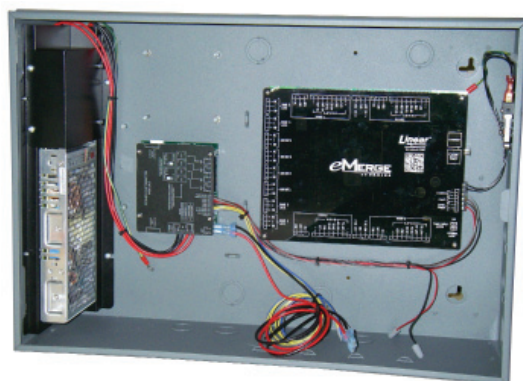


eMERGE™

*e*³
SERIES



Linear®
e3 eMerge

Access Control System

Document Number: 620-100531, Rev. C

Installation Instructions

NORTEK

SECURITY & CONTROL

USA & Canada (800) 421-1587 & (800) 392-0123

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Standards 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, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. 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 his own expense. e3 eMerge systems are Level I UL 294 listed devices and must be installed in controlled locations.

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Notice

It is important that this instruction manual be read and understood completely before installation or operation is attempted. It is intended that the installation of this unit will be performed only by persons trained and qualified in the installation of access control equipment. The important safeguards and instructions in this manual cannot cover all possible conditions and situations which may occur during installation and use. It must be understood that common sense and caution must be exercised by the person(s) installing, maintaining and operating the equipment.

This installation manual is for e3 eMerge systems.

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1.0 Introduction

This manual contains information regarding the basic installation, wiring and configuration of the e3 eMerge browser-based access control systems. Systems are available in a space-efficient and durable plastic housing or in a heavy-duty steel cabinet featuring an internal power supply with a supervised power distribution module that supports battery back-up. All systems use the same e3 Controller.

1.1 Access Control Overview

Access control systems are designed to monitor and control access throughout a building or restricted area. An access control system involves the use of an access device (card, PIN code, etc.), which is presented at an entry device (reader/keypad) to gain access. When access is granted, a door is unlocked for a pre-programmed amount of time and a transaction is recorded in a database for reporting or tracking purposes.

1.2 System Overview

Systems are available in a variety of models starting with one door, two reader configurations. Models can be upgraded with expanded capabilities using optional software license keys. The e3 eMerge Controller includes Ethernet support, an integrated web server and Power over Ethernet (PoE) support.

Table 1.1: Specifications

Specifications	
Processor	Cortex 1GHz
On-board RAM	512MB DDR2 (333MHz)
Power	Regulated 12 VDC @ 2A
Operating system	Embedded Linux
Transactions per second	> 30
Plastic enclosure (W x H x D):	12.25 in x 11.1 in x 2.23 in
Steel enclosure (W x H x D)	17.75 in x 14.25 in x 6.5 in
Temperature specification	-4°F to 120°F (-20°C to 50°C)

1.3 Installation Overview Checklist

Note: The checklist provides a logical sequence for installing a system.

The following list presents the steps required for successfully installing a system.

- ☐ Mount the enclosure
- ☐ Connect the readers
- ☐ Wire the inputs and outputs
- ☐ Connect power to the system
- ☐ Obtain IP address and other TCP/IP information from network administrator
- ☐ Configure the network settings for the system
- ☐ Connect the system to a local area network (LAN)
- ☐ (Optional) Add licenses for additional doors and readers

2.0 e3 Controller Layout

2.1 e3 Controller Components

The following illustration shows the e3 Controller wiring and components.

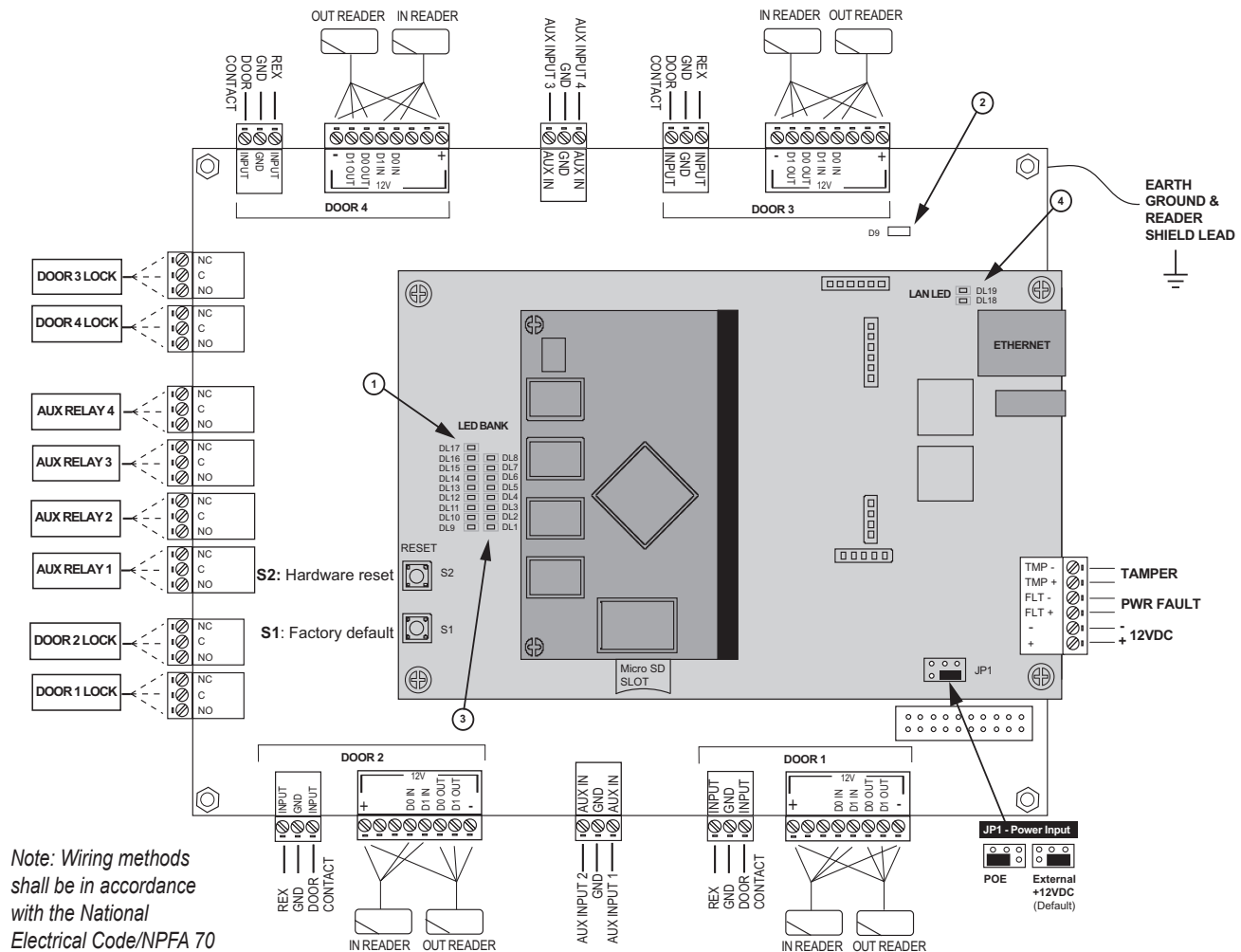


Figure 2.1. Board Layout

Table 2.1: LED Indicators

LED	Condition
① DL17	Red On = Power On Middle Board
② D9	Red On = Power On Bottom Board
③ DL1	Blue On = System is Rebooted
DL1 to DL16	Blue On = System is Booting
④ DL19, DL18	Blue Blink = Network Connection
NOTE: System start up time is approx. 60 secs.	

Note: For UL installations, the maximum Ethernet cable length is 30m (98.5 FT).

Table 2.2: Default I/O States

Attribute	Default State
Door Status Inputs	Normally Open, Unsupervised, 8 Sec. Held Open Time
REX Inputs	Normally Open, Momentary, Unsupervised
Auxiliary Inputs	Normally Open, Unsupervised
Door Lock Outputs	Not Energized, Single Pulse, 3 Second Unlock Time
Aux Outputs	Not Energized, Single Pulse, 3 Seconds On

3.0 Installing the e3 Controller

3.1 Mounting the Compact Enclosure

The housing is designed to accommodate the necessary wiring connections for most installations. The compact enclosure is optimized to run wires under the back panel and thru the knockouts shown in Figure 3.1 and Figure 3.2. The enclosure should be mounted vertically on a wall, in a secure location within normal temperature and humidity levels.

Note: 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.

Note: Choose a centrally located, secure, clean and dry area near an AC power source. Avoid mounting the e3 Controller within 6 feet of any equipment that generates electrical interference.

Caution: This equipment includes electronic components that are highly sensitive to static electricity. Please discharge by touching an earth ground before installing or handling this equipment.

Note: The compact enclosure will not accommodate a backup battery. If using a backup battery, a separate housing must be installed or use PoE supply with suitable UPS backup.

Note: Tie down loops are located in the enclosure and used to provide strain relief for field connections.

Note: The plastic housing is not listed for installations that require UL 294.

Installing the Compact Enclosure

1. Run all necessary wires to the enclosure location.
2. Remove the enclosure's cover by removing the two screws in the front of the housing.
3. Level the enclosure on a sturdy wall. Mark the mounting holes with a pencil.
4. Partially insert screws into the top two mounting holes and hang the enclosure on the screws.
5. Pull all wires through the knockout holes in the enclosure. Label each wire according to its use.
6. Recheck for level, insert the two lower screws, and tighten all four mounting screws.

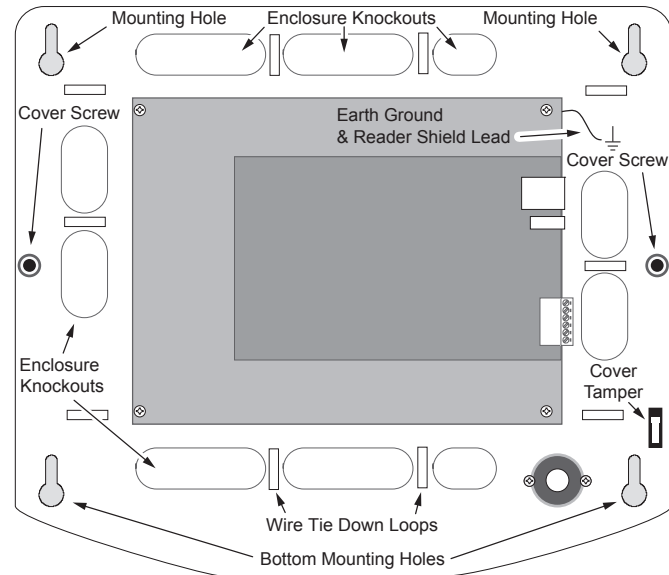


Figure 3.1. e3 Controller Compact Enclosure

Mounting Extensions

If running surface wires, six extension legs may be snapped onto the back of the enclosure to provide additional space behind the enclosure for the wires.

Compact Enclosure Tamper Protection

A tamper switch is mounted inside the enclosure and is pre-wired to the tamper input on the terminal strip. If the enclosure cover is removed for any reason the tamper switch will activate, triggering a condition that can be linked to an event action in programming (e.g., send an e-mail or generate an output).

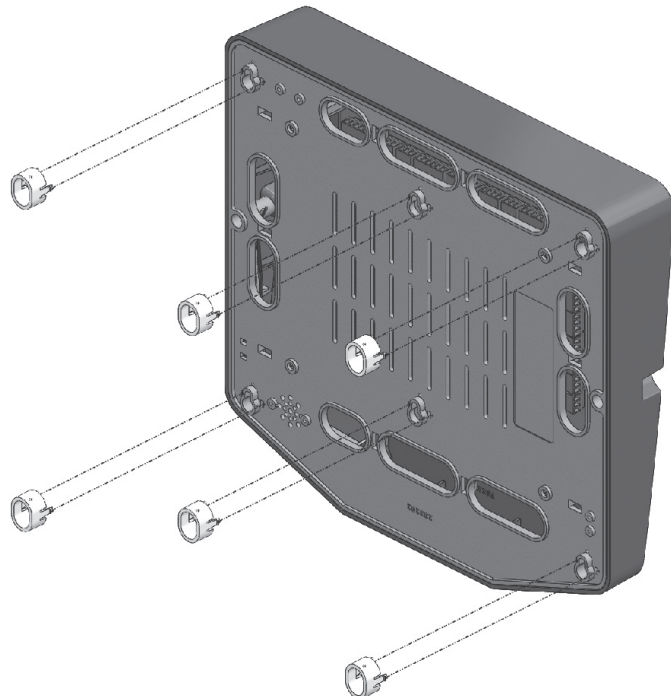


Figure 3.2. Mounting Feet / Extensions for Compact Enclosure

3.2 Mounting the Metal Enclosure

Note: Choose a centrally located, secure, clean and dry area near an AC power source. Avoid mounting the e3 Controller within 6 feet of any equipment that generates electrical interference.

Caution: This equipment includes electronic components that are highly sensitive to static electricity. Please discharge by touching an earth ground before installing or handling this equipment.

Note: Tie down loops are located in the enclosure and used to provide strain relief for field connections.

The metal enclosure is designed to accommodate one or two 12 VDC 7Ah backup batteries and the necessary wiring connections for most installations. Conduit knockouts are provided on all sides of the enclosure. The enclosure should be mounted vertically on a wall in a secure location within normal temperature levels. A minimum of 12 inches of space around all sides of the enclosure is recommended.

Installing the Metal Enclosure

1. Run all necessary wires to the enclosure location.
2. Remove the enclosure's cover by unlocking the door and disconnecting the ground wire. The door may be lifted out of the hinge slots.
3. Remove the metal cabinet knockouts required for wire entry and install bushings or conduit connectors as needed to protect wires from damage.
4. Level the enclosure on a sturdy wall. Mark the mounting holes with a pencil. (The cabinet can be vertically or horizontally mounted depending on space requirements.)
5. Partially insert screws into the top two mounting holes and hang the enclosure on the screws.
6. Pull all wires through the knockout holes in the enclosure. Label each wire according to its use.
7. Recheck for level, insert the two lower screws, and tighten all four mounting screws.
8. Re-install the door and connect the ground wire to the door.

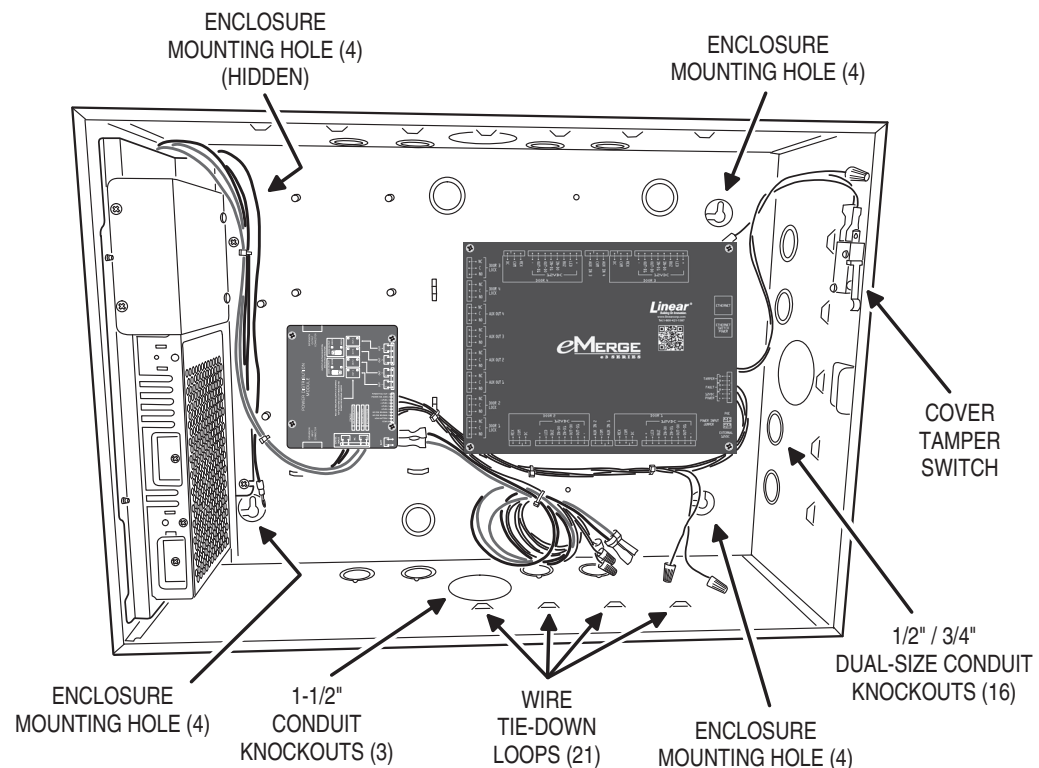


Figure 3.3. e3 Controller Metal Enclosure

Metal Enclosure Tamper Protection

A tamper switch is mounted inside the enclosure and is pre-wired to the tamper input on the terminal strip. If the enclosure door is opened for any reason the tamper switch will activate, triggering a condition that can be linked to an event action in programming (e.g., send an e-mail or generate an output).

4.0 System Power

The e3 Controller in the Compact Enclosure requires a 12 VDC, 2A supply (not included). For UL installations, a Linear brand plug-in power supply (PIP) is required (see below). The system may also be powered by a high Power-over-Ethernet (PoE) injector using an optional Linear brand PoE module.

Note: For PoE applications only use UL294B listed PoE power supplies.

- ◆ Linear brand 12 VDC/24W (2A) PIP; P/N 0-291312RU
- ◆ Linear brand 12 VDC/60W (5A) PIP; P/N 0-299177RU (required for UL installations)
- ◆ Linear brand e3 PoE module; P/N 620-100159 (requires additional high power PoE injector). PoE is not supported for installations requiring UL294.

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

Note: Power should only be applied to the system when all connections are secured and tested.

MINIMUM Cable Specifications for power: Use a minimum of 16 AWG Belden (2 conductor) or equivalent. Maximum distance: **6 feet (1.8 meters)**.

Note: Wiring methods shall be in accordance with the National Electrical Code/NPFA 70 and all local codes.

4.1 Compact Enclosure Power Connections

Power Supply Connection

1. Connect 12 VDC from the power supply to the +12V and GND input terminals on the e3 Controller. **Note:** e3 eMerge systems require a 12 VDC, 2 amp Class 2 power supply. **Incorrect voltage will damage the product and void the warranty.**
2. Connect an earth ground to the green earth ground lead provided in the enclosure.
3. Turn on the power supply. If using a PIP for the power supply, it must be plugged into a dedicated receptacle that is not controlled by a switch.
4. The power LEDs (DL17 and DL9) on the e3 Controller will turn on to indicate power is present.

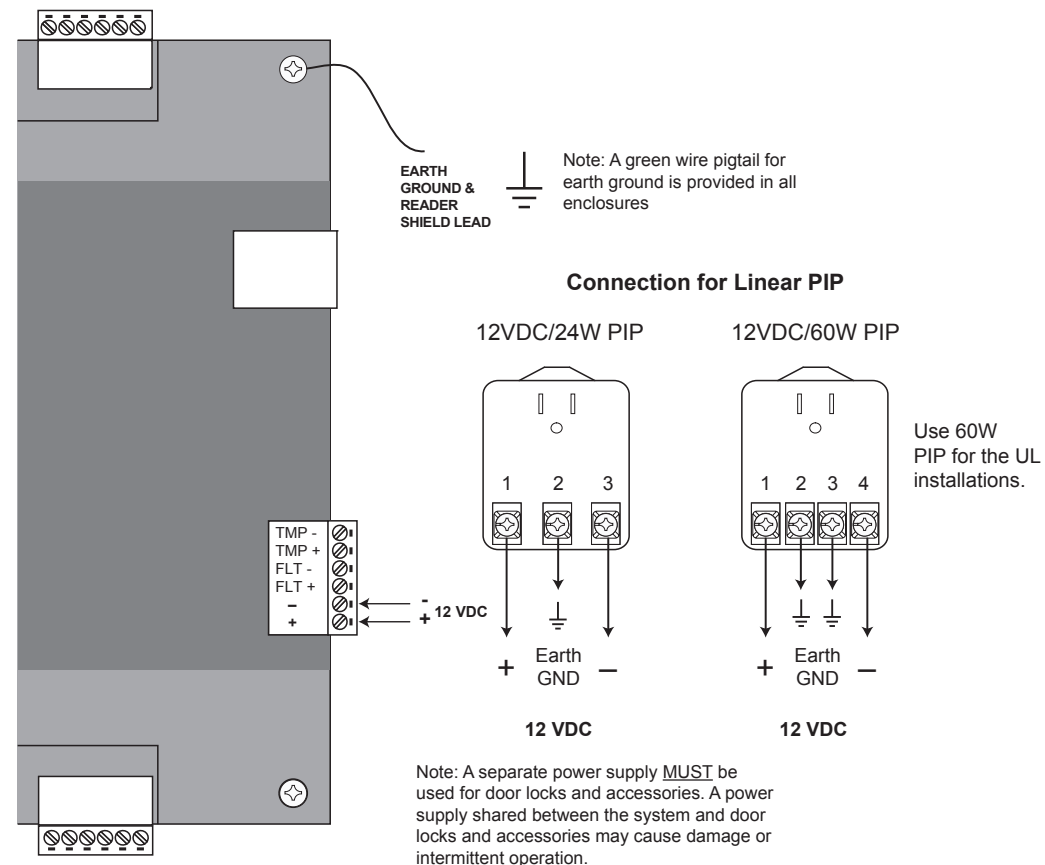


Figure 4.1. Power Connection

Note: The system settings must match the requirement (normally open or normally closed) of the power fault detection device.

Power Fault Connection

The e3 Controller is equipped with a power fault input that can be utilized as follows:

1. Determine whether your power fault input device uses a normally closed or normally open configuration. Please refer to instructions provided by the manufacturer.
2. Connect the power fault input device to Pin 3 and Pin 4 on the terminal strip.
3. Verify that the power fault input device is functioning properly.

The fault input can be configured via programming to trigger an event such as e-mail or popup message. The transaction will be logged in the history of the e3 Controller.

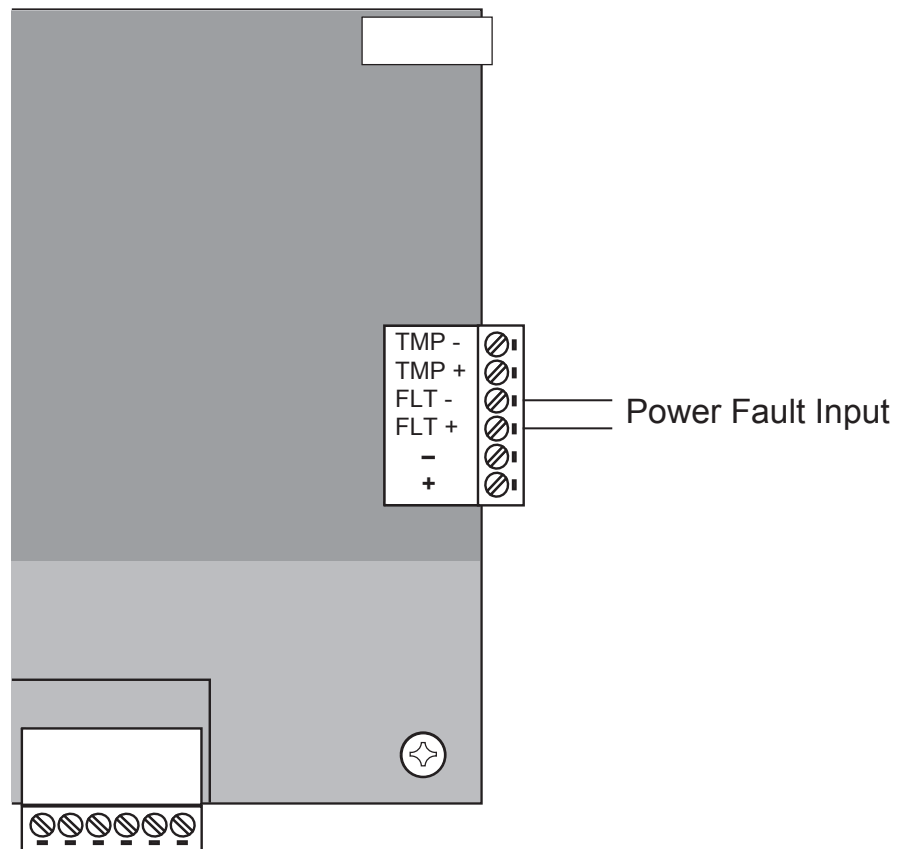


Figure 4.2. Power Fault Connection

4.2 Metal Enclosure Power Connections

Systems using metal enclosures include a factory installed 12 VDC 12.5 Amp power supply and a four-output power distribution module (PDM). An additional secondary power distribution module (Model PS124D-UP4) can be installed in the cabinet for a total of eight auxiliary power outputs (see Figure 4.4).

Power Distribution Module

The e3 power distribution module (see Figure 4.3) routes 12 VDC power from the system power supply to the e3 Controller, input devices (readers & keypads), and output loads (mag locks & door strikes). The power distribution module supports charging a 12V gel cell backup battery. The backup battery is supervised for its charge condition.

The power distribution module features an internal DC-DC step-up converter. Each of the module's four auxiliary power outputs can be set to supply 12 VDC or 24 VDC to the connected load. This allows the installer flexibility when specifying 12 or 24 volt auxiliary access equipment for the installation without having to specify a different voltage system power supply.

A normally closed fire release input is included on the power distribution module. If the input opens, power will be interrupted to the module's connected loads. This can be used to unlock fail secure doors automatically in case of fire system activation.

Indicators on the power distribution module display if the system is running on primary power or battery power, if the battery is low, or if the fire release is active. Each auxiliary output has bi-color indicators that display the voltage selected (12 VDC or 24 VDC) and if the output is shorted (red indicator). **Maximum output current for each auxiliary output is 375 mA.**

Note: The e3 eMerge Controller is not listed as, and cannot be used as a fire warning system.

Power Fault

If AC power loss is detected, the power distribution module will automatically switch to the backup battery, light the battery power indicator, and trigger the power fault input on the e3 Controller. The fault input can be configured via programming to trigger an event such as e-mail or popup message. The transaction will be logged in the history of the e3 Controller.

Note: When a power fault is detected, and the battery backup is used, system may be configured to back up the database and log files to the microSD card.

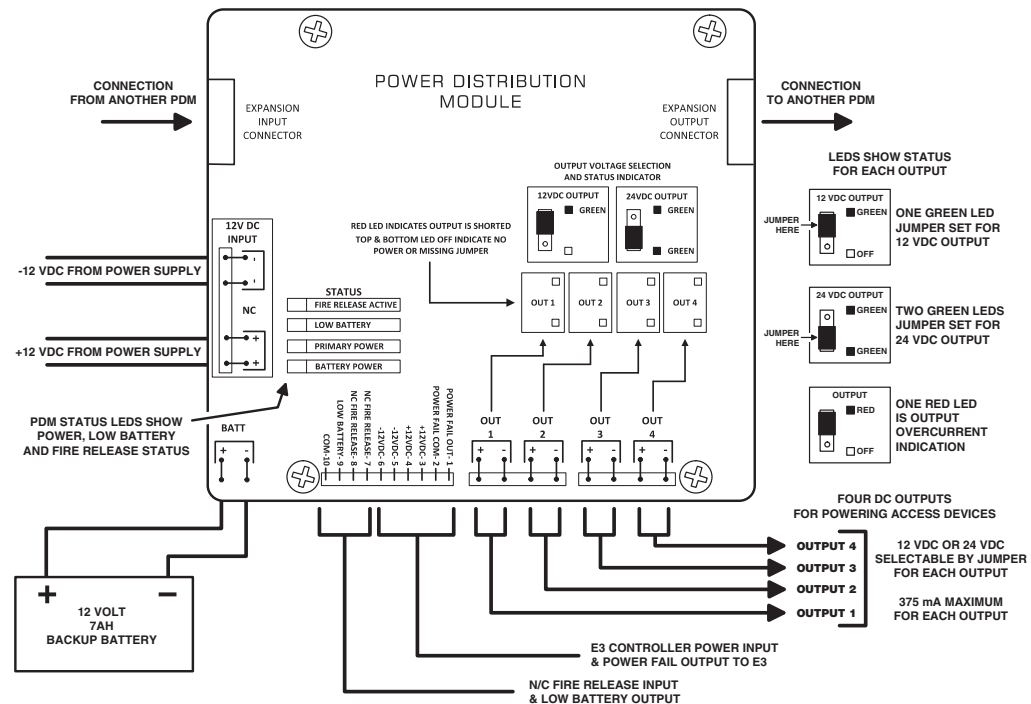


Figure 4.3. Power Distribution Module Connections & Features

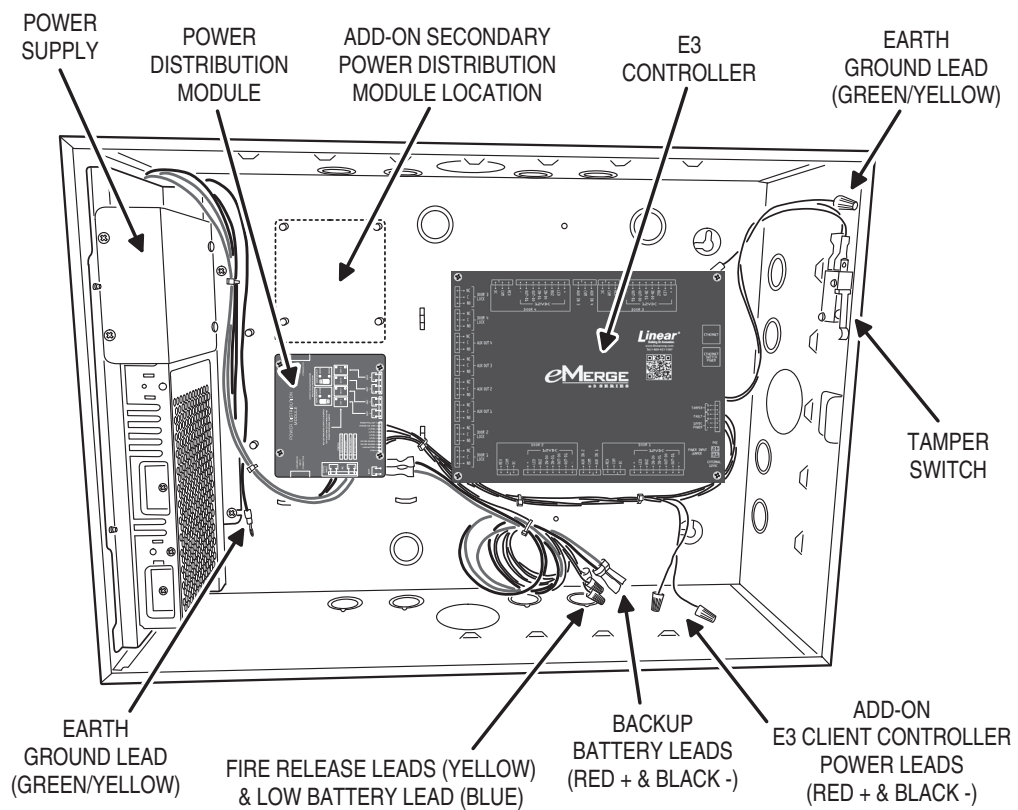


Figure 4.4. e3 Controller and Power Distribution Module in Metal Enclosure

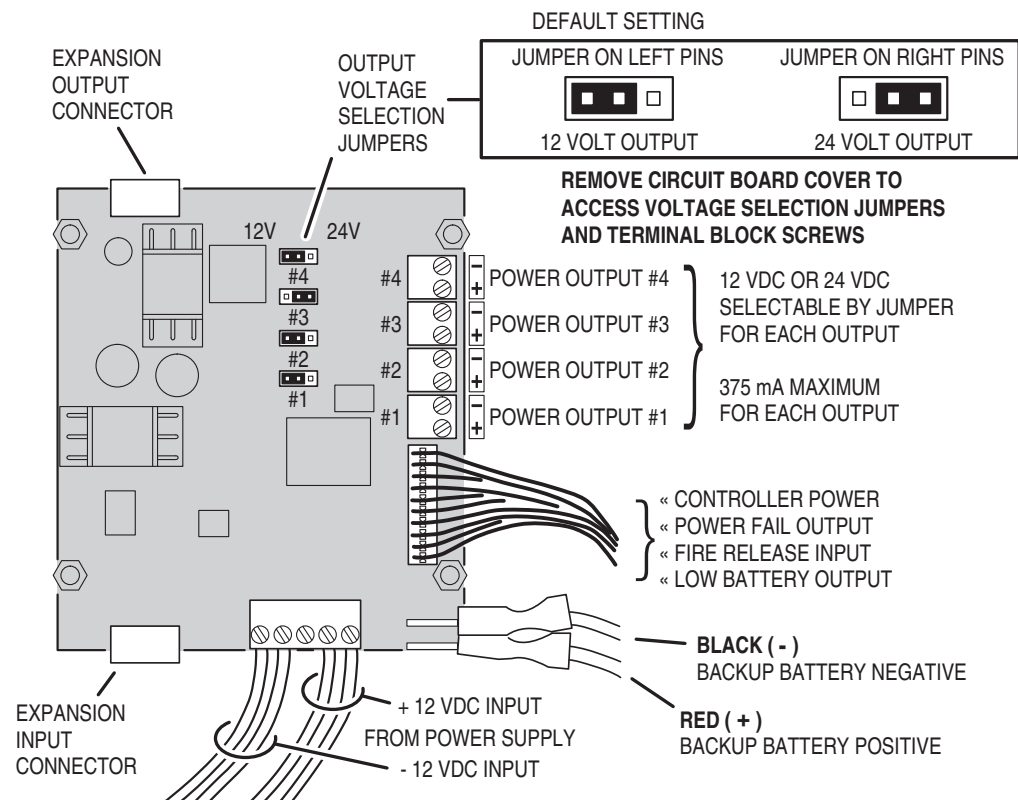


Figure 4.5. Power Distribution Module Features and Voltage Selection Jumpers

Note: The system will not power up using the backup battery. The 12 VDC power must be present to power up the system.

Note: Replace the backup battery every 2 to 3 years.

Note: When a power fault is detected, and the battery backup is used, system may be configured to back up database and log files to the microSD card.

Battery Connection

The metal enclosure provides charging and space for one 12 VDC/7Ah sealed lead-acid battery (not included). The battery provides standby power when the primary power source is lost. The e3 Controller will utilize the backup battery until the battery voltage reaches 11 VDC at which point the entire system shuts down.

Warnings:

- ◆ Use caution when installing the battery. Incorrect use can damage the battery, e3 Controller or can cause a fire.
- ◆ Connect only **one battery** to each Power Distribution Module. DO NOT connect multiple batteries in parallel or series. This will damage your system and void the warranty.
- ◆ The battery backup and charging uses advanced circuitry. Maximum charge rate is 650mA. Once the battery is fully charged it is maintained with an occasional 10mA charge. Ensure these ratings do not exceed the manufacturer's rating for the battery.
- ◆ Properly dispose of old batteries.

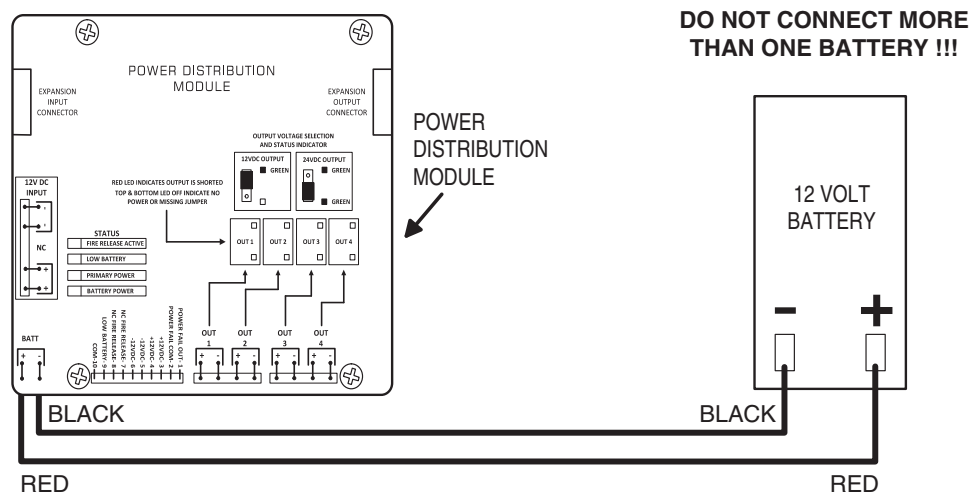


Figure 4.6. Battery Connection for Systems using Metal Enclosure

To determine standby battery time:

1. Determine the total standby load of the system by adding the maximum and standby current draw of the devices connected to the e3 Controller. For example, if the system consists of the e3 Controller (200 mA) and one 75 mA reader the total standby load is 275 mA (200 mA + 75 mA).
2. Divide the total standby load by 1000 to convert it to amps. For example, $275 / 1000 = .275$.
3. Divide the amp-hour rating of the battery by the total standby load to determine the standby time for the system. For example, $7.0 / .275 = 25.5$ hours standby time using a 7 AH battery with a system that consists of the e3 Controller and one 75 mA reader.

Power Supply Connection

The power distribution modules are pre-wired in the e3 metal enclosure.

1. Connect the e3 power cord to a 120 VAC un-switched power outlet.
2. Connect an earth ground to the green earth ground lead provided in the enclosure.
3. Apply AC power.
4. The power LEDs (DL17 and DL9) on the e3 Controller will turn on to indicate power is present.
5. Connect the leads to the backup battery.

Note: If the 6-foot e3 power cord does not reach an available 120 VAC un-switched outlet, have a licensed electrician install an outlet or route power to the e3 cabinet using conduit and appropriate fittings per local electrical codes.

Note: Wiring methods shall be in accordance with the National Electrical Code/NPFA 70 and all local codes.

4.3 PoE Connection (optional)

Note: Each Controller consumes 200 mA of current at 12 VDC (2.4W).

Note: A PoE module is required for each Controller that will use the PoE option.

Note: Linear E3-POE module; P/N 620-100159 (requires additional high power injector) Linear 30W PoE injector: POE-PLUS

Note: For PoE applications only use UL294B listed PoE power supplies. PoE is not supported for installations requiring UL294.

Systems can be powered using Power over Ethernet (PoE), which is a method for providing power via Ethernet cabling. To place the e3 Controller in PoE mode, move the Power Input Jumper to the left position as illustrated in Figure 4.7.

A Power over Ethernet installation must use a high-power 30W PoE injector and the Linear E3-POE module. Refer to the PoE module's installation guide for specific installation information.

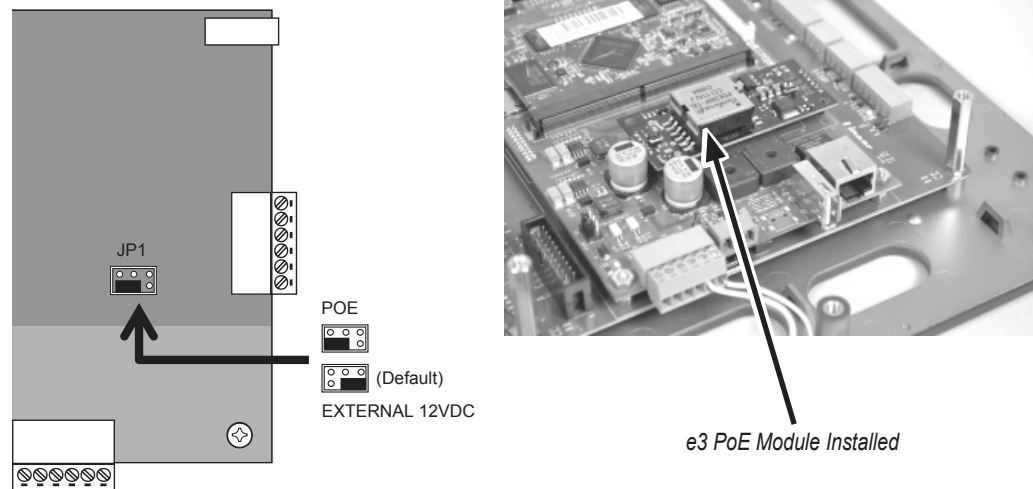


Figure 4.7 Power Input Jumper

5.0 Inputs and Outputs

5.1 System Inputs

Systems have the capability of monitoring door status (door contact) inputs, request to exit (REX) inputs, and auxiliary general purpose inputs.

All inputs are assigned default features that can be configured as needed. The following table shows the default states for each of the inputs:

Table 5.1: Default Input States

Input	Default State
Door Status Inputs	Normally Open, Unsupervised, 8 Second Held Open Time
REX Inputs	Normally Open, Momentary, Unsupervised
Auxiliary Inputs	Normally Open, Unsupervised

Door Status Input

The door status input monitors whether the door is in an open or closed state. A door status switch (typically a magnetic reed switch) will change states when the door is opened or closed. The door status input does not require any programming to enable however, you will have to select either normally open (NO, factory default) or normally closed (NC) operation in the e3 Controller. Simply connect a magnetic reed switch to the appropriate door input as shown in the e3 Controller illustration, Figure 2.1.

Request To Exit

The Request to Exit (REX) input is a momentary input closure that activates the door output relay for the same amount of time as a valid card swipe or keypad entry. REX devices can include a press-to-exit switch on the inside of a door or a passive infrared detector (motion detector), which allows convenient egress. The REX input does not require any programming. Simply connect a normally open (NO, factory default), momentary input device to the REX inputs as shown in the e3 Controller illustration, Figure 2.1.

Auxiliary Inputs

The auxiliary inputs are general purpose inputs that can be used with a variety of input devices including CO detectors, alarm system integration, etc. These inputs can be configured via programming to trigger a defined action such as to activate an auxiliary output.

5.2 Wiring the Inputs

All inputs may be configured for normally open (factory default) or normally closed contacts with supervision or non-supervision. Use standard 1k ohm resistors for supervision. Refer to Figure 5.1 for the acceptable wiring configurations.

Minimum Cable Specifications:
22 AWG Belden or equivalent. Maximum distance 2000 feet.

Note: Wiring methods shall be in accordance with the National Electrical Code/NPFA 70 and all local codes.

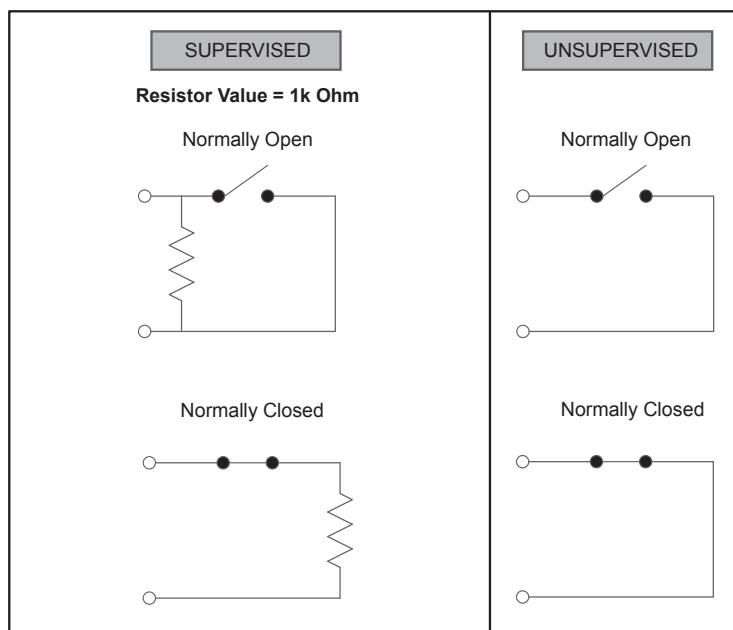


Figure 5.1. Input Circuit Configurations

Tamper Protection

A tamper switch is mounted inside the enclosure for connection to Pin 5 and Pin 6 on the terminal strip. If the cover or enclosure door is removed for any reason the tamper switch will activate, triggering a condition that can be linked to an event action in programming (e.g., send an e-mail or generate an output).

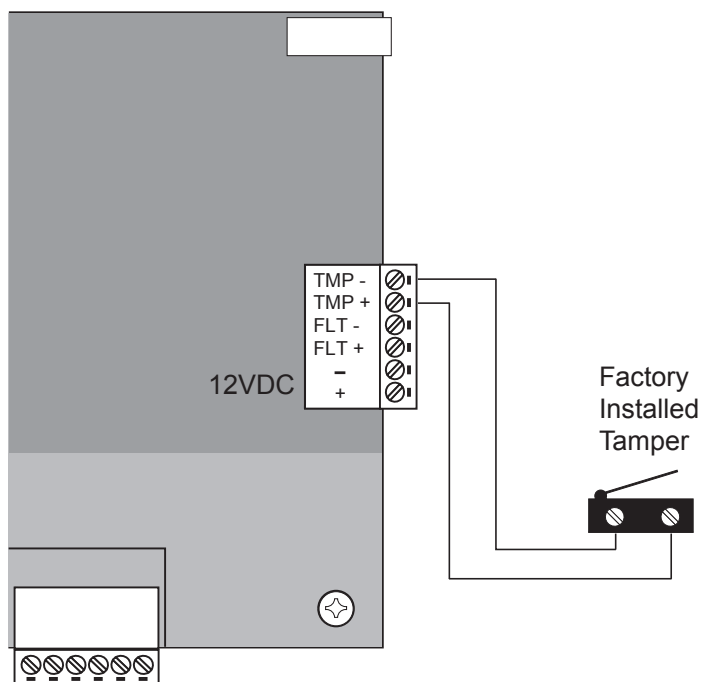


Figure 5.2. Tamper Input Wiring

5.3 System Outputs

All systems have door lock relays and auxiliary output relays that may be activated in response to reader activity, time schedules or input conditions. All relays are Form-C SPDT and provide non-powered dry contacts rated for 2A. The number of available door lock relays and auxiliary output relays will depend on the number of licensed doors.

Output Defaults

All outputs are assigned default features that can be configured as needed. The following table shows the default states for each of the outputs:

Table 5.2: Default Output States

Output	Default State	Default Response
Door Lock Outputs	Not Energized, Single Pulse	3 second unlock time in response to corresponding reader activity (Reader 1 activates door 1 lock relay)
Aux Outputs	Not Energized, Single Pulse	No default response. Must be configured via programming.

Wiring Requirements

The cable must be the proper gauge for the current load and should not be routed in parallel with other wiring especially high voltage or AC wiring. Refer to the Table 5.3 for wiring recommendations:

Table 5.3: Recommended Wiring Requirements

Total Amps	Voltage (AC or DC)	Wiring Gauges and Distance				
		14	16	18	20	22
.5 A	12V	1500 ft	1000 ft	600 ft	375 ft	225 ft
	24V	2000 ft	1200 ft	750 ft	450 ft	300 ft
1.00 A	12V	800 ft	500 ft	300 ft	200 ft	100 ft
	24V	1000 ft	600 ft	400 ft	200 ft	150 ft
2.00 A	12V	400 ft	240 ft	150 ft	90 ft	60 ft
	24V	480 ft	300 ft	180 ft	120 ft	70 ft

5.4 Door Lock Outputs

The door lock relay outputs can each be configured to operate in fail-secure or fail-safe modes.

- ◆ In fail-secure mode, a door lock relay *energizes* when access is granted.
- ◆ In fail-safe mode, a door lock relay *de-energizes* when access is granted.

Wiring the Door Lock Outputs

Connect the locking device to each door relay. Door strike wiring is shown in Figures 5.3 through 5.5. Magnetic lock wiring is shown in Figures 5.6 and 5.7. Refer to the locking device's specifications to determine the required voltage, current draw, and proper configuration.

WARNING: IF THE E3 CONTROLLER IS POWERED FROM A STAND-ALONE PIP POWER SUPPLY, DO NOT USE THE PIP POWER FOR THE LOCKING DEVICE. A SEPARATE POWER SUPPLY OR DC POWER FROM AN E3 POWER DISTRIBUTION MODULE MUST BE USED TO POWER THE LOCKING DEVICE.

See the figures below for door strike wiring.

Note: If using a 24 VDC locking device and powering it from the e3 Power Distribution Module, be sure to set the Module's jumper for the output to 24 volts.

Caution: Do not use a Controller's PIP power supply for the locking device. A separate power supply or DC power from an e3 Power Distribution Module must be used.

Caution: The diode or MOV must be installed as shown in the illustrations. Failure to install these protection devices may damage the control board or cause erratic operation.

Note: For fail-safe operation with a door strike, do not power the strike from the e3 Power Distribution Module, use a stand-alone power supply with battery backup.

Note: Wiring methods shall be in accordance with the National Electrical Code/NPFA 70 and all local codes.

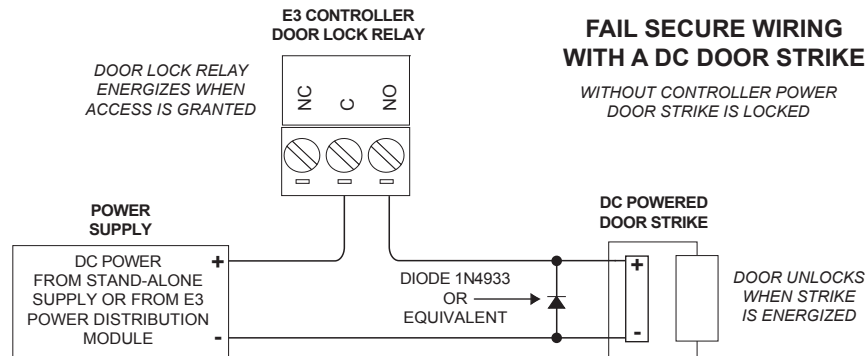


Figure 5.3. Fail Secure DC Door Strike

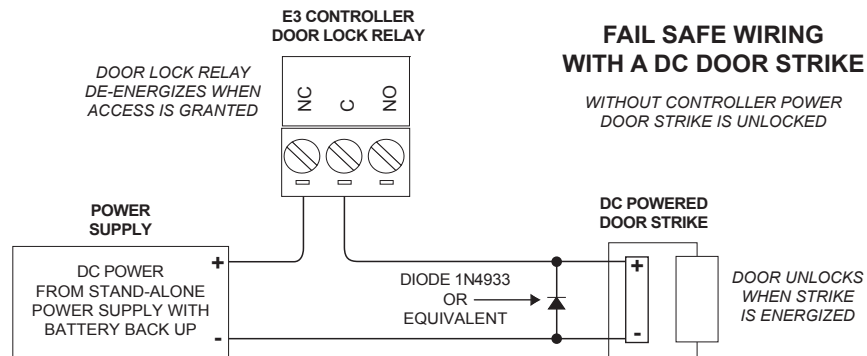


Figure 5.4. Fail Safe DC Door Strike

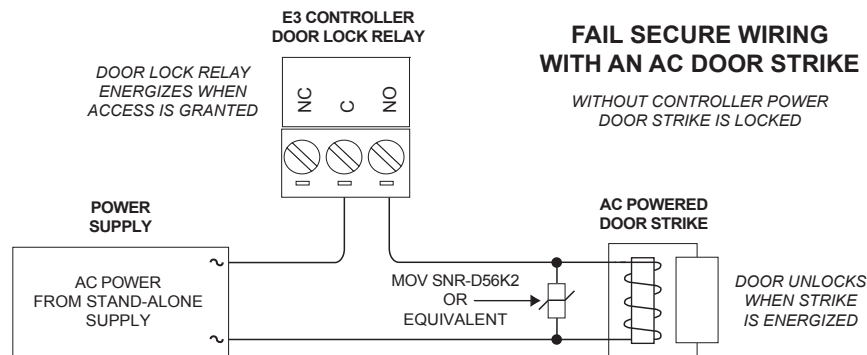


Figure 5.5. Fail Secure AC Door Strike

5.4 Door Lock Outputs (cont.)

Note: If using a 24 VDC locking device and powering it from the e3 Power Distribution Module, be sure to set the Module's jumper for the output to 24 volts.

Caution: The diode must be installed as shown in the illustrations. Failure to install protection devices may damage the control board or erratic operation.

Note: For fail-secure operation with a mag lock, do not power the strike from the e3 Power Distribution Module, use a stand-alone power supply with battery backup.

The door lock relay outputs can be configured to operate in fail-secure or fail-safe modes.

- ◆ In fail-secure mode, a door lock relay **energizes** when access is granted.
- ◆ In fail-safe mode, a door lock relay **de-energizes** when access is granted.

WARNING: IF THE E3 CONTROLLER IS POWERED FROM A STAND-ALONE PIP POWER SUPPLY, DO NOT USE THE PIP POWER FOR THE LOCKING DEVICE. A SEPARATE POWER SUPPLY OR DC POWER FROM AN E3 POWER DISTRIBUTION MODULE MUST BE USED TO POWER THE LOCKING DEVICE.

See the figures below for magnetic lock wiring.

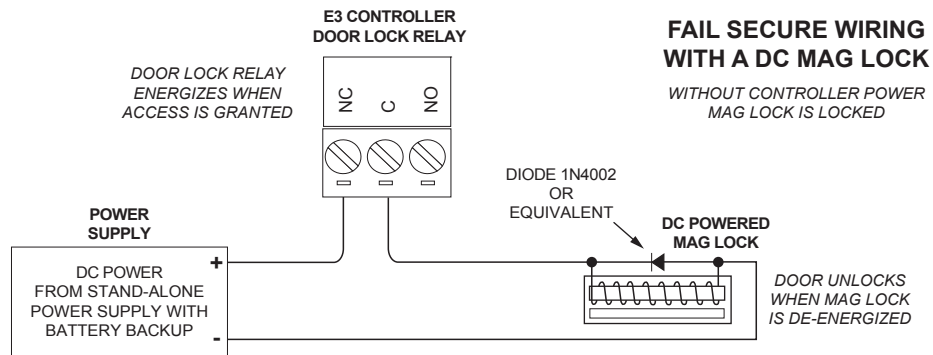


Figure 5.6. Fail Secure DC Magnetic Lock

Caution: Do not use a Controller's PIP power supply for the locking device. A separate power supply or DC power from an e3 Power Distribution Module must be used.

Note: Wiring methods shall be in accordance with the National Electrical Code/NPFA 70 and all local codes.

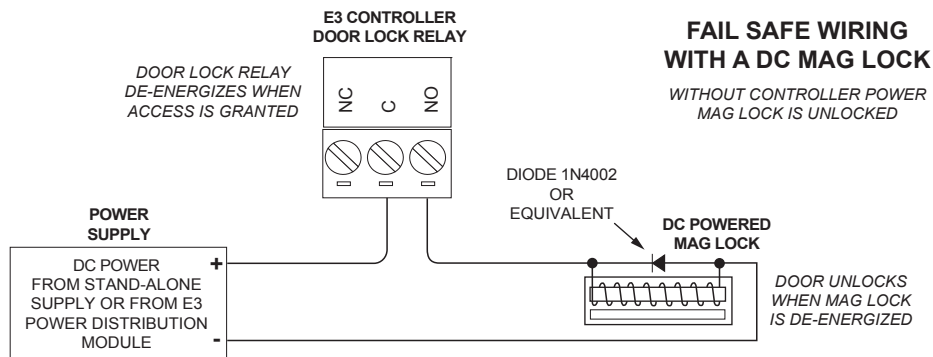


Figure 5.7. Fail Safe DC Magnetic Lock

6.0 Readers

6.1 Wiring the Readers

The e3 Controller can accept up to eight readers or keypads. Each reader port on the e3 Controller supports a 12 VDC reader with Wiegand output format. Readers can be installed as primary (entry) readers for each door as well as optional secondary (exit) readers.

The maximum power available for an individual reader is 750 mA @ 12 VDC with a combined maximum of 1.5A for the e3 Controller. Determine the reader's power consumption by referring to the documentation included with the reader. *Exceeding the maximum current for individual readers or for the e3 Controller will damage the protection fuses and void the warranty.*

Wiring Readers

1. Remove power from the e3 Controller.
2. Pull the reader wiring through a knockout in the enclosure.
3. Connect the color-coded wires from the reader's wiring harness to the appropriate location of terminal strip as shown in Figure 6.1.
4. Remove excess shield to ensure that it is not exposed. An exposed shield can cause interference. Tape off any exposed shield with electrical tape.

Caution: Improper power wiring will damage the fuse and void the warranty.

Minimum Cable Specifications: Twisted, shielded 22 AWG (250 ft.) or 18 AWG (500 ft.) Belden #9535 (5 conductor) or equivalent. Please follow manufacturers installation requirements.

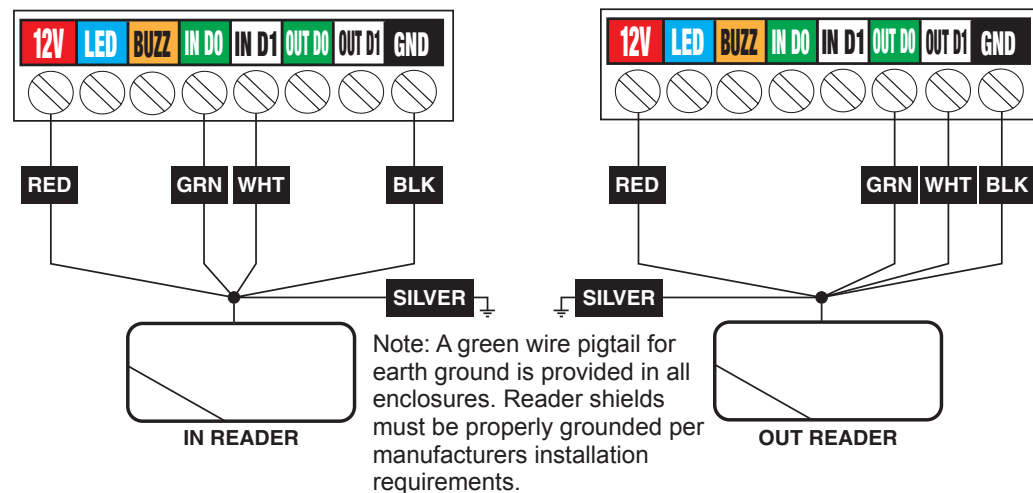


Figure 6.1. Reader Wiring (typical)

Note: Wiring methods shall be in accordance with the National Electrical Code/NPFA 70 and all local codes.

7.0 Network Connection

Caution: The system is exposed to potential risks if installed on a network without proper security precautions. Consult the appropriate on-site IT administrator.

The e3 Controllers must be located in a trusted network environment where a protected network security system (firewall, etc.) is installed and maintained. Obtain the following information from your network administrator before configuring the e3 Controller:

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

7.1 Preparing for the Network

To allow for the system to be recognized on the local network, it is necessary to change the e3 Controller's IP address as follows:

Note: If a DHCP server is present, IP Addresses are dynamically assigned. A static IP address is strongly recommended for the Controller because a DHCP Server may assign a new IP Address.

1. Connect your programming computer directly to the Ethernet port of the e3 Controller as shown in Figure 7.1. A standard Ethernet CAT-5 cable is used for the direct connection. (You may also connect the computer and e3 Controller to an Ethernet Switch.)

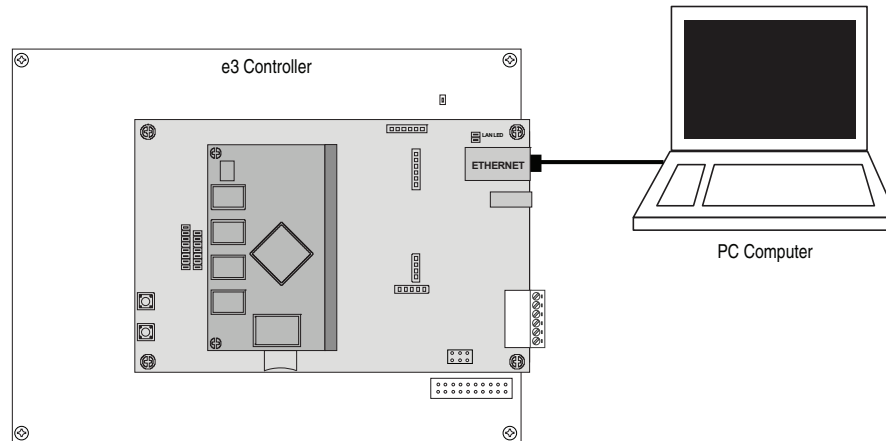


Figure 7.1. Connecting to the e3 Controller

Note: For UL installations, the maximum Ethernet cable length is 30m (98.5 FT.).

2. Assign a static IP address of 192.168.0.149 to the computer. (For instructions on how to change the static IP address of a Windows computer, please visit: <http://technet.microsoft.com/en-us/library/ff710457>).
3. After assigning the static IP address, open a web browser and enter the IP address of the e3 Controller (Default = 192.168.0.250).
4. The e3 Controller presents the login page as shown in Figure 7.2. To log on, enter the default user ID and password (admin/admin).

A screenshot of a web browser displaying a login page. The page has a dark background with white text. At the top, it says 'LOGIN'. Below that are two input fields: 'User ID' and 'Password'. Under the 'Password' field is a 'LOGIN' button. At the bottom, there is a link that says 'Forgot your password?'.

Figure 7.2. Login Page

5. Select the Network Setting icon, then the IP Address icon to display the page shown in Figure 7.3. Enter the static IP address, Subnet Mask, Gateway and DNS server so that it matches the requirements of the local network. (Refer to the User Programming Guide for detailed programming information.)

Network Setting > IP Address

Help

Basic

IP Type * : ☐ DHCP ☒ Static

IP Address * : 172.16.111.82

Subnet Mask * : 255.255.255.0

Gateway * : 172.16.111.1

DNS Server 1 : 172.16.111.84 (Optional)

DNS Server 2 : 172.16.111.88 (Optional)

HTTP Port : 80 (Default 80)

HTTPS : ☐ (Check Box to Enable: Required for RMC)

HTTPS Port : 443 (Default 443)

Save & Reboot Reset Cancel Upload cer-key

Figure 7.3. Network Settings IP Address Page

Cable specification:
CAT 5 or better with an RJ-45 connector wired straight through to a network hub, switch or router.

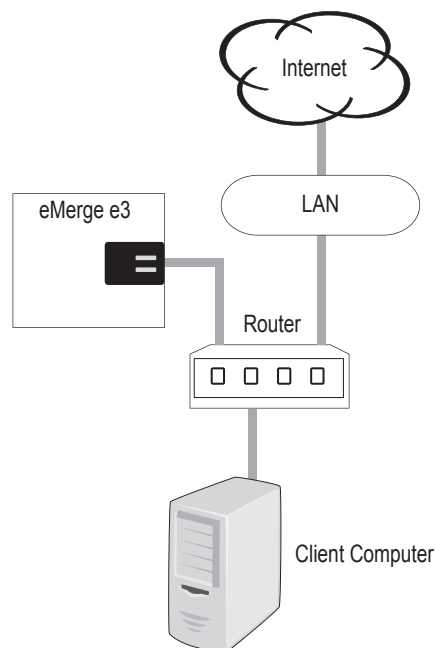


Figure 7.4. Connecting to a LAN

Note: The system data will be lost if the Controller is powered down without performing Save & Reboot.

6. Click **Save & Reboot** and the system will reboot. (Reboot will take approximately 2 minutes.) **Note:** The system data will be lost if the e3 Controller is powered down without performing **Save & Reboot**.
7. Disconnect the programming computer from the e3 Controller. The system is now ready for the local network.

7.2 Connecting to the Network

Note: LAN connection is only required for monitoring, reporting and configuration. Once configured, systems will operate without a LAN connection.

1. Pull an Ethernet cable through the opening in the enclosure nearest the Ethernet port.
2. Plug the RJ-45 connector into the Ethernet port on the e3 Controller.
3. Connect to the local area network (LAN) as shown in Figure 7.4.

If the network connection is functioning properly, the LAN LEDs on the e3 Controller will illuminate as shown in Figure 7.5. The local computers will then be able to access the system by entering the IP address of the e3 Controller.

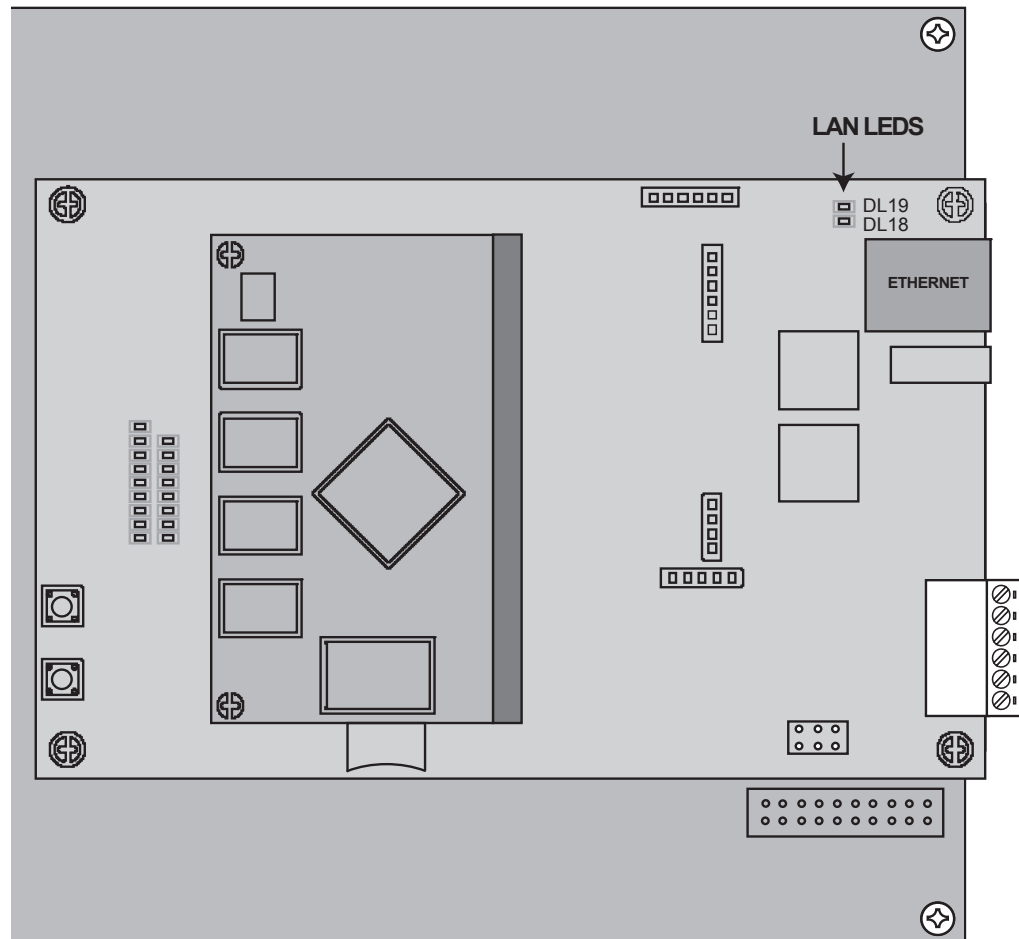


Figure 7.5. LAN LEDs

7.3 Adding a Client

Some e3 eMerge systems provide the ability to add additional e3 Controllers to expand the amount of doors or elevator control, inputs and outputs. These additional e3 Controllers are referred to as clients. A client can be mounted on top of the main e3 Controller (server) for systems using metal enclosures or in a separate enclosure.

Mounting a Client to a Server

1. **Disconnect power from the e3 Controller.**
2. Remove the 4 screws securing the shield over the e3 Controller.
3. Position the expansion board over the 4 existing standoffs and fasten using the standoffs included with the new e3 Controller. *Do not over-tighten or the expansion e3 Controller could be damaged.*
4. Install the shield over the expansion board using the 4 screws removed in Step 2.
5. Connect the client and server to the network and apply power. The client's power connection must be connected to the output of the Power Distribution Module or you can use the approved PoE module. See Section 4 in this manual for power connections.

Note: The Server and Client require independent network connections

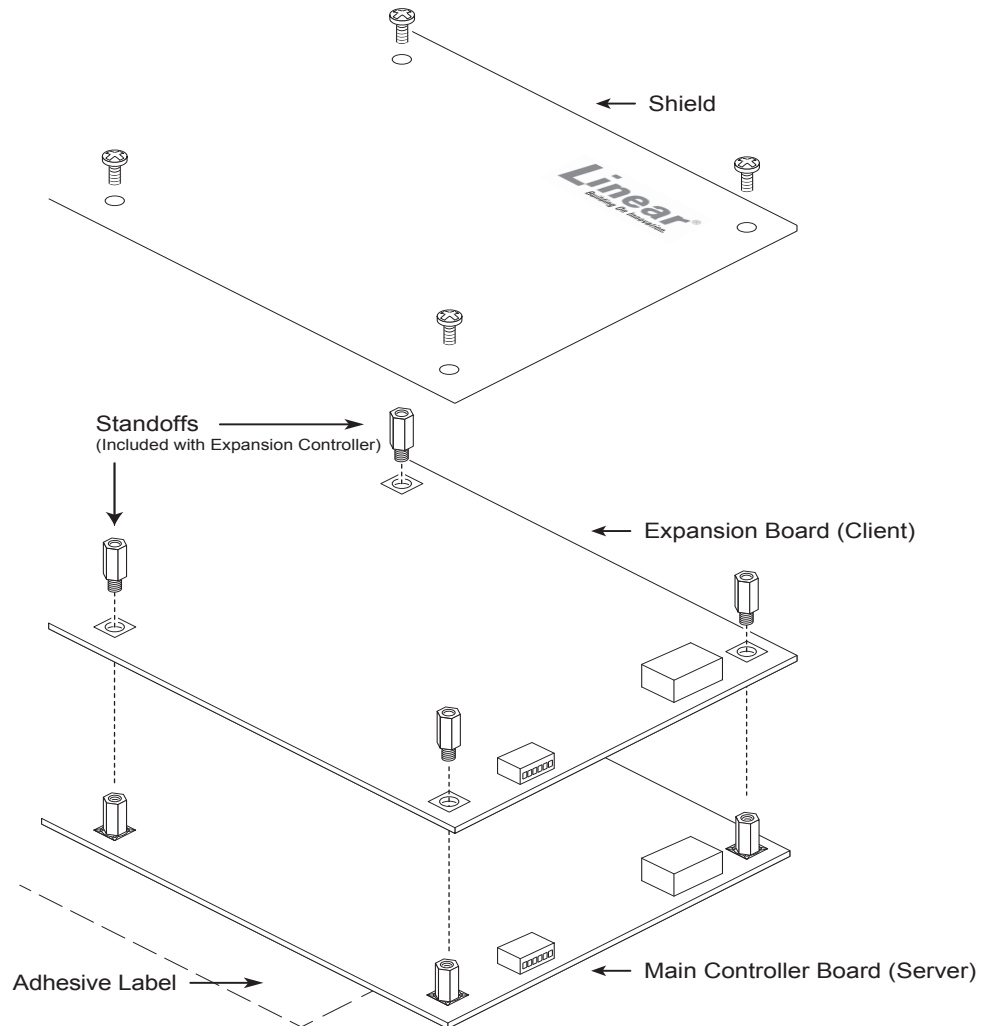


Figure 7.6. Mounting Client to Server

7.4 Configuring the Client and Server on the Network

IP Installer is a utility located on a thumb drive shipped with all systems. The purpose of this utility is to locate the server and client on the network. It also provides a simple method of changing the IP address of the e3 Controller(s).

Note: You will have to change or modify the fire wall settings the first time IP installer is run.

Run IP Installer

1. Connect all e3 Controllers to the local network.
2. Connect the thumb drive (included with the system) to a Windows computer on the local network.
3. Locate IP Installer.exe and double-click the file.
4. IP Installer will open. Click **Scan** to search the network for e3 Controllers.
5. When e3 Controllers are identified they will be listed in IP Installer.

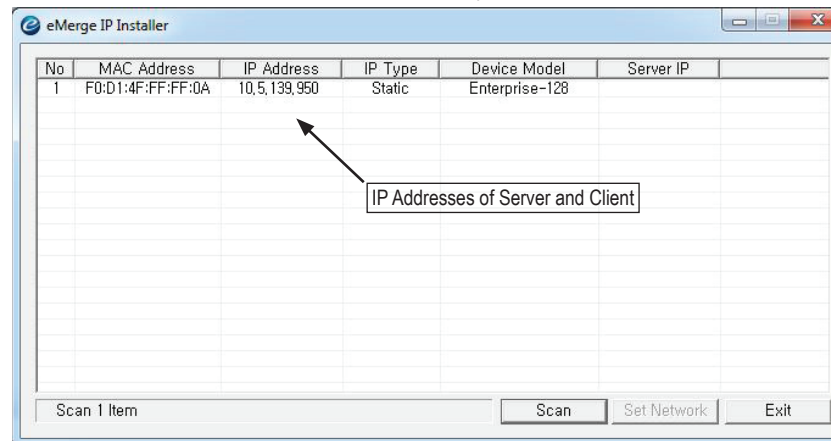


Figure 7.7. IP Installer

Change the IP Address of Server and Client

The default IP address of the server and client is 192.168.0.250. To avoid conflict on the network, the IP address of the client and server must be changed as follows:

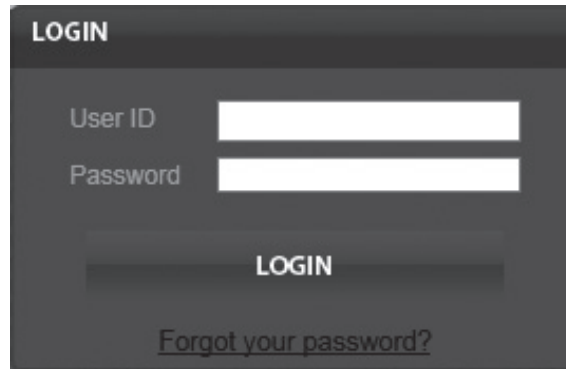
1. Connect the server to the network.
2. Open IPInstaller.exe and click **Scan**.
3. Select the server from the list and click **Set Network**.
4. Enter a new IP address for the server. This information must be provided by the IT Administrator.
5. Change the Subnet Mask and Gateway to meet the requirements of the local network.
6. Enter the IP Installer password (default = 4321) and click **OK**.
7. Connect the client to the network and repeat steps 1 through 4 to change the client's IP address.

Note: Consult the appropriate on-site IT Administrator when changing the IP Address, Subnet Mask and Gateway.

Assign the Server to Client

After the e3 Controllers are located on the network, the client must be linked to the server as follows:

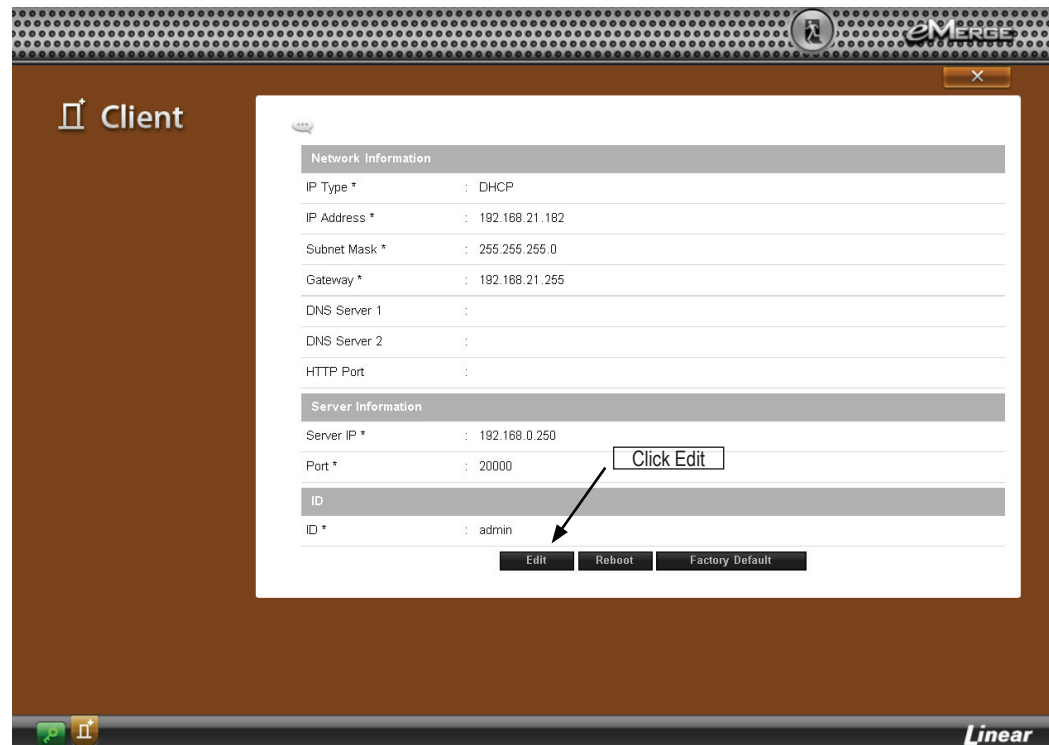
1. Using a web browser on a local computer, enter the IP address of the client as configured in IP Installer.
2. The browser presents the login page as shown.
3. To log on, enter the user name (default = admin) and password (default = admin).



A login page titled "LOGIN" with a dark background. It features two input fields: "User ID" and "Password". Below the fields is a "LOGIN" button. At the bottom, there is a link that says "Forgot your password?".

Figure 7.7. e3 Controller Logon

4. After a successful log on, the browser presents the page as shown. Click Edit.



A web interface titled "Client" with a brown background. It displays network and server information in a table-like format. The "Network Information" section includes fields for IP Type (DHCP), IP Address (192.168.21.182), Subnet Mask (255.255.255.0), Gateway (192.168.21.255), DNS Server 1, DNS Server 2, and HTTP Port. The "Server Information" section includes fields for Server IP (192.168.0.250), Port (20000), ID, and ID (admin). Below the ID field, there are three buttons: "Edit", "Reboot", and "Factory Default". An arrow points to the "Edit" button with the text "Click Edit".

Figure 7.8. Client e3 Controller Network Information

Client

Network Information

IP Type * : ☒ DHCP ☐ Static

IP Address * :

Subnet Mask * :

Gateway * :

DNS Server 1 : (Optional)

DNS Server 2 : (Optional)

HTTP Port : (Default: 80)

Server Information

Server IP * : Enter e3 Server IP address

Port * : (Default: 20000) Enter password and click Save

ID, Password

ID * :


Password * :

Save Reset Cancel

Figure 7.9. Editing Client e3 Controller Network Information

5. Enter the IP address of the server as entered in IP Installer.
6. Enter the password (default = admin) and click Save.

Link the Client to Server

1. Using a web browser on a local computer, enter the IP address of the server as listed in IP Installer.
2. The browser presents the login page.
3. To log on, enter the user name (default = admin) and password (default = admin).
4. After logging in, select the Site Management icon, then the Client Management icon.
5. The client will appear in the list. Click the  button to connect the client to the server.


Client & Site Setting > Client Management Help

No	Name	Type	IP Address	MAC Address	Alive	Version	
1	Client 3	Elevator	172.16.108.45	F0:D1:4F:FF:FF:72	On	0.32-07e	
2	Client 2	EV EXT	172.16.108.46	F0:D1:4F:FF:FF:72	On	0.32-07e	
3	Client 1	Door 4	172.16.108.43	F0:D1:4F:FF:FF:72	On	0.32-07e	

Client Management Buttons

Figure 7.10. e3 Client Management Page

7.5 Programming the System

The system provides the ability to access and manage the system from a web browser on any local or remote computer. The system can be programmed using a simple Wizard tool, which allows the user to configure the basic settings. Visit the Wizard at any time by clicking icon  in the lower left corner of the web page.

Refer to the User Programming Guide (P/N 620-100240) for specific programming and configuration instructions.

8.0 Troubleshooting

Table 8.1: Troubleshooting the System

Question	Solution
The e3 Controller does not power up.	<ul style="list-style-type: none"> Check setting of JP1 on middle board (near input power connector) to ensure that the jumper is in the appropriate position for your desired power source. Measure input power for +12 VDC If RED LED's are off, then input fuse may be blown. This fuse is not field-replaceable.
The e3 Controller powers up but does not respond to card readers or inputs.	<ul style="list-style-type: none"> Measure power at reader connectors. If no voltage is present, then reader fuse may be blown. Bring reader and/or input and connect directly at the e3 Controller. If it works at the e3 Controller, the wire run may be faulty.
No network communication exists with the e3 Controller.	<ul style="list-style-type: none"> If LAN LED's are off or solid, then no physical network connection exists. Check network cabling. Verify the Subnet Mask, Gateway, DNS and IP address as provided by the network admin.
I have an unlicensed e3 Controller, how do I obtain a license key?	<ul style="list-style-type: none"> The MAC address is printed on the e3 Controller. Using the MAC address, the license key can be obtained by visiting http://www.e3upgrade.com/ and entering the MAC address.
How to reboot the system?	<ul style="list-style-type: none"> Hardware Reboot system: Momentarily press switch S2 on middle board (near bank of 16 LED's).
How to clear the memory of the system and restore factory defaults?	<ul style="list-style-type: none"> Press and Hold switch S1 for full 20 seconds on middle board (near bank of 16 LED's). You may also reboot and factory default the system using the GUI software. <p>Note: If factory defaulted, all configuration information will be lost including the license key. To retrieve the license key, visit www.e3upgrade.com and enter the MAC address of the e3 Controller (MAC Address is printed on the product).</p>

For further troubleshooting assistance, please visit the following online resources:

- ◆ <http://www.nortekcontrol.com/faq/>
- ◆ <http://www.learnnortekcontrol.com>
- ◆ <http://www.e3links.com>

Scan this QR code to go to
www.e3links.com



Nortek Security & Control Technical Support:

- ◆ Tel: (800) 421-1587;
- ◆ Hours: 5:00 AM to 4:30 PM Pacific Time, M-F

9.0 Test, Maintenance and Service

9.1 Testing

Monthly testing of the system is recommended.

- ◆ Check that all used inputs and outputs are correctly functioning with the connected devices.
- ◆ Check that system and log backups are occurring at scheduled times.
- ◆ Check for proper operation of backup battery. As a precaution, backup system data before performing a battery test.

9.2 Maintenance

The systems require very little maintenance. It is recommended to check the following every 6 months:

- ◆ Cover or door is secure
- ◆ Enclosure is clean and dry
- ◆ All wires are securely connected to the terminals and proper strain relief is used.

9.3 Service

These systems contain Class 2 circuits. Do NOT alter or tamper with any of the components in these systems.

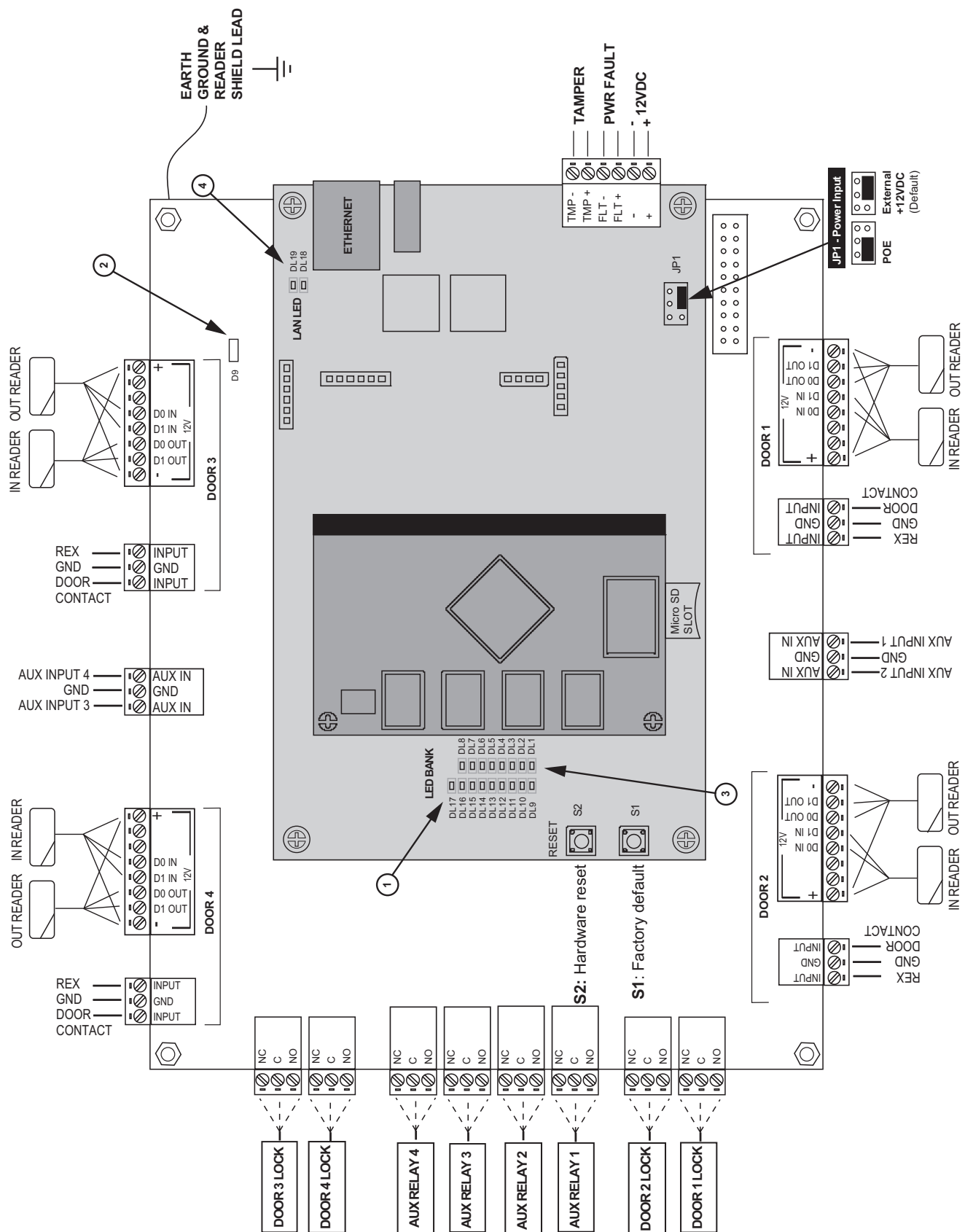
There are no user serviceable parts on the e3 Controller or on the Power Distribution Module. Contact technical service for assistance if you are experiencing operational difficulties.

The battery used for the power backup should be replaced every 2-3 years.

9.4 Parts List

Polycarbonate Shield	620-100070
Polycarbonate Shield for Elevator	620-100073
Tamper Switch for Compact Enclosure	620-100038
Tamper Switch for Metal Enclosure.....	2500-2347
e3 PoE module	620-100159
Linear 30W PoE injector	POE-PLUS
Linear 12 VDC/24W PIP.....	0-291312RU
Linear 12 VDC/60W PIP (recommended power supply).....	0-299177RU
Replacement Power Distribution Module	PS124D-UP4

For a replacement e3 Controller, please contact Nortek Security & Control Sales for support at 1-800-421-1587



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