NAPCO E-Access Control System
Installation Instructions

8 Door XL Systems
with an Integrated Power Supply

WI2759

Table of Contents

Notifications
- Copyright 4
- Approvals 4
- Notice 4

Introduction
- Access Control Overview 5
- System Overview 5

Systems Specifications

Installation of Systems
- Mounting the Enclosure 8

System Features
- Tamper Detection 9
- System Power 9
- Power Fault Detection 9
- Door Lock Power 9
- Fire Release Input 10
- Battery Connection 10
- Battery Warnings 10
- Input Power Connector 11
- Controller Power, Power Fault & Fire Cutout Connector 11
- Output Power Connectors 11
- Power Connection 13
- Calculating Estimated Standby Time 13

Controller Features
- Controller Hardware Identification 14
- Controller Inputs 14
- Controller Connectors 15
- Input Wiring 15
- Request to Exit & Door Position Connectors 16
- Power, Power Fault & Tamper Connector. 17
- Controller Outputs 20
- Output Wiring Requirements 21
- Door & Auxiliary Output Connectors 21
- SD Card 23
- USB Backup Device 23
- Factory Default Button 23
- IP Reset Button 23
- Hardware Reset Button 23

Adding 4 Door Expansion

Powering On and Connecting to a Network
- Preparing for the Network 25
- Connecting to the Network 27
- Adding Clients to Systems 28
- IP Finder 29

Wiring Diagram

Trouble Shooting

Testing, Maintenance and Service

Parts List

Contact & Warranty Information

Notifications

Copyright

Copyright © 2023, all rights reserved. No part of this document may be reproduced, copied, adapted or transmitted in any form without written permission.

Approvals

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates and can radiate radio frequency energy and if not installed and used in accordance with the manual, may cause harmful interference. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

FCC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

UL294

This Access Control System is compliant with Level I UL 294 listed devices and must be installed in a secure, controlled location.

Notice

This manual contains information regarding the basic installation and configuration of the browser-based Access Control System. It must be read and completely understood before installation or operation.
It is intended that this unit will be used for its intended purpose, and installed by persons trained and qualified to install access control systems and has the skills and knowledge working with electrical circuits and safety codes. Important safeguards and instructions in this manual cannot cover all possible situations and conditions that occur during installation and use and it must be understood that common sense and caution must be exercised by the person(s) installing, maintaining and operating the equipment.

Installations must conform to all national and local building and electrical codes.

This manual is for installing 4 and 8 Door Systems with integrated door lock power:

Models 4DXLPL and 8DXLPL

Introduction

Access Control Overview

Access Control is the selective restriction to a place or resource such as a property, building or room to authorized persons and is a matter of who, where, and when. An access control system is used to automate access control using credentials, credential readers, electric door locks and other devices. Administrators configure the system to determine who is allowed to enter or exit, where they are allowed to exit or enter, and when they are allowed to enter or exit. When access is granted, the door is unlocked for a predetermined time and transaction is recorded. When access is denied, the door remains locked and the attempted access is recorded. Administrators can then run reports on the recorded transactions to review activity for selected dates and times.

System Overview

Models are available in variety of configurations starting from 1 Door systems that require a separate power supply to 1, 2, 4 & 8 Door systems that include an integrated power supply for the controller and door lock power. Using software license keys, most models can be ungraded after installation with additional features, such as enhanced reporting or more users.
All controllers include tamper and power fault inputs, in and out readers, request to exit and door position inputs for each door and auxiliary inputs and outputs for each door, and are designed to be connected to a local area network, and configured using the embedded web server.
Controllers can be configured as either a server or a client. The software license key is used to determine if a controller is a server or a client. Client controllers communicate with the server controller via the local area network and are configured through the server using a web browser on PC or smart device connected to the network. Once the server or client controller is configured, they will function without a network connection or the PC. The network and PC is only required for setup, configuration and reporting.
All systems require a server. Some systems have the ability to add additional client controllers to increase the number of doors, inputs or outputs or control elevators. After logging in, the license information about a can be determined by clicking on the license icon at the bottom of the web page.
Certain models offer a mobile APP that can be used to setup and configure, view logs, lock and unlock doors and activate threat levels. In addition, some models also offers a cloud service that provides a portal where a users or dealer can log into and manage one or many systems securely.

Systems Specifications

General	
Operating System	Embedded Linux
Transactions	> 60 per Second
System Power Requirements	120VAC @ 3A
Operating Temperature	32ºF to 95ºF (0ºC to 35ºC)
Enclosure Size (W x H x D)	15 x 15 x 7 in (381 x 381 x 178 mm)

Model	4 Door Systems 4DXLPL	8 Door Systems 8DXLPL
Internal Power Supply	Controller, Readers & 12V and 24V DC for Door Locks	
Lock Power Output	375 mA @ 24V 700 mA @ 12V	
Battery Backup	Controller, Readers & Door Lock	
Recommended Battery Type (battery is not included)	Powersonic PS-1270-FI or Similar 12V, 7AH, Sealed Lead Acid with 0.187 inch terminals	
Standby Power Requirement	550 mA @12V	1100 mA @12V
Readers (Wiegand)	8 Total, One In & One Out Reader for Each Door	16 Total, One In & One Out Reader for Each Door
Reader Power	300 mA @ 12V Max per Reader 1500 mA @ 12V Max per System	300 mA @ 12V Max per Reader 3000 mA @ 12V Max per System
Request to Exit (REX) Inputs	4 Total, One for Each Door	8 Total, One for Each Door
Door Position (status) Inputs	4 Total, One for Each Door	8 Total, One for Each Door
Auxiliary Inputs	4 Total, General Purpose	8 Total, General Purpose
Tamper Digital Input	Yes, Prewired on Units with Integrated Power	
Power Fault Digital Input	Yes, Prewired on Units with Integrated Power	
Door Lock Outputs	4 Form C Relay, 24V @ 2.0A	8 Form C Relay, 24V @ 2.0A
Auxiliary Outputs	4 Form C Relay, 24V @ 2.0A	8 Form C Relay, 24V @ 2.0A

UL294 Rating				
Destructive Attack	Line Security	Endurance	Standby Power	Single Point Locking Device with Key Locks
Level I	Level I	Level III	Level I	Level I

Installation of Systems

System Location

Choose a centrally located, secure, clean and dry area near an AC power source. Avoid mounting the controller within 6 feet (2 meters) of any equipment that may generate electrical interference.

For UL294 installations, the maximum Ethernet cable length is 98.5 feet (30 meters).

Power Supply

The system's power must only be connected to an unswitched, grounded, 120 VAC outlet. If an unswitched outlet is not available or within 5 feet of the mounting location, have a licensed electrician install an outlet per local codes. All wiring must be in accordance with the National Electrical Code, NPFA 70 and all local codes.

Handling Precautions

This equipment includes electronic components that are sensitive to static electricity. Make sure to discharge by touching an earth ground before handling this equipment.

Installation Check List

The list below provides a logical sequence for installing the access control system ACS. This list cannot cover all possible situations and conditions that occur during installation and use and it must be understood that common sense and caution must be exercised by the person(s) installing, maintaining and operating the equipment.

- ✓ Calculate the systems power requirement by adding up the power required for each device connected to the system to make sure the required power can be provided by the system.
- ✓ Mount the system in a secure, controlled location.
- ✓ Connect the inputs and outputs.
- ✓ Connect the readers.
- ✓ Connect the door locks and auxiliary outputs.
- ✓ Connect power to the system using a dedicated unswitched grounded outlet rated for 120 VAC @ 5 Amps (up to 5 feet from the outlet).
- ✓ Obtain an IP address, Subnet Mask, DNS and other information from the network administrator. For more information, see our document FAQ for the IT Professional.
- ✓ Configure the system's network settings.
- ✓ Connect the system to the local area network and apply license.
- ✓ Add optional license keys to upgrade features such as more doors, cloud-based management, etc.
- ✓ Turn on services such as mobile app, cloud-based management, backup, time server, etc.

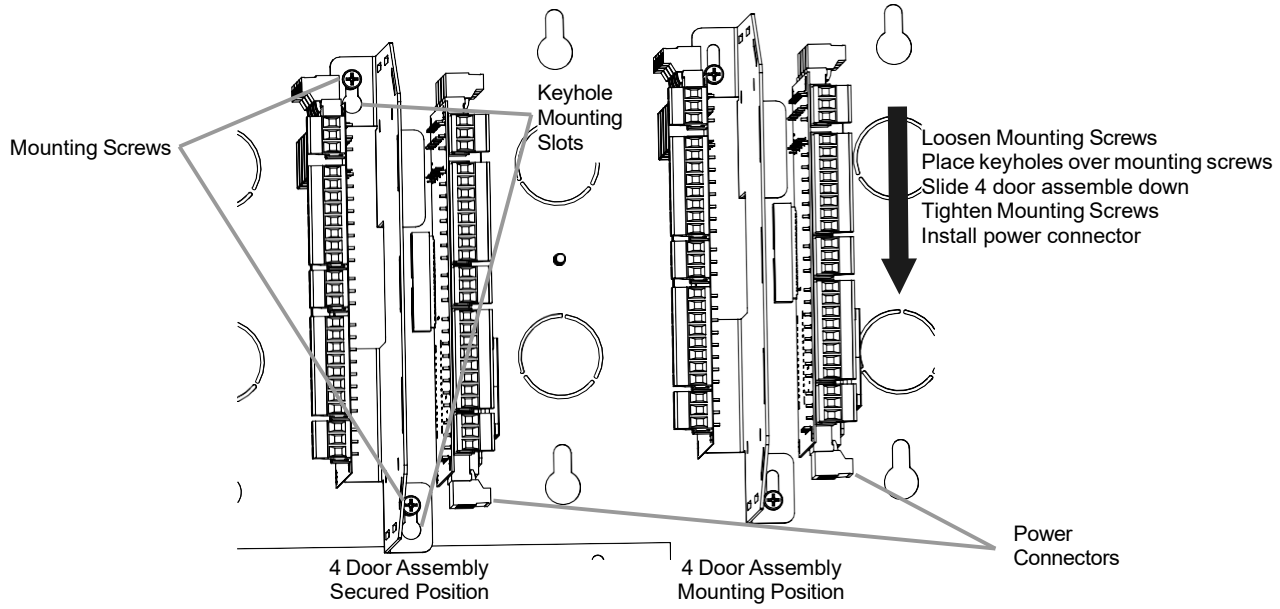
Mounting the Enclosure

The enclosure should be mounted vertically on a wall in a secure location. The temperature in the mounting location must be within the system's specified limits. A minimum of 8 inches of space around all sides of the enclosure is recommended. Knockouts are provided along the sides and top of the enclosure for routing wires. When running wires through the knockouts, install bushings or conduit connectors as needed to protect wires from damage.

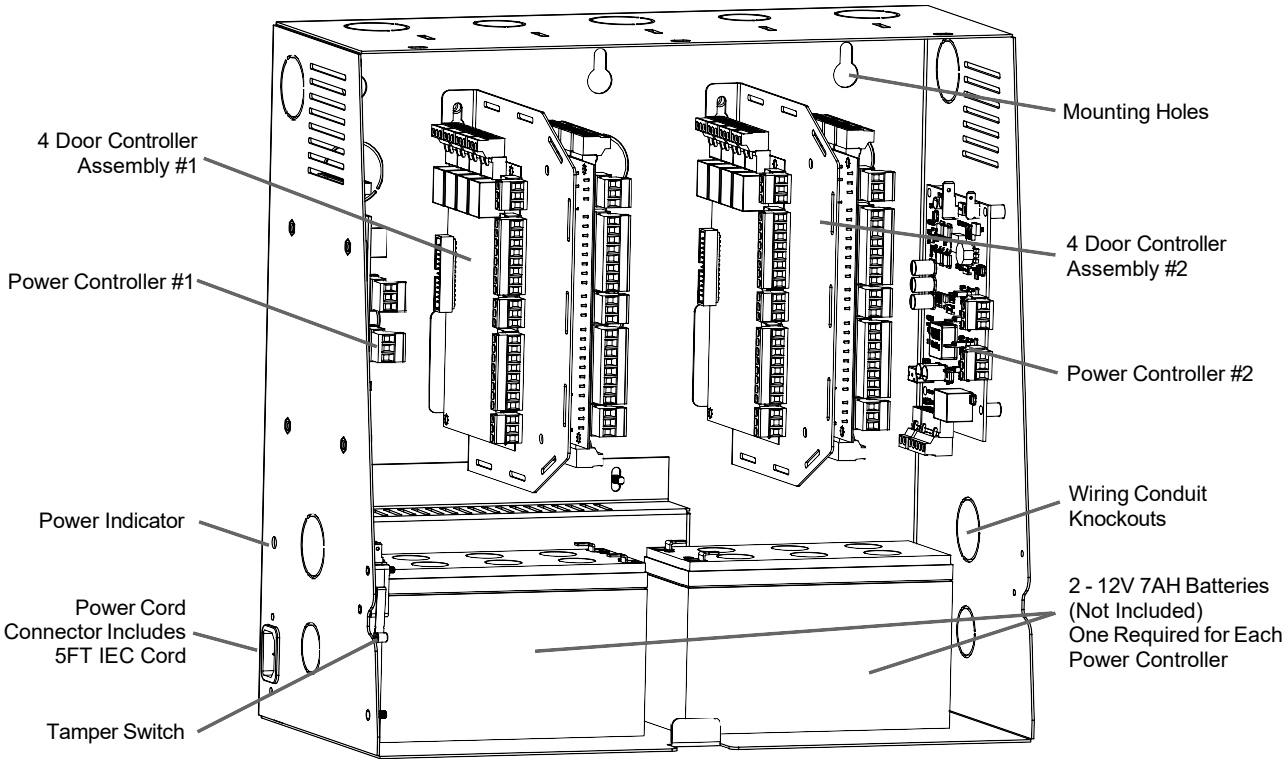
1. Run all wires to the enclosure location and label the wires according to their use.
2. Remove the enclosure's door by first unlocking the door and removing the door's ground wire. **DO NOT CUT** the ground wire. The door may be lifted off of the enclosure, which will provide more room for mounting and connecting wires to terminals.
3. Locate the enclosure on the wall and level. Mark the top center mounting hole on the wall and remove the enclosure and install anchors appropriate for the type of wall and mounting conditions. The mounting slots are sized for use with ¼ inch hex head lag screws. Use a length suitable for the mounting conditions but typically not less than 1 ¾ inch long.
4. **DO NOT DRILL** the mounting holes while the enclosure is in place on the wall. Dust and debris from drilling will contaminate and damage the electronics.
5. Partially insert mounting screws into the top mounting hole and hang the enclosure on the screws. Check for level.
6. Mark and drill the remaining mounting locations. Insert the remaining screws and tighten.
7. Run the wires through the knockout holes and connect to the appropriate terminals (see the following sections of the manual for wiring details).
8. Reinstall the door and reconnect the door's ground wire.

The 4 door controller assemblies are shipped loose to reduce shipping damage and must be installed into the enclosure. The image below shows how to mount the controller assemblies.

Mounting the 4 Door Assembly in the Enclosure



System Features



8 Door System with Integrated Lock Power, Features and Mounting Locations

Tamper Detection

A tamper switch is mounted in the enclosure and is prewired to the controller. If the enclosure's door is opened, the tamper switch will activate and signal the controller. The controller can be configured using Event Actions to perform a system backup, activate an auxiliary output or send an email notification when a tamper input is detected.

System Power

The enclosure includes a 12V DC 12.5A (150W) power supply and Power Module. The power module provides power to charge a 12V sealed lead acid battery (SLA, not included) that is used for battery backup operation, power for door locks and power for the main controller and accessories such as readers and keypads. **NOTE:** A indicator light on the exterior of the enclosure is illuminated when the system is plugged in and AC power is present.

Power Fault Detection

When the power power module detects an AC power loss, it will automatically change operation over to battery backup and signals the controller that a power fault has occurred. The controller's fault input can be configured using Event Actions to perform a system backup, activate an auxiliary output or send an email notification. This is prewired at the factory.

Door Lock Power

The power module has the ability to supply either 12 or 24 VDC power to the door locks. This can be set individually for each of the four outputs. LED's indicate if the output power is set to 12 VDC (GREEN LED), 24 VDC (AMBER LED) or if the output is overloaded (RED LED). ***NOTE: The maximum output current for each of the four outputs is 375 mA @ 24V or 700 mA @ 12V.***

Fire Release Input

The power module is prewired with a normally closed Fire Release input. If the input is opened, power will be disconnected from the connected door locks. This can be used to unlock fail safe door locks. ***Note: The power module and/or access control system is not listed as, and can not be used as, a fire warning system.***

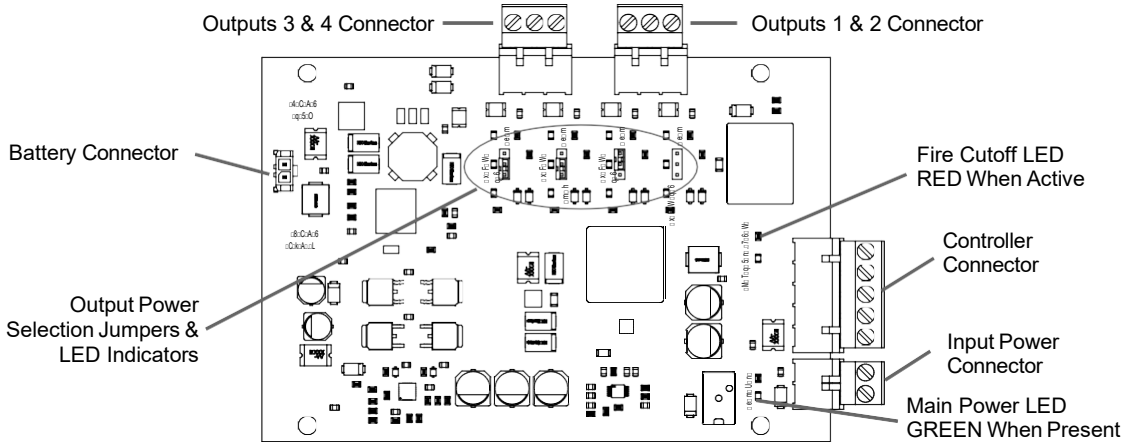
Battery Connection

The enclosure provides space and charging for one 12V sealed lead acid battery for each power module. The power module monitors the battery to prevent over charging and excessive discharging. When primary AC power is lost, the battery will provide standby power until the battery voltage reaches approximately 11 VDC at which point the system will shutdown until main power is restored. The amount of time standby power is supplied depends on the initial battery voltage and the current draw of the devices connected to the system.

Battery Warnings

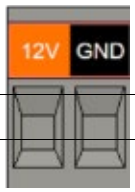
- Use caution when installing the battery. Incorrect use can damage the battery, power module or can cause shock or fire.
- Connect main AC power before installing the battery. Depending on the condition of the battery, the system may power up when connecting the battery without an AC power connection.
- Only connect one battery to the power module. Do not connect multiple batteries in parallel or in series. This will damage the system and void the warranty.
- The battery charger provides a maximum charge rate of approximately 900mA and will maintain the charge on a fully charged battery. Ensure that this does not exceed the battery manufacture's rating.
- Replace the backup battery every 2 to 3 years.
- Properly dispose of old batteries.

The illustrations below show the features of the power module.



Power Controller Features and Connections

Input Power Connector



Terminal	Description
12V	+12 VDC Input Power
GND	Ground

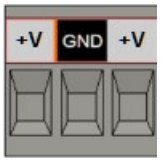
NOTE: *This is prewired at the factory to the internal 12 VDC power supply.*

Controller Power, Power Fault & Fire Cutout Connector

Terminal	Description
12V	+12 Power for Controller
GND	Ground for Controller
PFT	Power Fault, Output, Normally Open When Main Power is OK
FC	Fire Cutout Inputs, Normally Closed

NOTE: *12V, GND and PFT is prewired at the factory to the controller and a jumper wire is connected between the FC inputs.*

Output Power Connectors

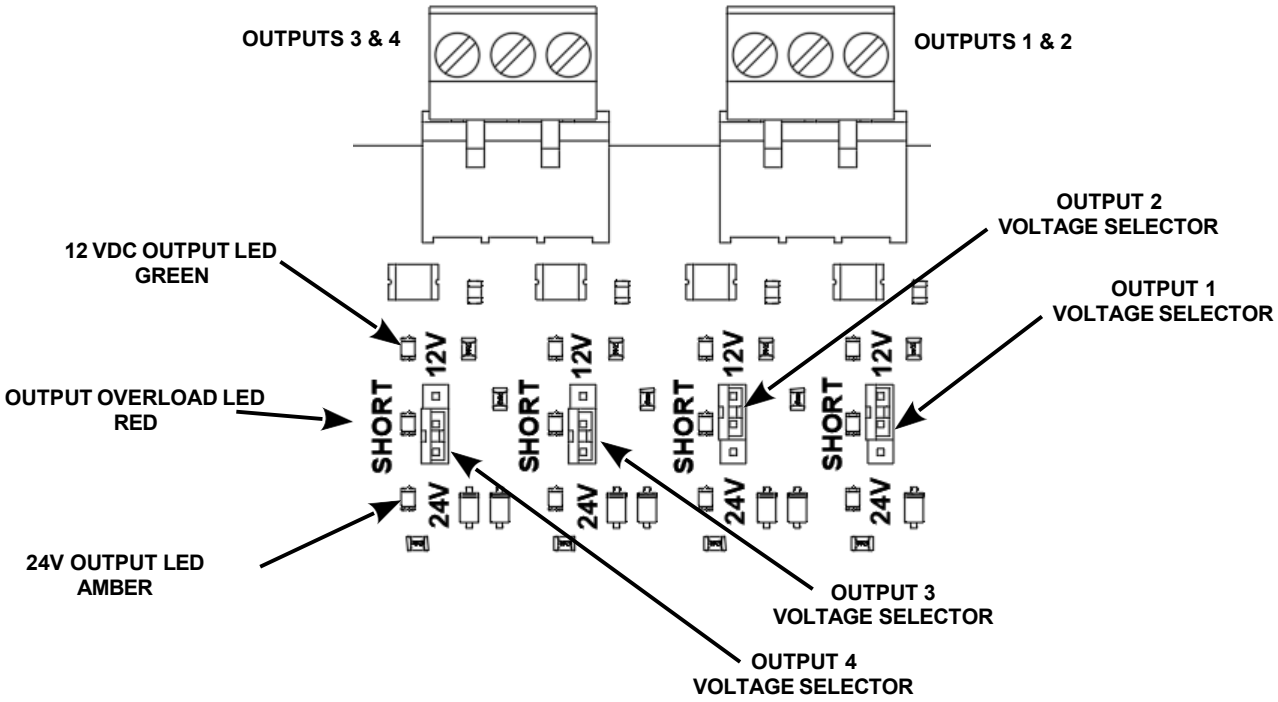


Terminal	Description
+V	+12 or +24 VDC Output, 375 mA MAX
GND	Ground (shared with the two outputs)
+V	+12 or +24 VDC Output, 375 mA MAX

The output voltage can be individually set for each of the four outputs. Jumpers are used to set the output voltage on the power module and LED's show the status of the output voltage. The images below shows the location of the of the jumpers and the LED's.

The GREEN LED indicates the output voltage is 12 VDC. The AMBER LED indicates the output voltage is 24 VDC. If the output is overloaded, the RED LED will be on.

NOTICE: *The maximum output current for each of the four outputs is 375 mA @ 24V or 700 mA @ 12V.*



Power Module Output LED Indicators

The output voltage selection jumpers as shown below to set the voltage to the desired value. ***Note:*** *Make sure to check specifications of the door lock before applying power. Using the wrong voltage can damage the door lock or power module and void warranties.*

Power Module Output Power Jumper Settings
(only on models with lock power)

Power Connection

The power module is prewired, however the power outputs will have to field connected to the appropriate outputs. Before connecting the backup battery, connect the power cord to a grounded, unswitched 120 VAC outlet. The GREEN power indicator LED should be ON and the RED fire cutoff indicator LED should be off on the power board. The output voltage indicator LED's should be on according to the selector settings. Additionally the RED LED heartbeat indicator on the controller should be blinking approximately once per second.

After verifying all of the status LED's are in the expected conditions, connect the leads to the battery. First connect the negative wire (BLACK) then connect the positive wire (RED).

Calculating Estimated Standby Time

Standby time is determined by adding the maximum standby current draw of all the devices connected to the system to the current draw of the controller, and divide the amp hour rating of the standby battery by the total system load. **Note:** If the device rating is listed in mA it can be converted to amps by dividing by 1000. The table below shows and example of how to calculate estimated standby time.

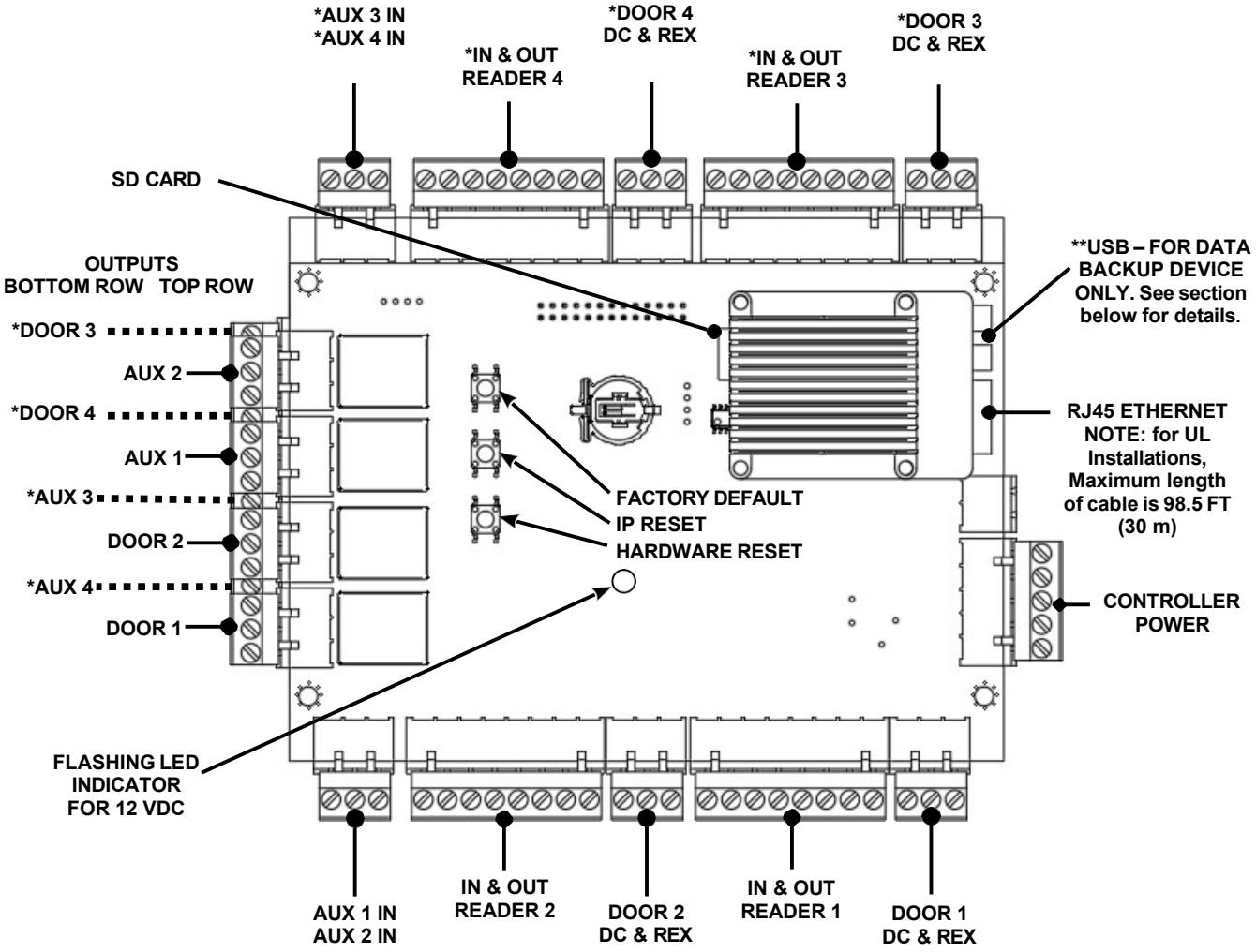
Example Standby Time Calculation			
Device	**Standby Current**		
4DXLPL Controller	550 mA	0.550 A	***NOTE:*** *Always include controller's standby current in the calculations.*
Reader 1	80 mA	0.080 A	
Reader 2	100 mA	0.100 A	
Door Lock 1	250 mA	0.250 A	
Door Lock 2	250 mA	0.250 A	
	1230 mA	**1.230 A**	**Total System Load**
Battery Rating	7.0 AH		
Standby Time Calculation	7.0 AH / 1.230 A	**~ 5.5 Hours**	**Estimated Standby Time**

NOTE: *The actual standby time depends on the condition of the battery and the activity of the installed system.*

Controller Features

The following shows the controller's features and wiring components.

Controller Hardware Identification



4 Door Controller Layout

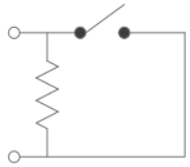
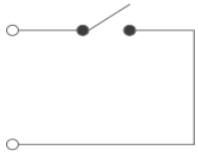
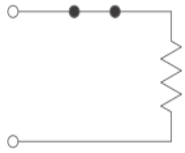
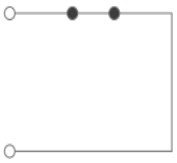
Controller Inputs

Controllers can monitor door position, request to exit and auxiliary (general purpose) inputs. All inputs are assigned default states that can be modified as needed through the user interface. The table below shows the default state for each of the inputs.

Input Type	Default State
Door Position (status) Inputs	Disabled
Request to Exit Inputs	Normally Open, Momentary, Unsupervised
Auxiliary Inputs	Normally Open, Momentary, Unsupervised
Tamper	Normally Open, Momentary, Unsupervised
Power Fault	Normally Open, Momentary, Unsupervised

Input Circuit Configurations

The table below shows the different input configurations. These types can be independently configured for each input by the user.

Supervised	Unsupervised
Normally Open Note: Use 1K Ohm Resistor 	Normally Open 
Normally Closed 	Normally Closed 

Controller Connectors

The controller is provided with plugin terminal blocks that are color coded and marked to indicate the proper connection for field wiring.

NOTE: *The connector terminals are designed to accept 14-22 AWG solid or stranded wire.*

*The **Minimum Cable Specifications** for the wiring of inputs is 22 AWG Belden or equivalent with a maximum distance of 2000 feet (610 meters).*

NOTE: *All wiring shall conform with the National Electrical Code, NPFA70 and local building codes.*

Input Wiring

All inputs may be configured for normally open or normally closed contacts. Door position, request to exit and auxiliary inputs may also be configured with for supervision to detect if wiring to the contact is broken or cut. ***Wires must not be routed in parallel with or in the same conduit with any high voltage AC wiring.***

Request to Exit & Door Position Connectors

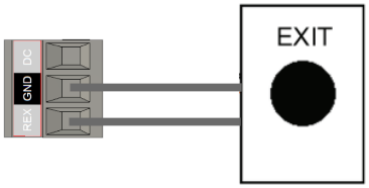
Terminal	Description
REX	Request to Exit Input, Normally Open, Normally Closed or Monitored
GND	Ground, Common Connection for REX and DC Inputs
DC	Door Position Input, Normally Open, Normally Closed or Monitored.

NOTE: *REX and DC input types are user configurable options.*

Request to Exit (REX) Inputs

A REX input activated the door output to unlock a door. A REX device can be a press to exit button, motion detector or other device mounted on the secured side of an entrance. REX features may be modified in Device Settings for Doors and can be set to normally open (NO), normally closed (NC) or monitored using either a series or parallel resistor. For applications where a manual unlocking device is used, such as an exit bar, REX activating the door output can be disabled.

Request to Exit Wiring

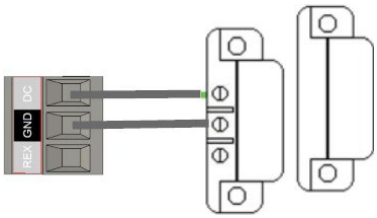


1. Disconnect power from the controller.
2. Determine if your REX device is normally open or normally closed (refer to the instructions provided by the REX manufacturer).
3. Connect the REX device as shown.
4. After power is applied to the controller, make sure to configure the controller in Device Settings for Doors and select the appropriate REX input type.
5. After power is applied to the controller, verify the input is properly working.

Door Position Inputs

Monitors if the door is open or closed. The door switch (typically a magnetic reed switch, not provided) will change state when the door is opened or closed. To use this feature, it must be enabled in Device Settings for Doors. It can be set to normally open (NO), normally closed (NC) or monitored using either a series or parallel resistor.

Door Position Wiring



1. Disconnect power from the controller.
2. Determine if your door position switch is normally open or normally closed (refer to the instructions provided by the switch manufacturer).
3. Connect the door position switch as shown.
4. After power is applied to the controller, make sure to configure the controller to use the door position switch in Device Settings for Doors and select the appropriate door contact type.
5. After power is applied to the controller, verify the input is properly working.

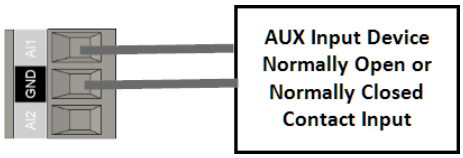
Auxiliary Inputs

Auxiliary inputs are used for general purposes and can be connected to devices such as alarms, detectors and devices that have a switched output. These inputs can be set to normally open (NO), normally closed (NC) or monitored using either a series or parallel resistor and these features may be modified in Device Settings for Aux Inputs.

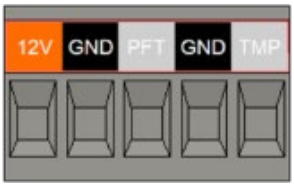
Auxiliary inputs must be programmed to produce a defined action, such as activating an auxiliary output, using Event Actions.

Auxiliary Input Wiring

1. Disconnect power from the controller.
2. Determine if device you are connecting to the Auxiliary input is normally open or normally closed (refer to the instructions provided by the device manufacturer).
3. Connect the device to the Auxiliary input as shown.
4. After power is applied to the controller, make sure to configure the controller in Device Settings for Doors and select the appropriate Auxiliary input type.
5. After power is applied to the controller, verify the input is properly working.



Power, Power Fault & Tamper Connector



Terminal	Description
12V	+12 VDC @ 5A (60W) Input Power
GND	Ground for Input power
PFT	Power Fault Input, Normally Open or Normally Closed Contact
GND	Ground for Power Fault and Tamper Inputs
TMP	Tamper Switch Input, Normally Open or Normally Closed Contact

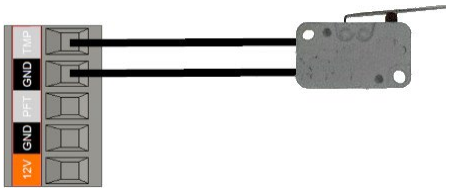
Tamper

The tamper input may be used to monitor access to the access control system. This input can be set to normally open (NO) or normally closed (NC) in Device Settings for Controllers. Typically a tamper switch is mounted inside the enclosure containing the access control system in such a way that when the enclosure is opened, the switch is activated.

The access control system can be programmed using Event Actions to perform a system backup, activate an auxiliary output or send an email notification when a tamper input is detected. The tamper input is prewired to detect when the enclosure door is opened.

Tamper Input Wiring

1. Disconnect power from the controller.
2. Determine if device you are connecting to the Tamper input is normally open or normally closed (refer to the instructions provided by the device manufacturer).
3. Connect the device to the Tamper input as shown.



4. After power is applied to the controller, make sure to configure the controller in Device Settings for Controllers and select the appropriate Tamper input type.
5. After power is applied to the controller, verify the input is properly working.

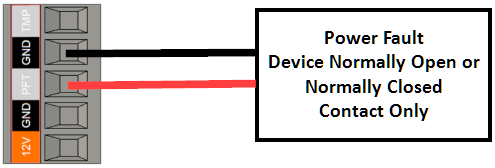
Power Fault

The power input may be used to monitor the power supply connected to the access control system. This input can be set to normally open (NO) or normally closed (NC) in Device Settings for Controllers. Typically power supplies designed for access control will have a switched output that is activated when main power is lost and changed to battery backup.

The access control system can be programmed using Event Actions to perform a system backup, activate an auxiliary output or send an email notification when a power input is detected. The power fault is prewired to the Power Module and detects when main power is lost and the power module changes over to battery backup.

Power Fault Input Wiring

1. Disconnect power from the controller.
2. Determine if device you are connecting to the Power Fault input is normally open or normally closed (refer to the instructions provided by the device manufacturer).



3. Connect the device to the Power Fault input as shown.
4. After power is applied to the controller, make sure to configure the controller in Device Settings for Controllers and select the appropriate Power Fault input type.
5. After power is applied to the controller, verify the input is properly working.

Power 12V DC & GND

The Power Input requires a dedicated Class 2, 12 VDC power supply. The power is prewired to the controller. A RED LED on the controller flashes to indicate when 12 VDC is present.

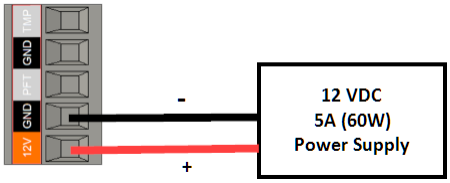
NOTICE: *A 12 VDC power supply must be used. Incorrect voltage will damage the product and void the warranty.*

CABLE SPECIFICATIONS: *Use a minimum size of UL listed 16 AWG, 2 conductor at a maximum distance of 4 feet (1.2 meters).*

NOTE: *Power supplies must be plugged into a dedicated receptacle that is not controlled by a switch.*

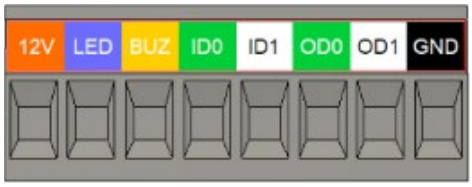
Power Wiring

1. Connect the power supply to the 12V and Ground terminals on the connector.
2. Power should only be applied to the system when all connections are secured and tested, and when instructed to apply power.



NOTE: Power is prewired on controllers with integrated power supplies.

In & Out Reader Connectors



Terminal	Description
12V	+12 VDC Power for the Readers
LED	LED Control for the In and Out Readers
BUZ	Buzzer Control for the In and Out Readers
ID0	In Reader, Data 0
ID1	In Reader, Data 1
OD0	Out Reader, Data 0
OD1	Out Reader, Data 1
GND	Ground for the Readers

NOTE: *Reader current is limited by an auto resetting fuse on the controller. Improper connection may damage the controller and void the warranty.*

Readers

The controller can be connected to Wiegand type readers or keypads. Each door on the controller supports a primary (entrance) In Reader and a secondary (exit) Out Reader.

The maximum power available through the controller for an individual reader is 300mA @ 12VDC with a combined maxim for the controller of 1500mA. ***Exceeding the maximum power for an individual reader or for the controller may damage the controller, void the warranty and will cause erratic operation.*** Refer to the manufacture's documentation to determine the reader's power requirements. ***Wires must not be routed in parallel with or in the same conduit with any high voltage AC wiring.***

*The **Minimum Cable Specifications** for readers is a Belden shielded, twisted, 6 conductor plus ground cable; 22 AWG when the reader is mounted up to 250 feet from the controller and 18 AWG when the reader is mounted up to 500 feet from the controller.*

Note: *Use UL294 listed readers for all installations. All wiring shall conform with the National Electrical Code, NPFA70 and local building codes.*

Reader Wiring

1. Disconnect power from the controller.
2. Connect the color coded wires from the reader to the appropriate terminals on the reader connector as shown. **Refer to manufacture's instructions for exact color codes for each connection. Do not assume the wire colors are the same for all reader manufacturers.**
3. Remove excess shield from the reader cable to prevent interference with the controller's electronics or other electrical circuits. Tape off any exposed shield with electrical tape.
4. Reader shields must be grounded per the manufacture's requirements.
5. Make sure to properly ground the reader shield.
6. After power is applied to the controller, verify the reader is properly working.

In & Out Reader Wiring				
Reader Connector	**Color**	**Description**	**Typical IN Reader Wire Color**	**Typical Out Reader Wire Color**
8	**Black**	Ground	**Black**	**Black**
7	**White**	Out Reader, D1	**X**	**White**
6	**Green**	Out Reader, D0	**X**	**Green**
5	**White**	In Reader, D1	**White**	**X**
4	**Green**	In Reader, D0	**Green**	**X**
3	**Orange**	Buzzer Control	**BUZ***	**BUZ***
2	**Blue**	LED Control	**LED***	**LED***
1	**Red**	12 VDC	**Red**	**Red**
***Wire Color Varies By Manufacturer. Check Reader Manual for Correct Color**				

Controller Outputs

The controller has door output and auxiliary output relays that may be activated in response to reader activity, time schedules or event actions. The outputs are assigned default features that can be configured in Device Settings for Doors or Auxiliary Outputs. The table below shows the default state for each type of output.

NOTE: Relays are configurable in the controller's UI. Activation time, state and output can be modified as required by the installation.

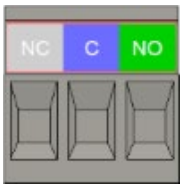
Output	Default State	Default Response
Door Output	Not Energized, Single Pulse	3 second activation time in response to valid access credentials
Auxiliary Output	Not Energized, Single Pulse	None. Must be configured in Device Settings or Event Actions

Output Wiring Requirements

The wire used must be of the proper gauge for the load current and distance from the controller to the load. ***Wires must not be routed in parallel with or in the same conduit with any high voltage AC wiring*** and all wiring shall conform with the National Electrical Code, NPFA70 and local building codes. The table below shows recommendations for wire gauge based on load and distance from the controller.

Total Load (Amps)	Voltage (AC or DC)	Wire Gauge and Distance (feet)				
		14	**16**	**18**	**20**	**22**
0.5 A	12V	1500	1000	600	375	225
	24V	2000	1200	750	450	300
1.0 A	12V	800	500	300	200	100
	24V	1000	600	400	200	150
2.0A	12V	400	240	150	90	60
	24V	480	300	180	120	70

Door & Auxiliary Output Connectors



Terminal	Description
NC	Normally Closed Dry Relay Contact
C	Common Relay Contact
NO	Normally Open Dry Relay Contact

NOTE: *The maxim capacity of the Door and Auxiliary output relays is 24V DC @ 2 Amps. Always use a dedicated power supply for Door and Auxiliary Outputs.*

Door Lock Wiring

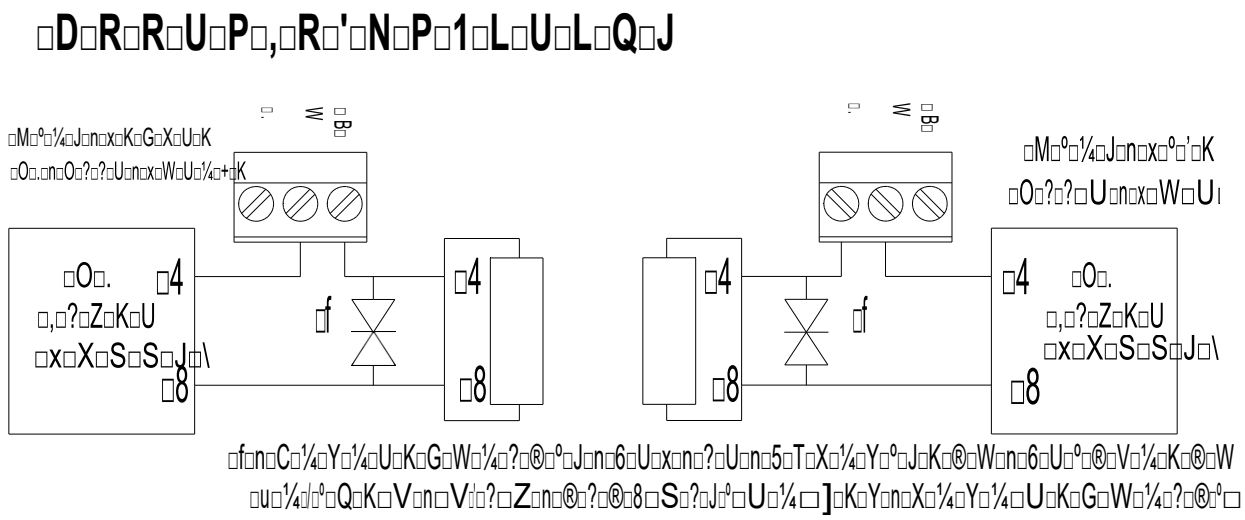
Door outputs can be configured to operate in a fail safe or fail secure mode. Connect the door locking device to the door output connector as shown below. Refer to the manufacture's specifications to determine the correct operating voltage, current and configuration. Use a power supply dedicated for door lock use. The built in power supply may be used to power 12V or 24V DC door locking devices.

Fail Secure DC Door Strike

Without power, the door strike is locked.

Fail Safe DC Door Strike

Without power, the door strike is unlocked.



SD Card

A micro SD card is provided with every controller. It must be properly installed for the controller to operate. Do not remove during normal use and always power down the system before installing or removing the micro SD card.

USB Backup Device

A USB memory device *may be* provided with the controller. When provided, and the controller is configured as a server, user data and log data may be backed up to the USB device. Do not remove during normal use and always power down the system before installing or removing the USB device.

Factory Default Button

Pressing this button for 22 seconds will delete user data and reset the controller to factory default condition. **NOTE: User data will be lost**.

IP Reset Button

Pressing this button will reset the controller's IP address to 192.168.0.250. **NOTE: User data may be lost.**

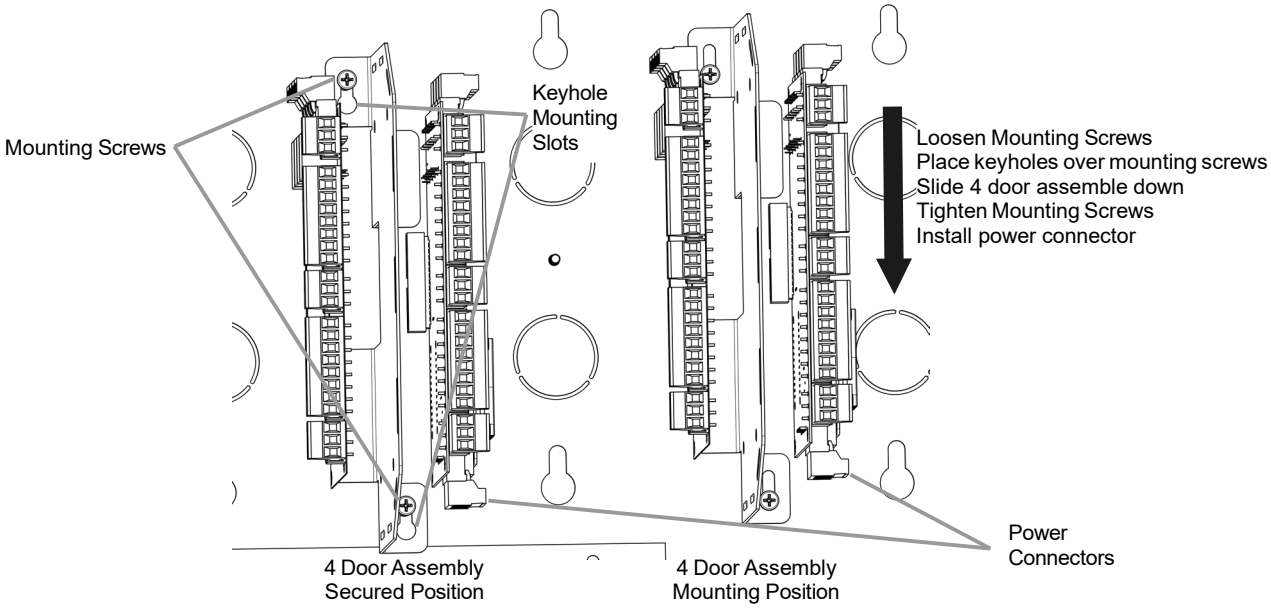
Hardware Reset Button

Pressing this button will restart (reboot) the controller. **NOTE: User data may be lost.**

Adding 4 Door Expansion

Four (4) door controllers (servers or clients) can be expanded to 8 doors by adding an optional 4 door expansion module. The module is mounted into the 4DMPLXL controller and provides 4 additional door inputs and outputs. The expansion module is installed as follows:

Mounting the 4 Door Assembly in the Enclosure



Powering On and Connecting to a Network

Controllers must be located in a secure area and connected to a network that is protected by a security system (firewall, etc.). Before connecting the controller to the network, obtain the following information from you network administrator. ***Note:*** *a Static IP address should be used when a controller is configured as a server controller.* Client controllers may use DHCP.

- ✓ IP address
- ✓ Subnet Mask
- ✓ Gateway
- ✓ DNS 1 and DNS 2

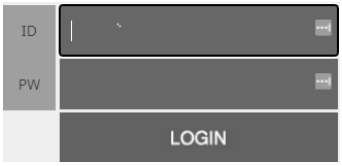
NOTICE
ONLY CONNECT THE CONTROLLER TO A SECURED NETWORK BEHIND A FIREWALL

Preparing for the Network

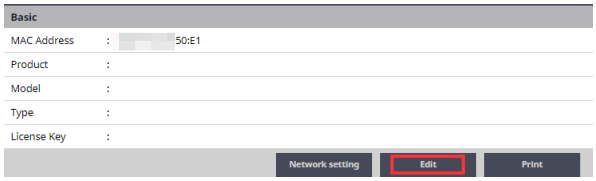
In most cases, the controllers IP address will have to be changed to allow the controller to be recognized by the local network. The controller's IP address is changed as follows.

1. Connect a programming computer directly to the Ethernet port of the controller. A standard CAT-5 cable is used for direct connection. A crossover cable is not required.
2. Assign a static IP address to the computer of 192.168.0.10. For instructions on how to change the static IP address of a Windows computer visit: https://support.microsoft.com/en-us/help/15089/windows-change-tcp-ip-settings
3. The factory default IP address of the controller is 192.168.0.250. Open a web browser, such as Google Chrome, and enter the default IP address into the address bar.

TIP: *As an alternative to directly connecting a cable, the Smart IP Finder utility can be used to change the controller's IP address. See the section below on how to use the utility.*

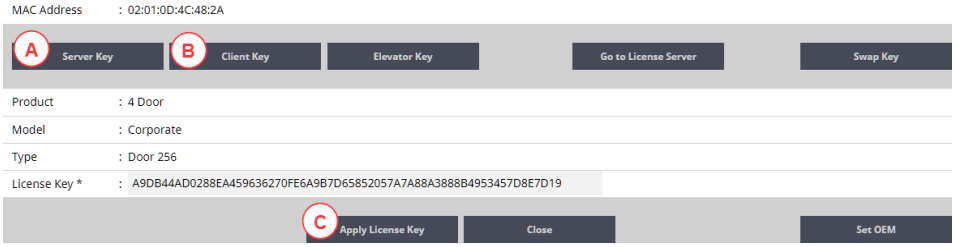


4. The controller's login page is displayed as shown. To login enter the default User ID: *admin* and default PW: *admin* ***NOTE: After you login with admin/admin, as an added security feature, you will be required to reset the password.***

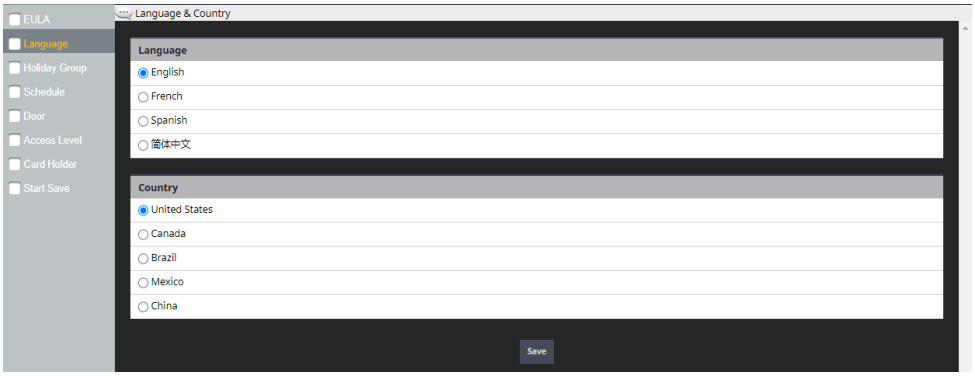


5. Controllers can be licensed as a server or a client. After first time login, the license page is is displayed. To get a license key, first click on the Edit button. On the next page, click on **A,** the Get License Key for a **SERVER** or click on **B**, the Get Client Key for a **CLIENT**. Click OK to confirm and the license key will be auto populated. Finish by clicking **C**, Apply License Key and the controller will restart.

NOTE: *The controller needs to access the Internet to obtain a license key.*



6. When the controller is licensed for a server, after logging in and reviewing the EULA, the system configuration Wizard is started. You must scroll to the bottom to accept and proceed. The Wizard is a guide that can be used to collect the basic information required to set up a system.

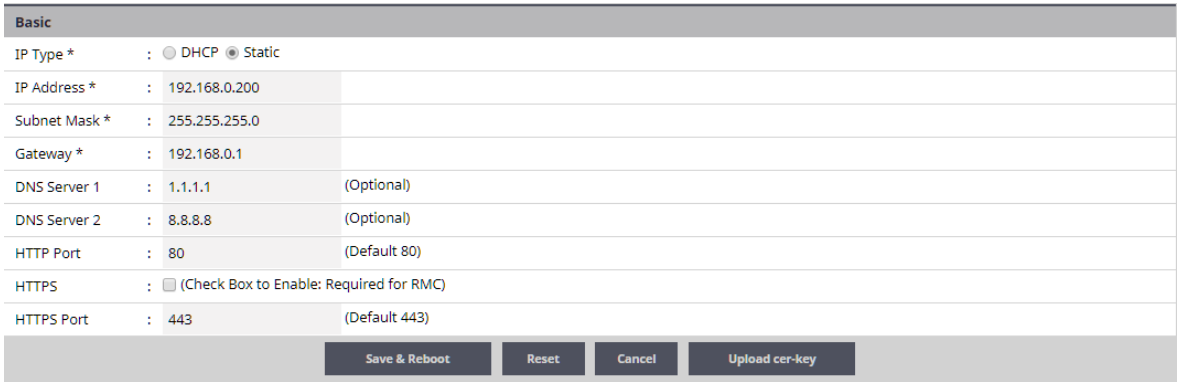


Wizard Starting Page

7. The network configurations may be accessed through the Sitemap by first clicking the icon at the bottom of the page, then clicking IP Address under Network Settings.

Accessing the Site Map

8. After entering the network information, click Save & Reboot and the controller will reboot. Typically rebooting will take less than 2 minutes.



Network Settings Page

9. After disconnecting the programming computer, the controller is ready for the local network.

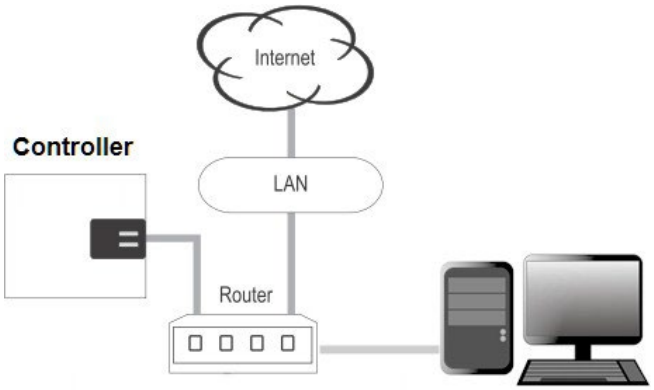
NOTE: *System data may be lost if the controller is powered down without performing Save Data.*

Connecting to the Network

Plug the Ethernet cable into the port on the controller and connect to the local area network as shown below. If the network connection is functioning properly the LAN LED's on the controller will blink. Computers connected to the local network will be able to access the system using the IP address of the controller.

*The **Minimum Cable Specifications** network connection is CAT 5 or better with an RJ-45 connector, wired straight through to a network switch or router.*

***Note:** For UL294 installations, the maximum Ethernet cable length is 98.5 feet (30 meters).*



***NOTE:** LAN connection is only required for monitoring, reporting and configuration. Once the system is configured, it will operate without a LAN connection.*

Adding Clients to Systems

Some systems have the ability to add additional controllers to increase the number of doors, inputs or outputs or control elevators. Clients are configured through the system's server, but must first be linked to the server.

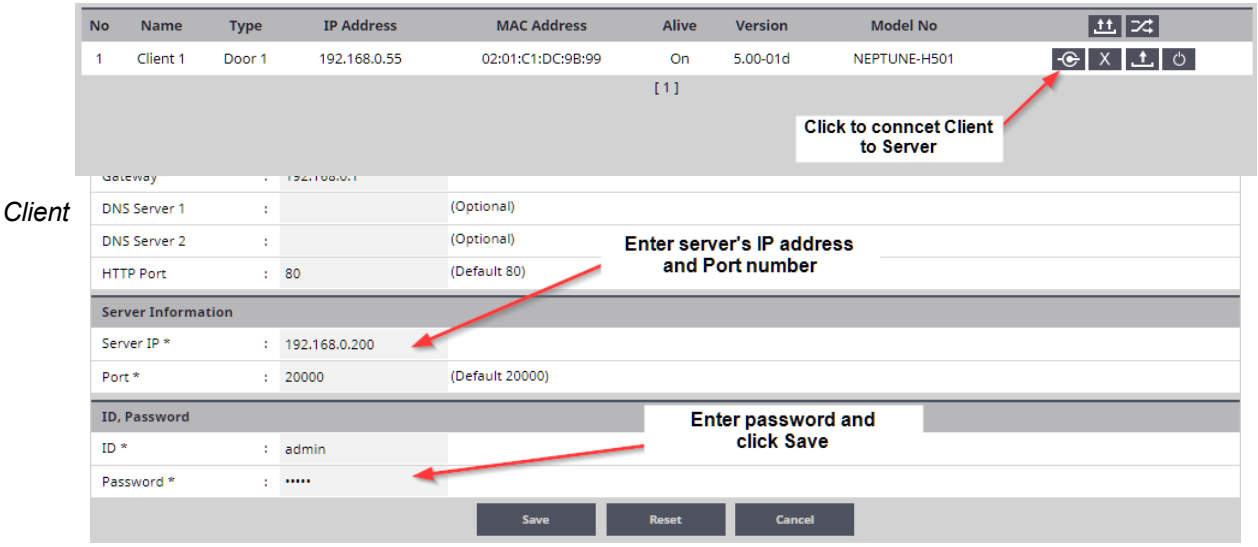
Setting the Client's Network

1. Connect a programming PC directly to the controller as described in the section Preparing for the Network.
2. Login using the default ID: *admin* and default PW: *admin* ***NOTE: After you login with admin/admin, as an added security feature, you will be required to reset the password.***
3. After login, the client's network page is displayed. Click Edit.

4. Change the IP address of the client controller. It is recommended to set this to DHCP.
5. Enter the IP address of the server controller and the server's port number (the default port number is 20000).
6. Enter the password and click Save.

Linking the Client to the Server

1. Login to the system's server.
2. After logging in, browse to the Site Management and select Client Management.
3. The client will appear in the client management list. Click on the button to connect the client to the server.



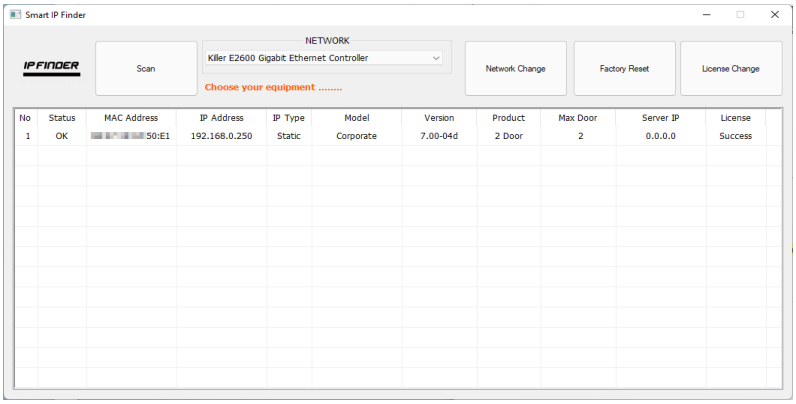
Management

NOTE: After you connect the client to the server, the client's password will be reset to match the server's password

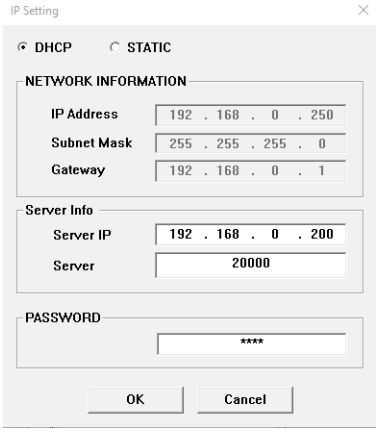
IP Finder

Smart IP Finder is a Microsoft Windows® PC utility that can be downloaded from our website. This utility can be used to locate controllers on the local area network. It also provides a method of changing the IP address of a server or client controller and is an alternative to directly connecting clients. To use Smart IP Finder, follow the steps below.

1. Download and install the utility on a Windows PC that is connected to the local network that will be used by the server and client controllers.
2. Connect all of the controllers to local network.
3. Run Smart IP Finder. If you PC has multiple network adapters, select the adapter in the Network Card list box that is connected to the local network used by the controllers, and click Scan to locate the controllers. When controllers are located, they will be listed in Smart IP Finder



4. In this example, a server controller is located at 192.168.0.200. The client's IP address can be changed and the client can be assigned to a server by first clicking on the client in the list, then click the Set Network button.
5. In the IP Setting popup, change the client's IP to static IP address or to a DHCP. Note that servers must be set to static IP address.
6. In the IP Setting popup, change the client's Server Info. In this example, the Server IP is 192.168.0.200 and the Server Port is 20000.
7. ***Enter the controller's password*** and click OK. This will update the client's IP address settings and assign it to a server. When the network changes are complete, the client will appear in the list with the new settings.

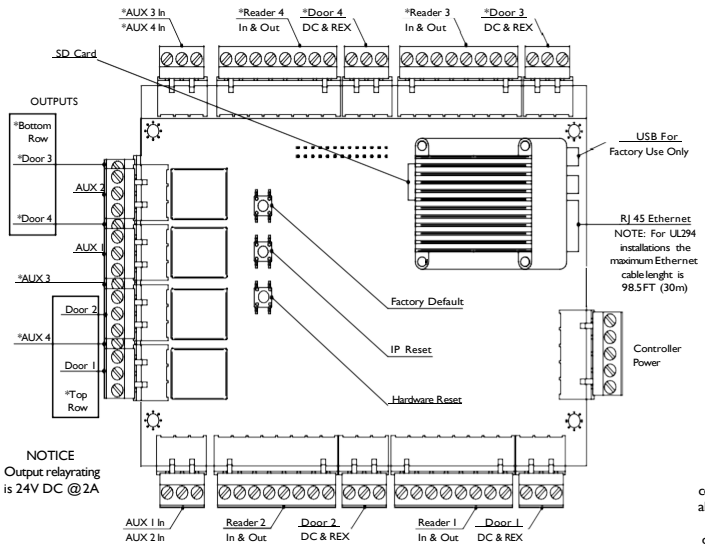


Access Control System Wiring Diagram

for Level 1 (controlled) Installations

Controller Layout

(* indicates only included on 4 door models)



NOTICE
Output relayrating is 24V DC @2A

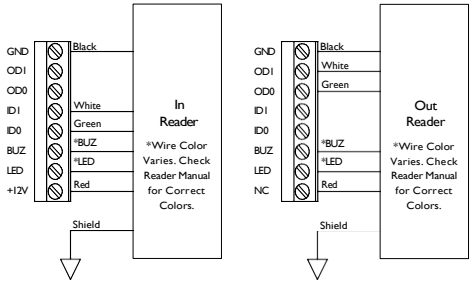
Use UL294 Listed Readers

12V DC @200mA max Conncet with twisted shielded wire, 22AWG (250FT), 18 AWG (500FT), Belden #9535 or equivalent.

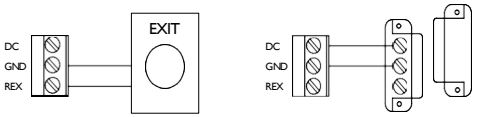
I/O	Default State
Door Status In	Disabled
REX In	Normally Open, Momentary
AUX In	Normally Open, Momentary
Door Out	Not Energized
AUX Out	Not Energized

NOTICE
To prevent loss of configuration information, always backupsystem's data before disconnecting power.

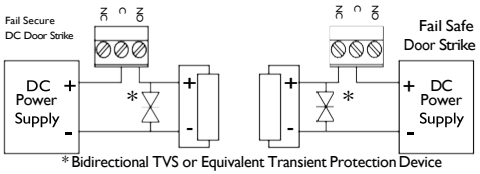
Wie gand Reader Wiring



Input Wiring



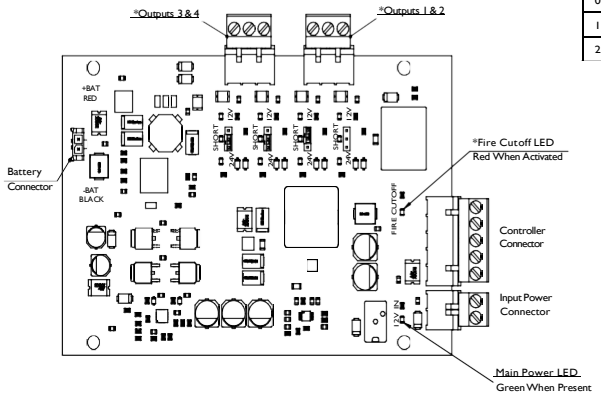
Door Lock Wiring



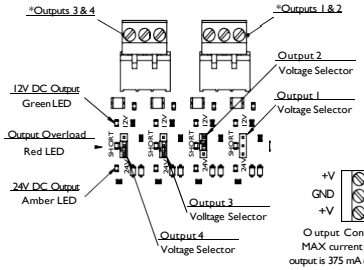
* Bidirectional TVS or Equivalent Transient Protection Device (images shownon-polarized bidirectional TVS)

Power Module Layout

(* indicates only included on models with lock power)



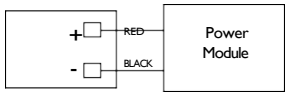
Output Wire Gauge				
Amps @ 12V DC	Wire Gauge & Distance (FT)			
	14	16	18	20
0.5 Amps	1500	1000	600	375
1.0 Amps	800	500	300	200
2.0 Amps	400	240	150	50



Output Connector MAX current for any output is 375 mA @ 24V DC or 700 mA @ 12V DC

NOTICE
DO NOT ALTER OR TAMPER WITH THIS DEVICE.
NO USER REPLACABLE PARTS.
Systemcontains Class 2 Circuits
Refer to Installaion Manual for additional information.

Optional Battery Connection



NOTICE: Qualified technician should replace battery every 2 to 3 years. See installation instructions for safe replacement batery. Use only 12V 7AH sealed lead acid battery. CHARGE RATE: 900 mA. Do not exceed manufacturer specifications.

Document 100101 REV D

Trouble Shooting

Question	Solution
NOTE: Validate the system's software for the server and client(s) has been updated to the latest version before calling for support.	
The controller does not power up.	– Check the AC outlet's voltage used to power the controller. – For systems using a Fire Cutout, check the status of the fire cutout input to see the power has been deactivated. – Check wiring from the power supply to the controller. – For systems using a Power Module, check for +12 VDC at the Power Input Connector. If +12 VDC is not present, the internal power supply may be damaged and need to be replaced. – Check for +12 VDC at the Power Connector for the Controller. If +12VDC is present and the RED LED's on the Controller are off, the input fuse may be blown. This fuse is not field replaceable. – If the measured voltage is less than 11 VDC, the system may be overloaded. Disconnect all readers, door and AUX outputs and check if the controller powers up.
The controller powers up but does not respond to card reader inputs.	– Check that the card and the card reader are compatible. – Measure the power at the reader connection. If no voltage is present, the reader fuse may be blown or overloaded. Disconnect the reader wiring and check for proper voltage. – Power cycle the controller to reset the controller and the reader fuse. – Check the wiring to the reader. Disconnect the field wires to the reader and directly wire a reader to the controller. If the reader works, the field wiring may be faulty. – Mover the reader to another door to see if the issue follows the reader.
No network communications with Controller.	– If the Ethernet LAN LED's are off or solid, then there is no physical connection to the network. Check network cabling at the Controller and at the router or switch. – Verify the correct IP, Gateway, Subnet and DNS address are being used for the network. – Have the network administrator verify that firewall rules or port restrictions are not blocking network access to the Controller. – Directly connect a programming PC to the Controller as described in the installation instructions to check Ethernet communications. Note that you may need to reset the IP address of the controller.
How to reboot the controller?	– For a hardware reboot, momentary press the controller's Reboot push button. – It will take approximately 1 minute for the controller to reboot and the UI can be accessed.
How to reset the IP address of the controller to factory default?	– Press and Hold the IP Default push button on the controller for 22 seconds. – The Controller will reboot and set the IP address to 192.168.0.250. – It will take approximately 1 minute for the controller to reboot and the UI can be accessed. – The Controller's IP address can be changed from the UI.

Trouble Shooting

Question	Solution
How to restore factory defaults to a controller?	***Note:*** *If the controller is factory defaulted, all configuration and user information will be lost, including the license key.* – Press and Hold the Factory Default push button on the controller for 20 seconds. – The Controller will reboot and the factory with the factory defaults, including the default IP address. – It will take approximately 1 minute for the controller to reboot and the UI can be accessed. – After installing the license key the controller can be reconfigured from the UI.
How to obtain a license key for an unlicensed controller?	– The controller's MAC address is required to obtain a license key. This is printed on the controller or can be found on the license page after logging in to the UI. – Visit the License On Demand web server to obtain the license key.
Can not obtain a license key after first login.	The controller needs access to the Internet to retrieve a license key. If an Internet connection is not available, the license key can be retrieved directly from the License On Demand web server.
Can not find IP address of controller.	– Make sure the network card on the PC used to access the controller is properly configured to communicate with the network connected to the controller. – Use the Smart IP Finder utility to scan the network for the controller and reset the IP address to a know value. – Use the IP RESET button on the controller to reset the IP to the factory default 192.168.0.250 – Restart the controller using the RESET button on the controller. – Power cycle the controller.

Testing, Maintenance and Service

A monthly test of the system and all the components is recommended.

- ✓ Check that all used inputs and outputs are correctly working with the connected devices.
- ✓ Check that the system and log backups are occurring at the scheduled times.
- ✓ Check for proper operation of the battery backup. ***NOTE:*** *Backup system data before performing a battery test.*

The system requires little maintenance, however it is recommend to check the following every 6 months.

- ✓ Doors on system enclosures are secure.
- ✓ Enclosures are clean and dry.
- ✓ All wires are securely connected to the terminals and proper strain relief is used.
- ✓ Proper bushings or fitting are installed in knock out for wires and wires are not cut or chaffed.
- ✓ Check date code on backup battery and replace if needed.

These systems contain Class 2 circuits. There are no serviceable parts on the controllers. Do not alter or tamper with any of the components of the system. Doing so will void the warranties and violate FCC rules.

Parts List

Order Model	Description
DMTAMP	Tamper Switch
SWAP4DXL	2 Door Controller Replacement (PCB only used for replacing existing controller)
ACM-4DXL	4 Door Expansion Module (converts 4 door controller into 8 door controller)
PSB1224	Power Module with Door Lock Power
SWITCHPS150	150W Power Supply
Please contact customer service to order replacement parts.	

Contact & Warranty Information

NAPCO Security Technologies

333 Bayview Avenue
Amityville, NY 11701

Phone: 800-645-9445

A NAPCO SECURITY TECHNOLOGIES COMPANY
Publicly traded on NASDAQ Symbol: NSSC
Visit our websites:
http://www.napcosecurity.com
http://www.alarmlock.com/

Document Number 100206-NAE REV A