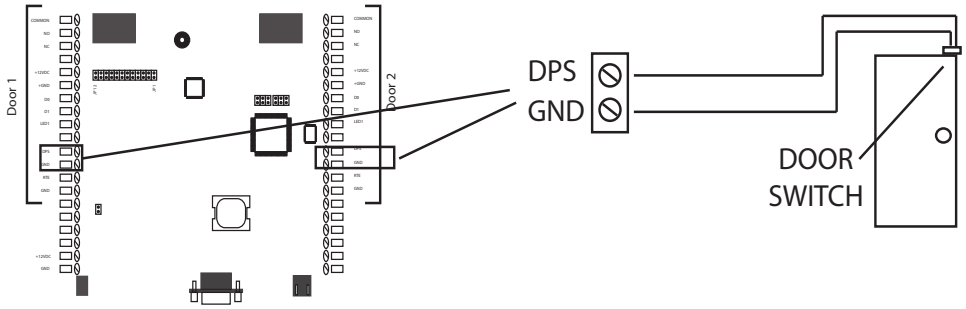


Figure 9 DPS Install

2.8 Connect a Request to Exit (RTE) switch

If you are using a Request to Exit Switch (RTE), connect one wire from the RTE normally open (N.O) switch to the terminal block labeled RTE on the controller. Connect the other wire from the Common (C) of the RTE switch to the terminal labeled GND on the controller which is directly below the RTE terminal."

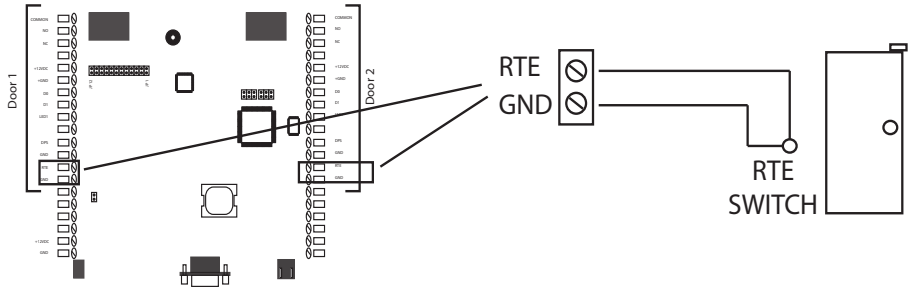


Figure 10 RTE Install

2.9 Connecting a Motion Sensor

If you are using a Motion Sensor for disabling alarm conditions when exiting a door, connect the wire from Request to Exit (REX) normally open contact (N.O.) in the Motion Sensor to the terminal block labeled RTE on the controller. Connect the wire from the Request to Exit (REX) Common contact (C) in the Motion Sensor to the GND on the controller which is directly below the RTE terminal.

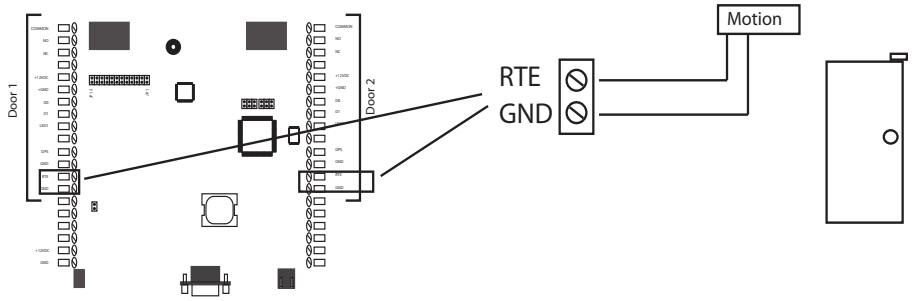


Figure 11 Motion Sensor Wiring

2.10 Connecting the ethernet cable

Plug your ethernet cable into the controller board jack. Your ethernet cable should be connected to a switch.

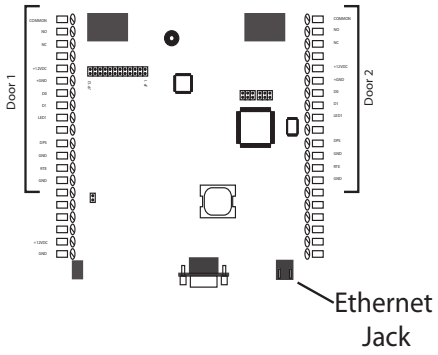


Figure 12 Ethernet Cable Install

2.11 Configure the IP address of the controller

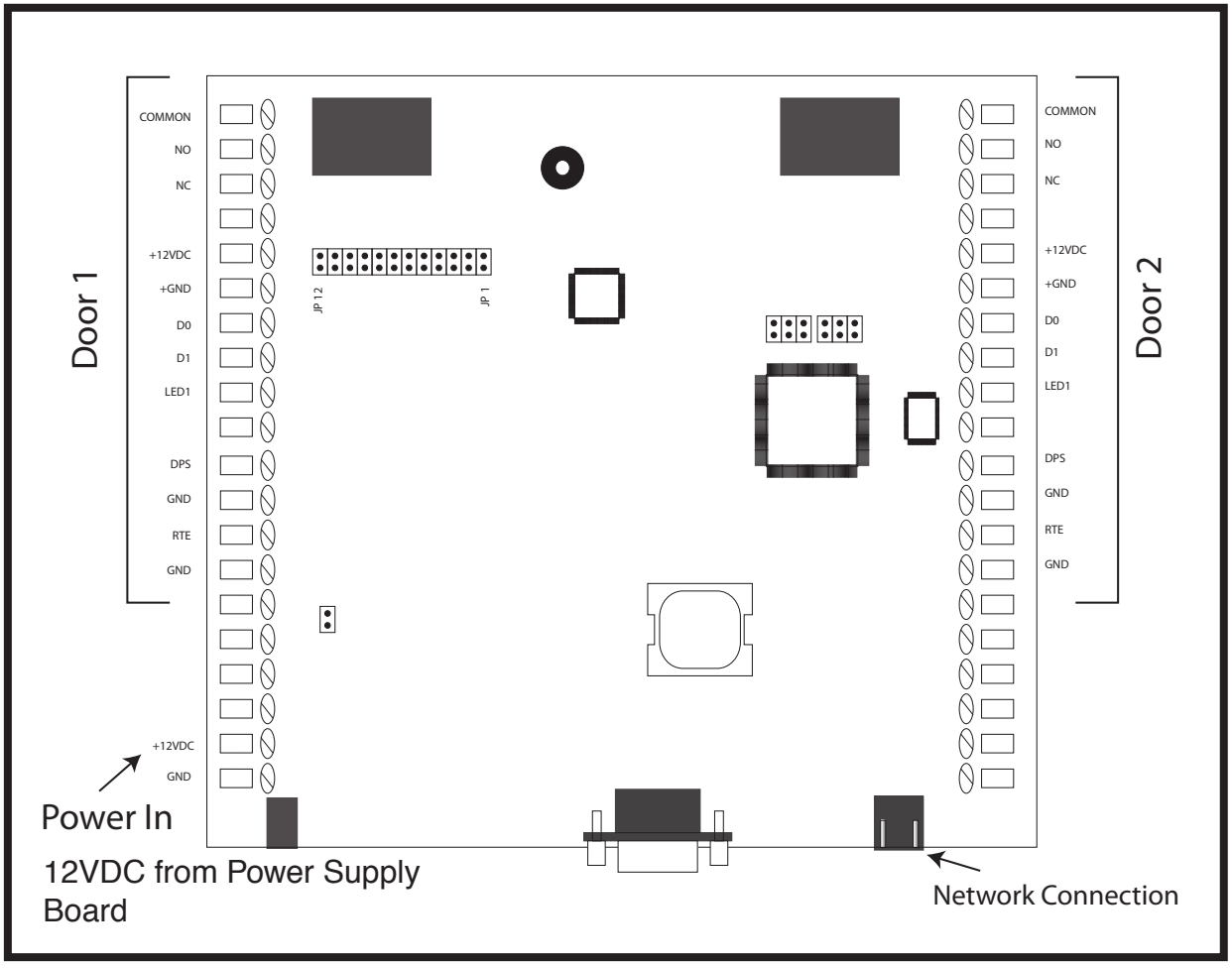
You will need to configure the IP address of the controller at this time prior to testing the installation. Refer to the software manual for instructions on configuring the address.

2.12 Software Testing

Perform all software testing as suggested in the software manual.

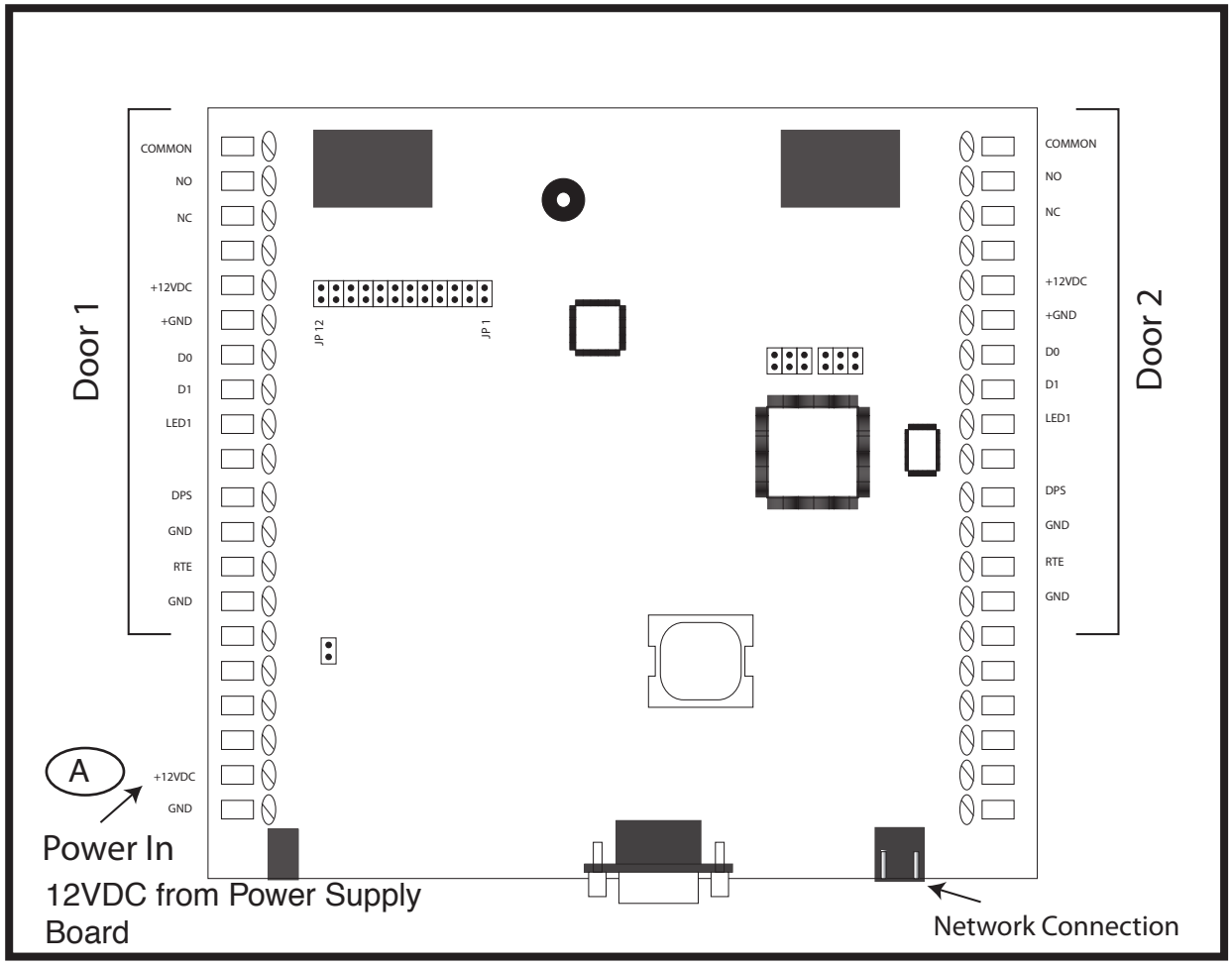
Section 3: Controller Diagrams

3.1 WAC-2D Controller Diagram



WAC-2D Controller

3.2 Power Connection Location

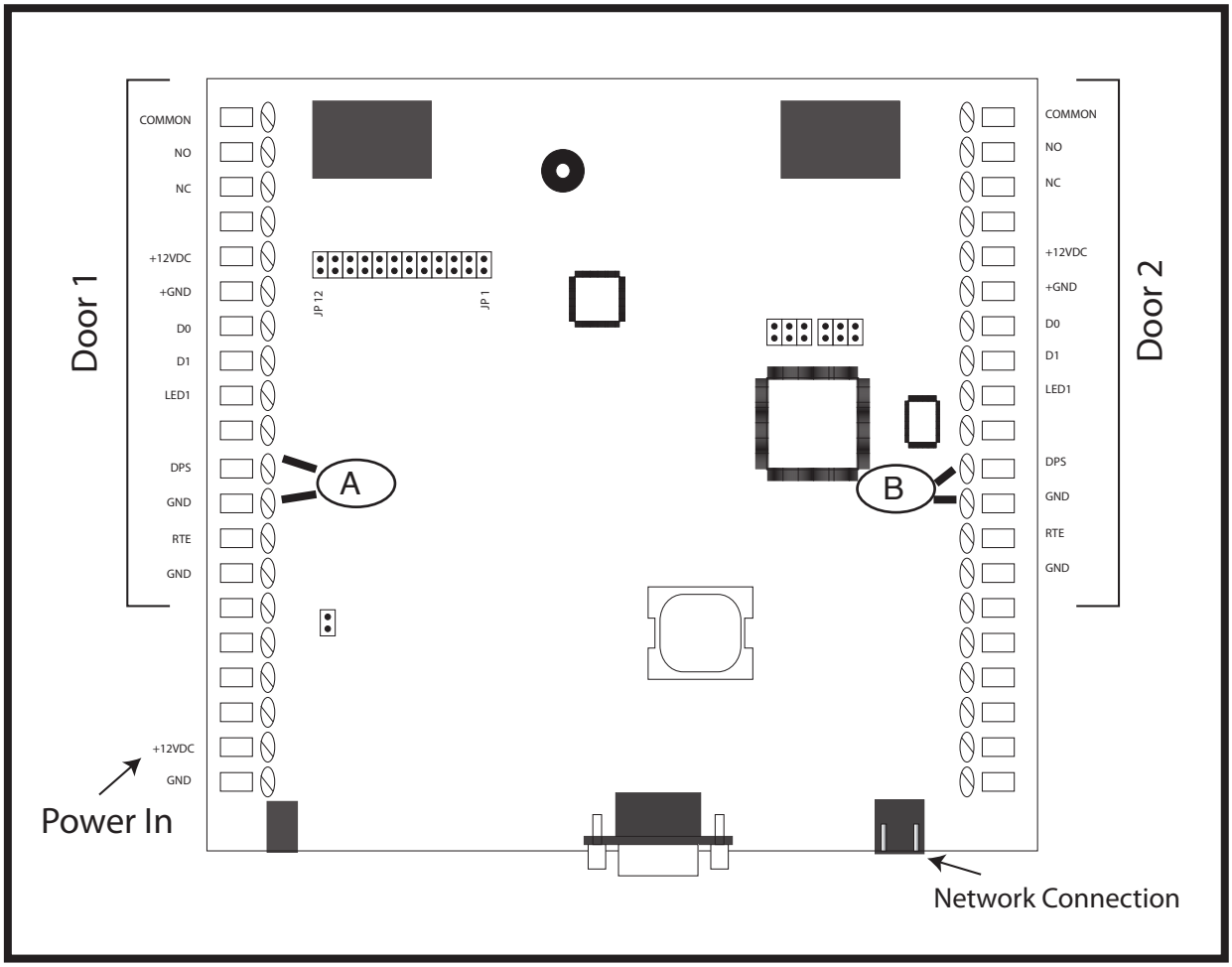


A Power IN (+12vdc) and Ground

Power and Ground are pre-wired to the power supply board using 18AWG wire.

WAC-2D Controller

3.3 Door Position Switch Connections

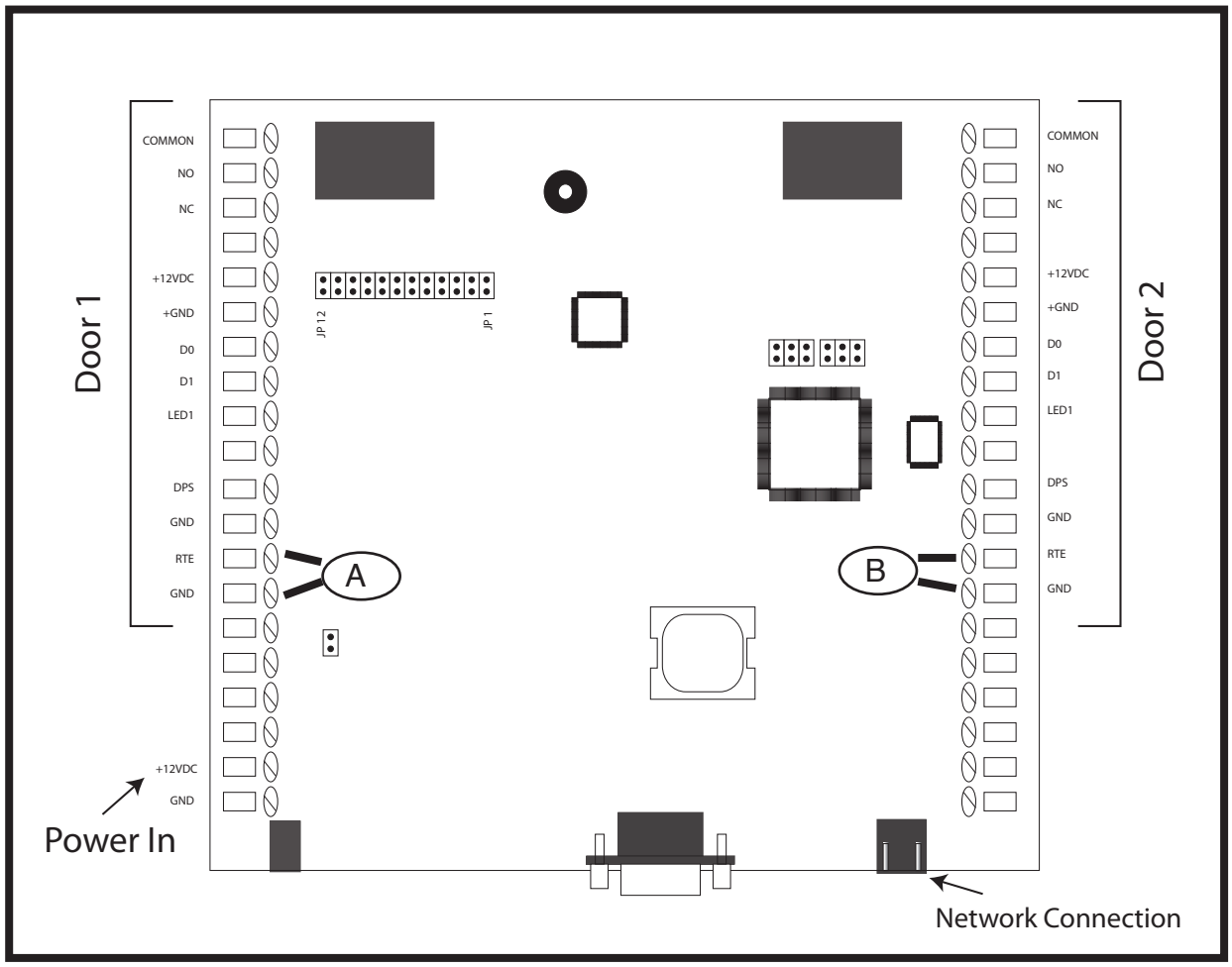


A	Door Position Switch (DPS) and Ground (GND)	Door 1
B	Door Position Switch (DPS) and Ground (GND)	Door 2

If using DPS, connect the DPS circuit to the connections labeled DPS and GND. DPS is active when the circuit is grounded (circuit goes low).

WAC-2D Controller

3.4 Request to Exit and Motion Sense Switch Connections

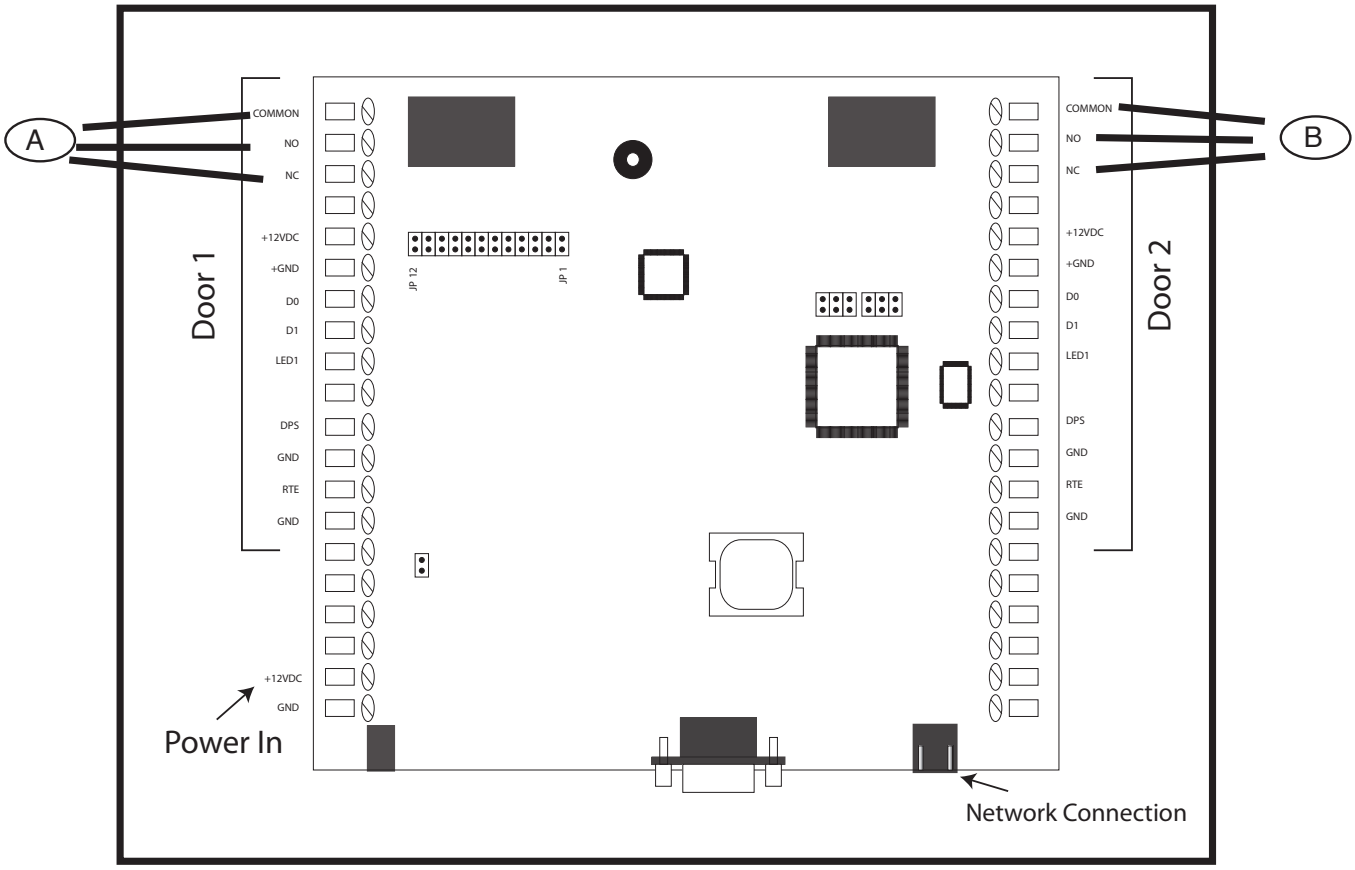


(A)	RTE or Motion Switch (RTE) and Ground (GND)	Door 1
(B)	RTE or Motion Switch (RTE) and Ground (GND)	Door 2

Note that the RTE connection may also be used in Fire Alarm/Burglar Mode

WAC-2D Controller

3.5 Relay Connections



A Relay Connections Door 1

B Relay Connections Door 2

Maximum rating for relays: 12VDC 1A, 24VDC 750ma.

Relays are Form C (NO, NC, COM). There is no direct voltage available at the relay terminals other than voltage which is applied to the common from a power supply.



M.M. Hayes Co., Inc.
The Sage Estate
Albany, New York 12204
800.348.5545 • 518.459.5545

www.mmhayes.com