



prox.pad™ plus Access System Installation/ Programming Manual

This equipment is designed to be installed and serviced by security and lock industry professionals.

Service Company, Put Contact Information Here:

Company Name:

Service Number:

Access system programming: This access system possesses serial communications capability and can be managed as part of an overall access control system with Hub Manager Professional™ software. See the inside cover for system requirements.

Optional Keypad Programming: The prox.pad plus unit can be programmed manually using the keypad on each unit and without the use of a personal computer (PC) and software. This manual contains the optional keypad programming instructions. Keypad programming can be helpful to get a door or doors up and running prior to having the availability of the host computer. In all cases, the personal computer programming options supersede the keypad programming options.

Access system programming - System Requirements

- Hub Manager Professional™ access control software version 5 or higher (part number HUBSWR includes software installation instructions)

PC Hardware Requirements

- IBM-compatible Pentium-class computer
- 30MB available hard disk space
- VGA monitor or better, 800 x 600 resolution recommended
- CD-ROM or DVD-ROM drive
- Mouse

Operating System List

- Windows 98; Windows 2000; Windows XP

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Chapter 1: Introduction

1.1 About this Manual

This manual is designed for installers and users of the International Electronics prox.pad plus Access System.

1.2 Safety Warnings and Cautions

When handling the main printed circuit board, to guard against possible static discharges, touch a grounded object **BEFORE** touching the prox.pad plus unit. Static shock can render the product unusable.

1.3 Design Change Disclaimer

Due to design changes and product improvements, information in this manual is subject to change without notice. IEI assumes no responsibility for any errors that may appear in this manual.

1.4 Reproduction Disclaimer

Neither this manual nor any part of it may be reproduced, photocopied, or electronically transmitted in any way without the written permission of IEI.

1.5 Technical Support-Service Company

To contact IEI's Technical Support department, call 1-800-343-9502 between 8:00 a.m. - 7:00 p.m. (Eastern Standard Time), Monday through Friday. Questions can also be submitted through our website at www.ieib.com.

1.6 Technical Support-End User

Contact your service company.

1.7 Warranty

International Electronics Inc. (IEI) warrants its products to be free from defects in material and workmanship when they have been installed in accordance with the manufacturer's instructions and have not been modified or tampered with. IEI does not assume any responsibility for damage or injury to person or property due to improper care, storage, handling, abuse, misuse, normal wear and tear, or an act of God.

IEI's sole responsibility is limited to the repair (at IEI's option) or the replacement of the defective product or part when sent to IEI's facility (freight and insurance charges prepaid) after obtaining IEI's Return Material Authorization. IEI will not be liable to the purchaser or any one else for incidental or consequential damages arising from any defect in, or malfunction of, its products.

Except as stated above, IEI makes no warranties, either expressed or implied, as to any matter whatsoever, including, and without limitation to, the condition of its products, their merchantability, or fitness for any particular purpose.

Warranty Periods Are:

1 Year	PowerKey
2 Years	Door Gard & Secured Series Products
2 Years	prox.pad and prox.pad plus
2 Years	LS Series
2 Years	Glass Break
5 Years	'e' Series Keypads
2 Years	Network Gateway

All products have date code labeling to determine the warranty period. A 90-day grace period is added to all products to account for shelf life.

1.8 Items Supplied from the Factory

The following items are supplied from the factory with the initial prox.pad plus shipment.

- Controller with Keypad, Faceplate, Request to Exit (REX) button (also called the "Filler Piece"), three Wire Harnesses, and various installation Screws.

1.9 Items the Installer Must Supply

For each initial prox.pad plus unit installation, the installer must supply the following items:

- The prox.pad plus unit works with these four types of cards:
 - Prox Card II
 - IsoProx II
 - Duo Prox II
 - Proxkey FOB
- a filtered and regulated 12VDC power supply
- the appropriate installation electrical tools
- the recommended remote antenna cable [ALPHA 1174C (22AWG) 4-wire, stranded] (this is required ONLY if you choose to remote the antenna a maximum 10 feet away from the keypad/controller)
- RS-485 cable (24AWG), shielded, two twisted-pair telephone cable with a shunt capacitance of 16 pF/Ft (required only when using software)
- power supply cable (18AWG-22AWG) 2-wire stranded (depends on distance)
- door lock cable (18AWG-22AWG) 2-wire stranded (depends on distance)
- door monitor cable (18AWG-22AWG) 2-wire stranded (depends on distance)
- REX cable (if using remote switch) 2-wire stranded
- For PC programmed and managed systems (not required in applications where programming is accomplished at the prox.pad plus keypad):
 - Hub Manager™ Professional access control software version 5 or higher with PC meetings requirements shown on inside of front cover
 - RS-232 to RS-485 interface installed on the PC COM port, which converts RS-232 communications to RS-485 (IEI model IEI232-485; part number 0295093)

1.10 General Description

The prox.pad plus unit is a single door access system that is programmed and managed from a personal computer using Hub Manager Professional software (version 5 or higher). The prox.pad plus unit is equipped with RS-485 communications, which allow up to 32 prox.pad plus doors to be networked together. Connectivity options include direct connection to a personal computer (PC) com port using the IEI 232 to 485 converter as well as LAN/WAN connectivity using the network gateway for IEI access systems.

The prox.pad plus unit is unique in that no separate controller is needed and there is no need to run cables from a reader to a control. The unit is self-contained and includes built in HID proximity and IEI keypad readers as well as the controller.

Separate options include the prox.pad plus power supply, which provides additional security with a tamper circuit that prevents lock release should the case be pried open. In addition, the prox.pad plus unit can be programmed manually with the unit's keypad. Important features include:

- Managed with Hub Manager™ Professional access software
- 32 doors per site
- No separate control to install
- Eliminate costly reader wiring
- 2000 users per door
- 2000 event audit trail
- Integrated-HID proximity
- Card, code, card and/or code
- Locate proximity 10 ft from control
- Indoor and outdoor
- Glass mount kit
- RS-485 network
- LAN/WAN connectivity option
- Option for data collection with PDA
- Door monitor
- Main relay for lock
- Programmable auxiliary relay
- Local sounder for alerts
- Option for keypad programming

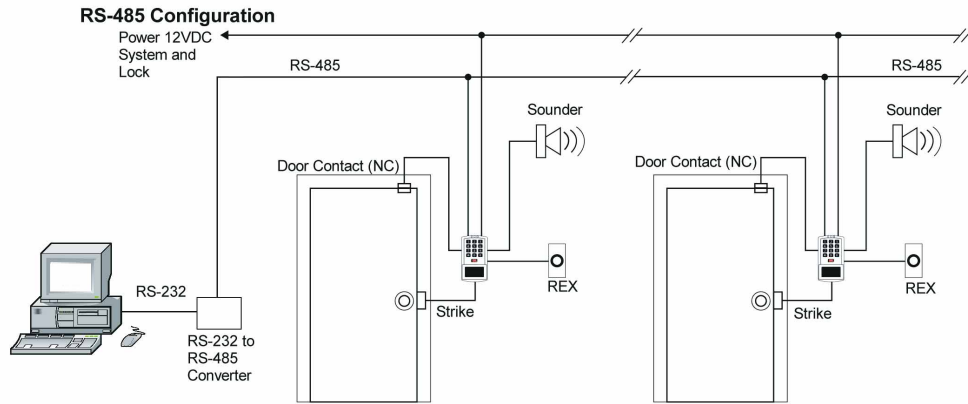


Figure 1-1 RS-485 Configuration

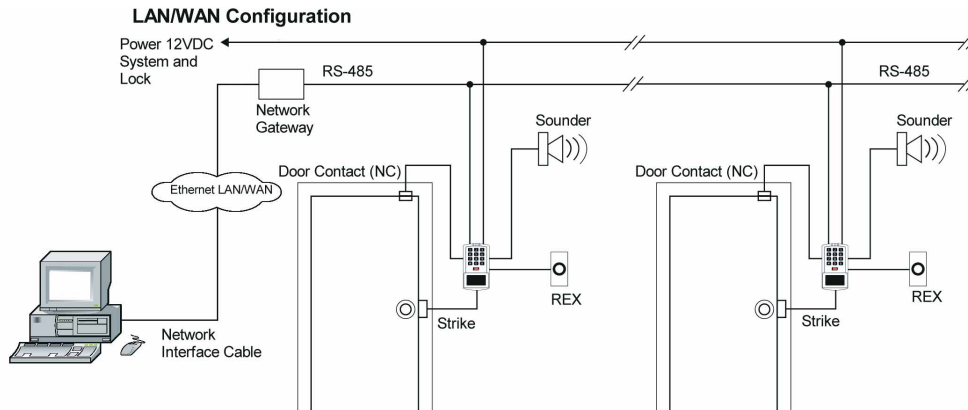


Figure 1-2 LAN/WAN Configuration

NOTE: prox.pad plus RS 485 communications—The prox.pad plus unit communicates with the host computer via the IEI RS232-RS485 interface (part number IEI232-485). For additional details see pages 3-13 to 3-15. For wire specifications, see page 1-7.

NOTE: Use with IEI Secured Series™ (Hub, Hub Max, Hub MiniMax) Networks—The RS 485 network characteristics for the prox.pad plus unit are different than those of IEI's Secured Series access systems. This means the prox.pad plus unit can operate in the same system as Secured Series controllers but not on the same physical network. Hub Manager Professional software (v5 or higher) can manage Secured Series doors and prox.pad plus doors (and LS doors as well), but these door controllers cannot be “connected” to the same network and network wires. Secured Series communication is RS-232; prox.pad plus communication is RS-485. These communication protocols are different. However, the ability of the Hub Manager Professional software to set up multiple local and LAN/WAN sites makes this an advantage rather than a problem.

1.11 prox.pad plus Operation

Once installed and programmed successfully, the prox.pad plus controller stores all transactions and controls all outputs. The controller receives data sent to it from the proximity reader, decides if access should be provided or not, and then energizes the door lock or not, locking or unlocking the door.

The prox.pad plus unit includes two relay outputs (located internally), an internal clock, programming keypad, and memory chips to store user information and a transaction data log.

An external IR (infrared) LED/port/transmitter at the top right of the prox.pad plus controller allows for printing of the Transaction Log and the Programmed User List to the optional IEI PDA Data Capture Device (DCD) software. Chapter 4 discusses printing reports.

NOTE: IEI recommends that first-time installers test the prox.pad plus unit BEFORE actually mounting and wiring the unit to become familiar with its operation (see Chapter 2).

Table 1-1. prox.pad plus Specifications

ELECTRICAL	
Power Supply/Current Requirements	10-15 VDC, linear filtered and regulated power supply 500 mA (not including locking device or peripherals)
WIRING	
Remote Antenna Cable	ALPHA 1174C (22AWG) 4-wire, stranded (this is required ONLY if you choose to remote the antenna 10 feet away from the keypad/controller)
RS-485 Cable	24AWG, shielded, two twisted-pair telephone cable with a shunt capacitance of 16 pF/Ft (required only when using software)
Power Supply Cable	18AWG - 22AWG 2-wire stranded (depends on distance)
Door Lock Cable	18AWG - 22AWG 2-wire stranded (depends on distance)
Door Monitor Cable	18AWG - 22AWG 2-wire stranded (depends on distance)
REX Cable	(if using remote switch) 2-wire stranded
MECHANICAL	
Height	5.25 in (13.3 cm)
Width	2.75 in (7 cm)
Depth	1.375 in (3.5 cm)
RELAY OUTPUTS	
	Main Relay - Form C (switches up to 2A)
	Aux Relay - Form C (switches up to 2A)
MONITOR INPUTS	
	Door Position (Normally Closed, dry contact)
	Request to Exit (REX, Normally Open, dry contact)

Table 1-1. prox.pad plus Specifications (continued)

OTHER OUTPUTS	
IR	Infrared output to optional IEI DCD PDA program
SOUNDER	4000 Hz, defeatable (see Table 4-2)
LEDs	Bi-Color (red/green) (see Table 4-2)
	Yellow
COMPATIBLE PROXIMITY CARDS	All 26-bit HID card, including the following: ProxCard II, IsoProx II, Duo Prox II, and Proxkey FOB; 26-bit cards are required for manual or batch programming
UNIT CAPACITY	
Users	2,000 users maximum; each user can have a card/tag, a PIN code, or a card/tag plus a PIN code
Transactions	2,000 transactions maximum; each transaction includes time, date, user "slot number," and event
Lock Time	1-255 seconds
Lock Mode	Access Time or Toggle/Latch
ALARM OUTPUT	One of these three events can be programmed: Alarm Shunt Relay, Forced Door Relay, or Propped Door Relay
USER ACCESS CONFIGURATIONS	
	Code ONLY
	Code AND Card
	Card ONLY
	Code OR Card

Table 1-1. prox.pad plus Specifications (continued)

PROGRAMMABLE USER TYPES	Each user is assigned one of the following user types:
	0-Toggle/latch strike
	1-Normal access
	2-Log Dump
	3-Lockout
	4-Extended unlock
	5-Single use
	6-Relock
	7-Emergency
SYSTEM USES/ INSTALLATION CONFIGURATIONS	Suitable for small installations or remote locations, indoors or outdoors Wall mounted, glass mounted, or secure installation
ENVIRONMENTAL	Indoor or outdoor
Operating Temperature	-31° to 150° F (-35° to 66° C)
Operating Humidity	5% to 95% relative humidity, non-condensing

Chapter 2: Installation

Chapter 2 supplies information about prox.pad plus installation configurations; installation considerations; and procedures for checking the cables, mounting the prox.pad plus unit, inserting circuit boards, and defaulting prox.pad plus memory.

2.1 Installation Configurations

It is the installer's responsibility to determine the appropriate prox.pad plus installation configuration, which differs from installation to installation. These three installation configurations are possible:

- **Wall mounted** installation (exterior to the room to be accessed). In this configuration, a single gang electrical box can be used. Typically, the prox.pad plus unit is wall mounted (surface mounted) outside the access area on the unsecured side.
- **Glass mounted** installation, using the four IEI-supplied pressure-sensitive adhesive pads. In this configuration, the prox.pad plus unit is affixed with the adhesive pads to the glass door or the window adjacent to the door being accessed, on the interior side of the glass. The side cut-out on the unit is used to bring the wires out of the side of the prox.pad plus case.
- **Secure** installation (or "two-stage" configuration), for higher security. In this configuration, the prox.pad plus antenna is located a maximum of 10 feet away from the controller/keypad; the controller/keypad is located on the secure side of the door.

2.2 Other Installation Considerations

Sections 2.2.1-2.2.4 describe important considerations the installer must decide upon before actually starting to install and wire the prox.pad plus unit.

2.2.1 Power Supply/Current Requirements

Power for the prox.pad plus unit must be from a minimum 10-15 volt DC linear, filtered and regulated power supply. It is typical for the chosen power supply to power BOTH the prox.pad plus unit and the selected locking device. When using one power supply for both the prox.pad plus unit and locking device, be sure to include both devices in your current requirements calculations.

NOTE: IEI recommends that you ground the power supply to earth ground.

2.2.2 Gang Box and Mounting

For the wall mounted installation configuration, a single gang electrical box can be used. (Typically, the prox.pad plus unit is wall mounted outside the access area on the unsecure side of the door.)

2.2.3 Mounting the Unit on Metal

The prox.pad plus unit uses radio frequency to transfer power to and communicate with the proximity card or keytag. If the antenna is mounted directly on a metal building or wall, some of the energy is absorbed by the metal, resulting in less power being transmitted to the keytag; this causes reduced read range. If you must mount the prox.pad plus unit on metal, test the unit in place before permanently installing it. If read range distance is not adequate, a non-metallic spacer can be fabricated and installed between the unit's antenna and the metal mounting surface.

2.2.4 RF Interference

The prox.pad plus unit should not cause interference to other equipment as it is designed to meet FCC guidelines. However, other devices can interfere with prox.pad plus operation.

Avoid locating the prox.pad plus unit closer than 3 feet (1 meter) to a computer monitor or television or another prox.pad plus unit. If you believe you are experiencing reduced read range due to interference, try repositioning the prox.pad plus unit, removing the antenna, or relocating other nearby electrical equipment.

2.3 Checking the Cables

Figure 2-1 below provides a detailed illustration of the prox.pad plus wiring harness. Figure 2-2 illustrates the Pin connectors on the main circuit board; Table 2-1 describes these four Pin connectors, P1, P2, P4, and P5.

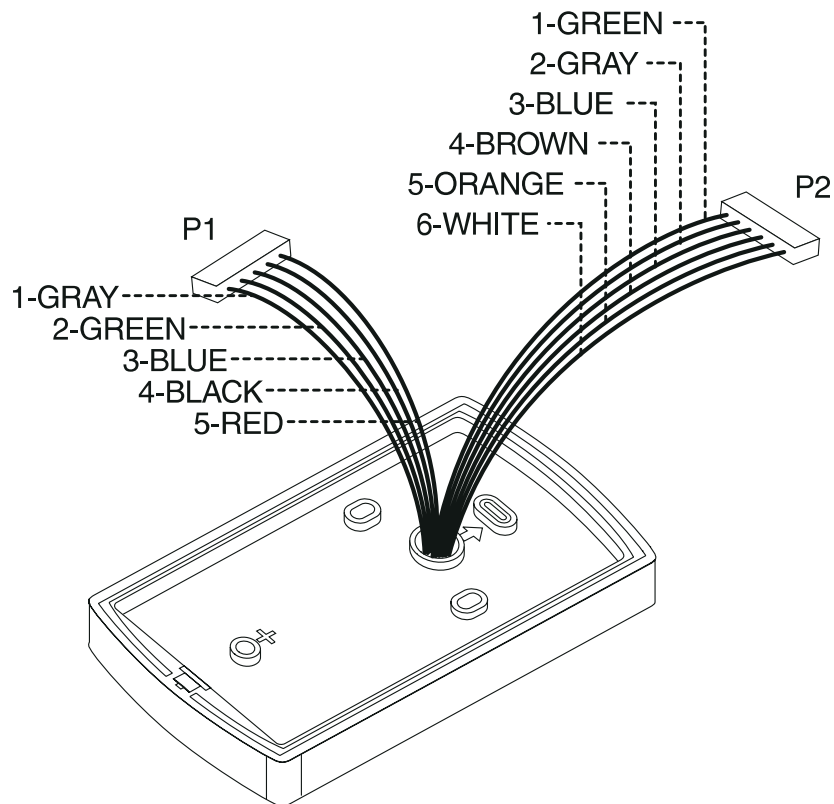


Figure 2-1 prox.pad plus Wiring Harness

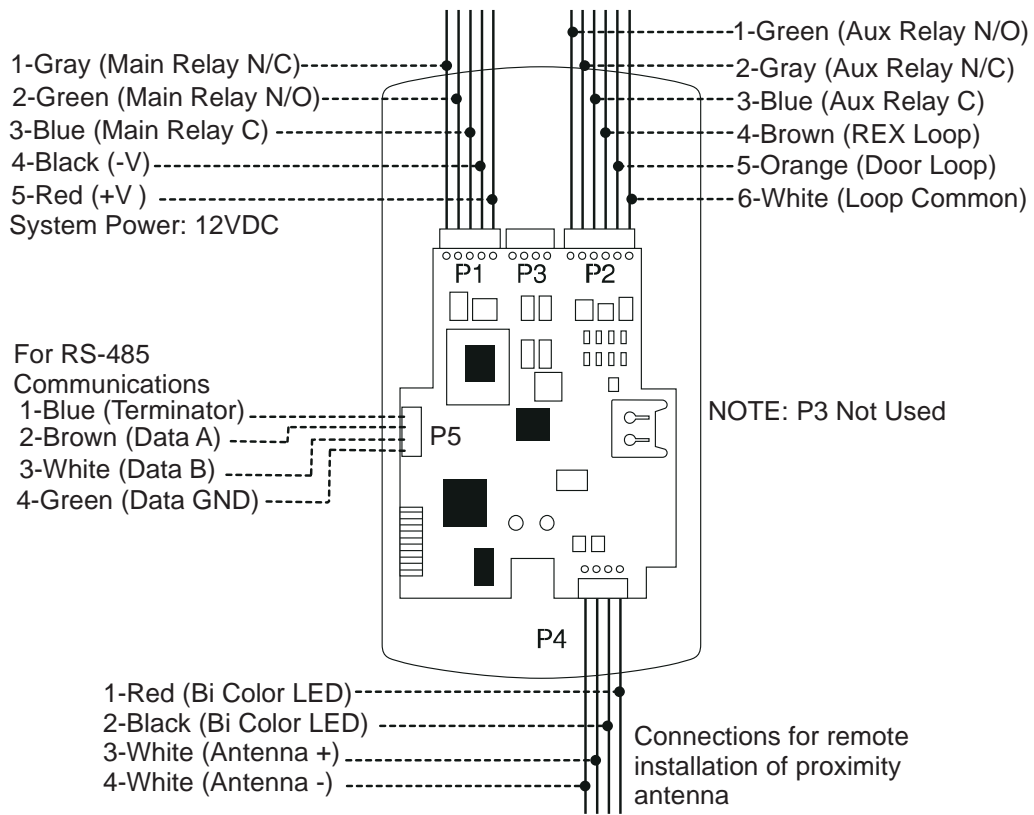


Figure 2-2 Identifying Pin Connectors

Table 2-1. prox.pad plus Pin Connectors

Pin Connector (on main circuit board)	Description/Use		
P1 (5-pin connector, top left-most location)	Pin	Wire Color	Use
	1	GRAY	Main Relay, Normally Closed (N.C.)
	2	GREEN	Main Relay, Normally Open (N.O.)
	3	BLUE	Main Relay, Common
	4	BLACK	Ground
	5	RED	Power In, +12 VDC
P2 (6-pin connector, top right-most location)	Pin	Wire Color	Use
	1	GREEN	Aux Relay N.O.
	2	GRAY	Aux Relay N.C.
	3	BLUE	Aux Relay Common
	4	BROWN	REX Loop (if used) (NO contact)
	5	ORANGE	Door Loop Contact (NC contact)
	6	WHITE	Loop Common (shared by REX and door loop)
	NOTE: Pins 1, 2, 3 can be wired at the installer's option for one of the following alarm outputs, Alarm Shunt, Forced Door, or Propped Door. Mandatory: If you do not wish to install door contacts per Figure 2-5, twist white and orange wires together. If not done, REX input will not work.		
P4 (4-pin connector, bottom location)	Pin	Wire Color	Use
	1	RED	Bi-Color LED (Red +)
	2	BLACK	Bi-Color LED (Green +)
	3	WHITE	Antenna (+)
	4	WHITE	Antenna (-)
P-5 (4-pin connector, left-hand side location)	Pin	Wire Color	Use
	1	Blue	Terminator
	2	Brown	Data A
	3	White	Data B
	4	Green	Data GND

Table 2-2. IEI-Supplied Parts/Optional Items

Quantity	Description
1	Keypad/control unit assembly, with Prox Sensor, Backplate, hex socket screw
1	Filler Piece/REX Button
1	Press to Exit Label
4	Wall Anchors
4	Mounting Screws
1	Antenna Backplate for remote mounting
1	Silicone Rubber "dogbone"
4	Self-Adhering Pads (for glass mounting)
1	Installer Guide
1	CD-ROM containing instruction manuals
4	Cable Assemblies
1	Tamper Screw
	Optional Items
1	Replacement Battery: Panasonic BR1225 or equivalent
lots of 25 only	ProxKey Keytags (IEI part number 0297301)
lots of 25 only	ProxCard II Cards (IEI part number 0297401)
1	Hub Manager™ Professional PC Software (version 5 or higher)
1	IEI Data Collection Device (DCD) PDA Software

2.4 Mounting the prox.pad plus Unit

Select one of these three installation configurations, wall mount, glass mount, or secure as appropriate for this installation. Then refer to sections 2.4.1-2.4.3.

2.4.1 Performing a Wall Mounted Installation

This section provides general considerations when performing a wall mounted installation. Typically, the prox.pad plus unit is mounted on a flat, level surface (drywall, masonry, wood, etc.) exterior to the room to be accessed. A single-gang electrical box (or “back box”) can be used. Typically, the prox.pad plus unit is wall mounted outside the access area on the unsecure side of the door.

Figure 2-3 illustrates the backplate on the prox.pad plus unit used for wall mounting. Two “single-gang box” holes align with two corresponding holes in the single-gang box. A “wire” exit knockout is supplied through which the prox.pad plus wiring is pulled. A typical wall mounted installation proceeds as follows:

1. Secure a single-gang box to the desired location.
2. “Punch out” the two single-gang box connectors on the controller backplate of the prox.pad plus unit.
3. Disconnect the controller backplate of the prox.pad plus unit from the front keypad/controller. Align the two single-gang box connectors on the controller backplate over the two corresponding holes on the single-gang box, previously secured at step 1.
4. Secure the backplate to the single-gang box by inserting/tightening two screws into the two single-gang box holes.
5. Pull the prox.pad plus wiring through the wiring exit as appropriate.
6. Connect the front keypad/controller to the back housing.
7. Install the tamper screw into the hole at the bottom front of the enclosure using a #6 spanner bit (not included, but available from IEI).

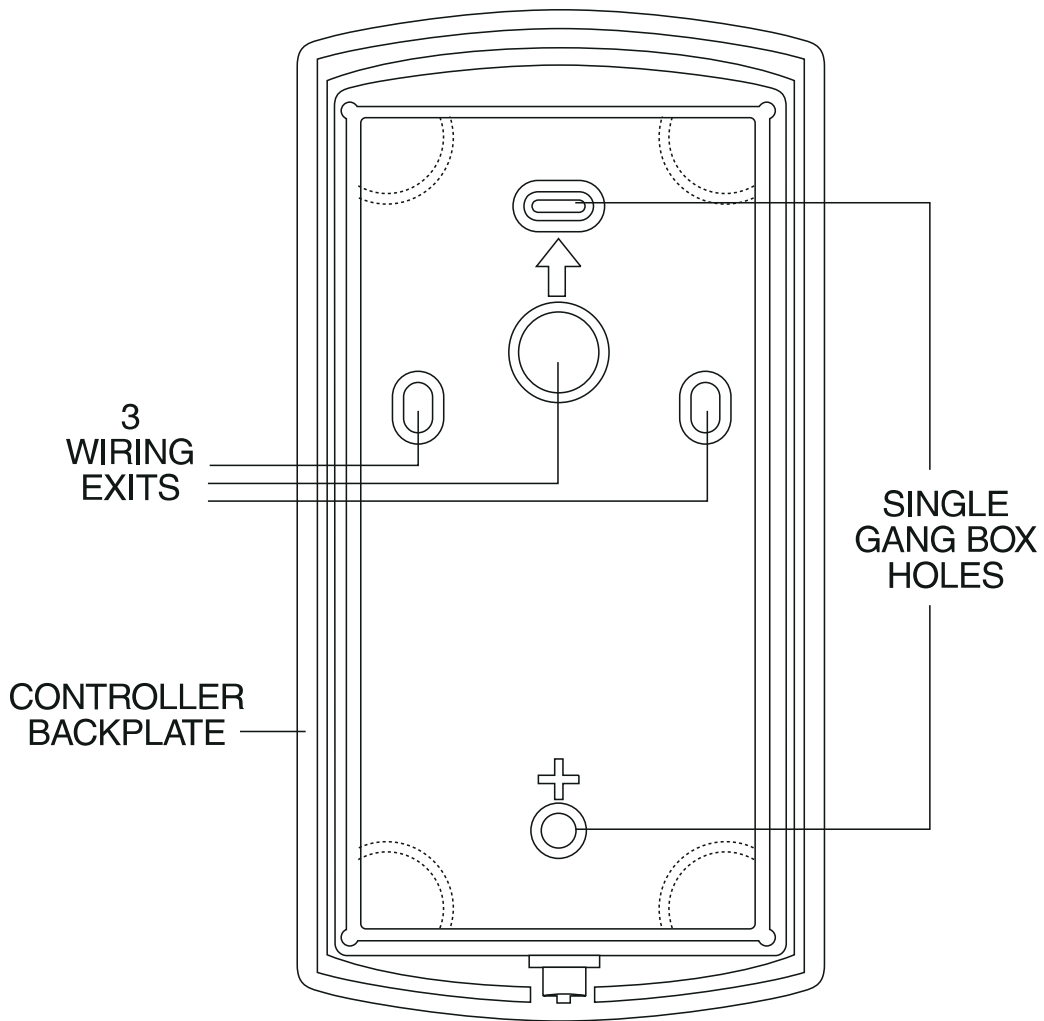


Figure 2-3 Performing a Wall Mounted Installation

2.4.2 Performing a Glass Mounted Installation

Figure 2-4 shows the four IEI-supplied pressure-sensitive adhesive pads and the two side cut-outs used for this installation. In this configuration, the prox.pad plus unit is affixed with the four self-adhesive pads to the glass or the glass window adjacent to the controlled door being accessed, on the interior side of the glass. One of the two side cut-outs is used to bring the wires out of the side of the prox.pad plus case.

A typical glass mounted installation proceeds as follows:

1. Disconnect the back housing from the front keypad/controller. Remove the tape from the four self-adhesive pads on the back housing and apply the pads to the four corners of the backplate.
2. Affix the back housing to the glass door or the glass window adjacent to the controlled door being accessed, on the interior side of the glass.
3. Determine which of the two side cut-outs on the back housing to use for the wiring and “cut out” that cut-out using the appropriate cutting tool.
4. Pull the wiring through the selected side cut-out as required.
5. Connect the front keypad/controller to the back housing.
6. Install the tamper screw into the hole at the bottom front of the enclosure using a #6 spanner bit (not included, but available from IEI).

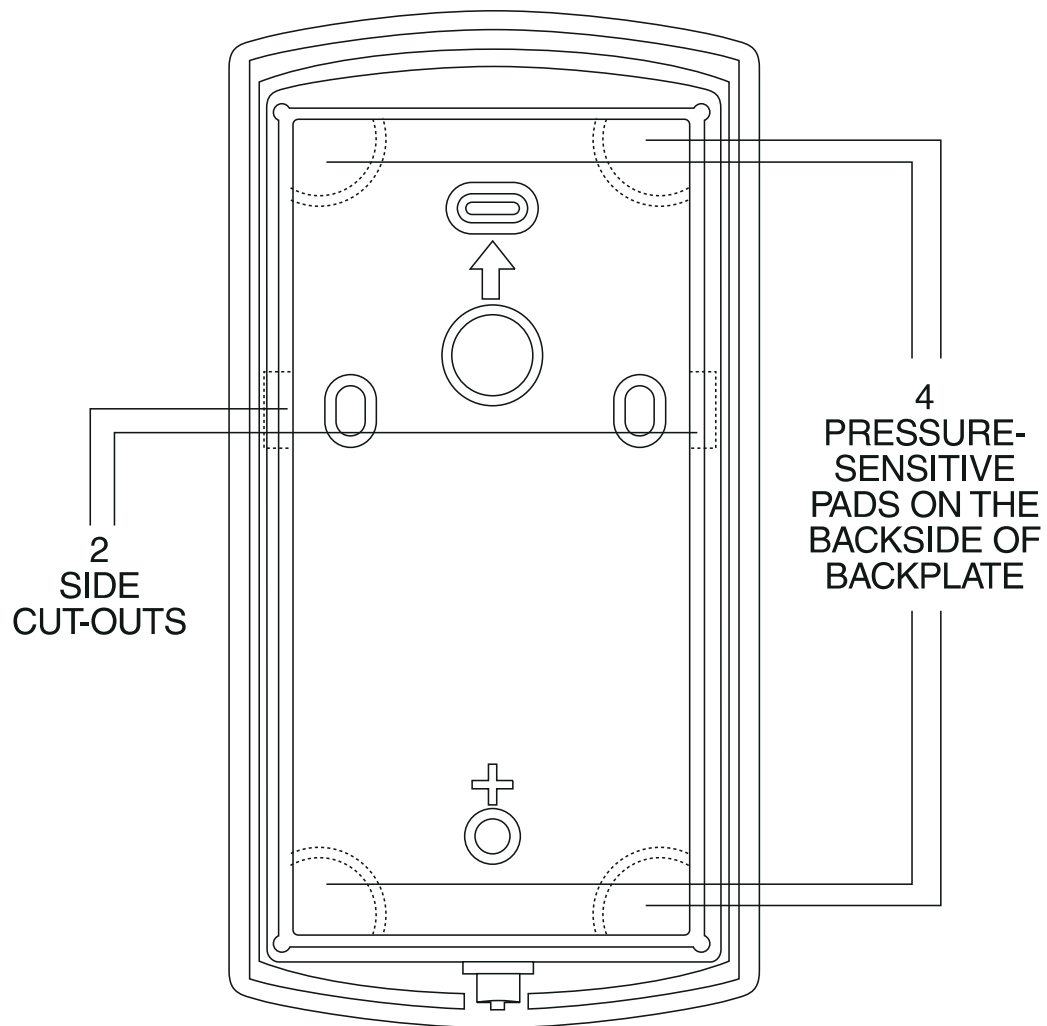


Figure 2-4 Performing a Glass Mounted Installation

2.4.3 Performing a Secure Installation

In this configuration, the prox.pad plus prox sensor housing is removed from the keypad/controller and located a maximum of 10 feet away. The controller/keypad is located inside a secure area.

1. Remove the antenna from the prox.pad plus keypad/controller as described below:
 - Disconnect the backplate of the prox.pad plus unit from the front keypad/controller.
 - When handling the main printed circuit board, to guard against possible static discharges, touch a grounded object BEFORE touching the prox.pad plus unit. Remove the main printed circuit board by pressing the two spring tabs in the direction of the arrows as shown in Figure 2-5. Be careful with the wires.
 - Pull on the main circuit board and remove Pin connector P4 (a 4-pin connector) from the bottom of the main board. A ribbon cable now holds the main board to the keypad board. DO NOT pull this ribbon cable out of its connector! Once the main board is removed, you can access the interior of the antenna.
 - Remove the antenna housing from the keypad/controller by pressing the labeled four secure tabs inward (see Figure 2-5) until the sensor housing “pops out.”
2. Prepare the wiring and extension wiring as follows:
 - Cut off the plastic end of the prox.pad plus sensor housing harness.
 - Splice the recommended remote antenna cable Alpha 1174C (22AWG), 10-foot maximum length, to the properly cut antenna cable using standard electrical techniques.

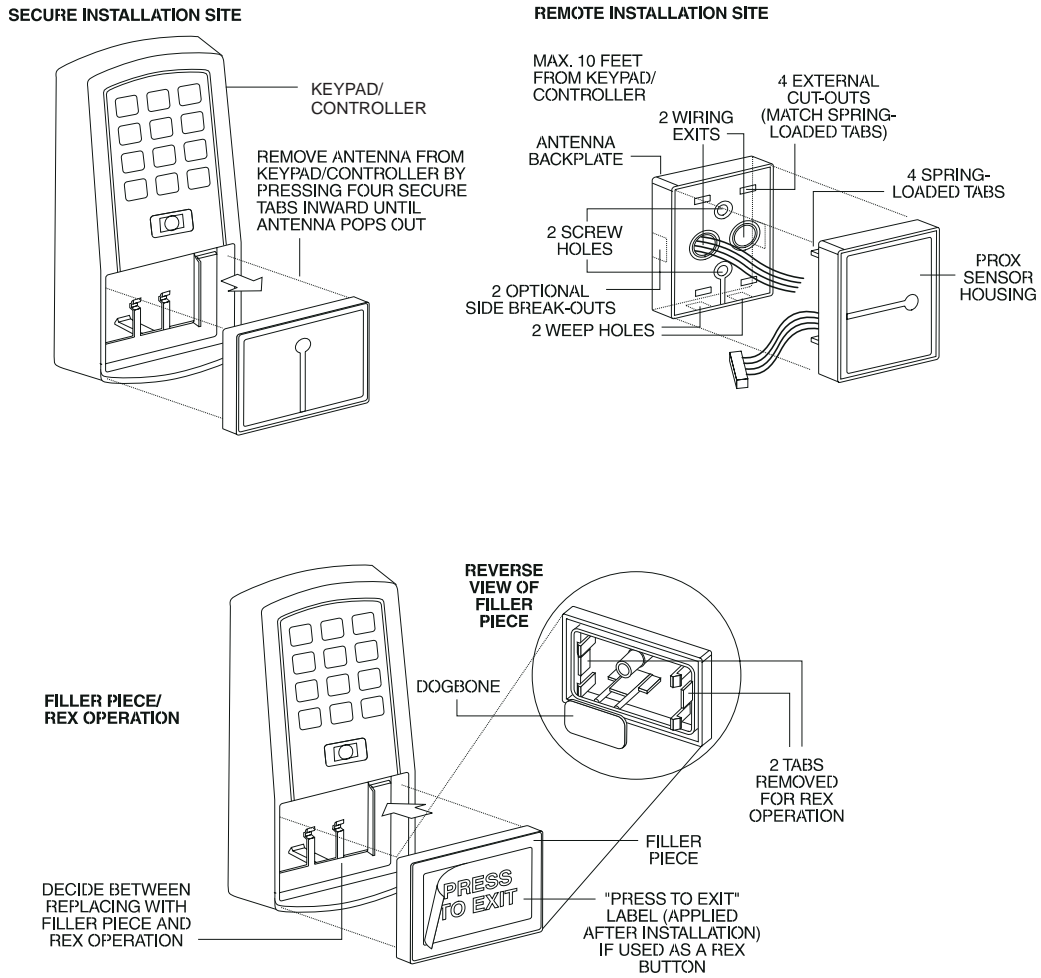


Figure 2-5 Performing a Secure Installation

3. Mount the antenna backplate in a vertical orientation and secure it to the wall through the two screw holes using two IEI-provided screws. Ensure that the two “weep holes,” provided to remove possible moisture, are positioned on the bottom. The wiring exits in the antenna backplate. (Four external cut-outs on the antenna backplate match the four spring-loaded tabs on the antenna.)

NOTE: Two side cut-outs are furnished on the antenna backplate for the wiring, if the installation does not permit the wiring to run through the wall. These must be “cut out” to be used.

- Once the antenna backplate is mounted properly, align the antenna to the backplate and connect the antenna to the antenna backplate. The large tab in the center of the antenna assembly must be broken off before being attached to the antenna backplate.
4. Run the antenna wiring back to the secure keypad/controller and connect it to the main circuit board, using the 10-inch 4-wire harness (red, black, white, and white) that you plug into connector P4 on the controller board. Connect the red wire of the antenna to the red wire of the P4 harness, etc. Seal the wire holes with silicone.
 5. Select “Filler” or “Request to Exit” (REX) operation as follows:
 - If you elect to use the filler piece as a REX switch, return to the keypad/controller and break off two tabs on the filler piece as illustrated in Figure 2-5. The filler piece replaces the antenna on the front of the keypad/controller for secure installations.
 - **If the filler piece is not to be used as a REX switch, DO NOT remove the two tabs.**

- Select “Filler or “REX” operation and affix the appropriate IEI-provided label to the filler piece. **For Filler operation**, no tabs are broken off the filler piece, which merely sits in place of the remotely located antenna, once the main circuit board and cabling are replaced. **For REX operation**, break off the labeled tabs, which allows a spring-loaded tab to engage the REX switch on the main circuit board and open the door.
- Replace the main circuit board into the keypad/controller and Pin connector P4 to the main circuit board.
- Connect the front keypad/controller of the unit to the back housing.
- Secure with a hex socket screw using the supplied hex wrench, or secure with a tamper screw (optional tool required).

2.5 Inserting Circuit Boards

If it proves necessary to remove or insert the main circuit board from/into the prox.pad plus controller/keypad, follow the steps below.

1. Disconnect the back housing of the prox.pad plus unit from the front keypad/controller.
2. **(When handling the main printed circuit board, to guard against possible static discharges, hold the board by its edges with one hand and then touch a grounded object BEFORE touching the prox.pad plus unit.)** Remove the main printed circuit board by pressing the two spring tabs in the direction of the arrows as shown in Figure 2-6. Be careful with the wires.

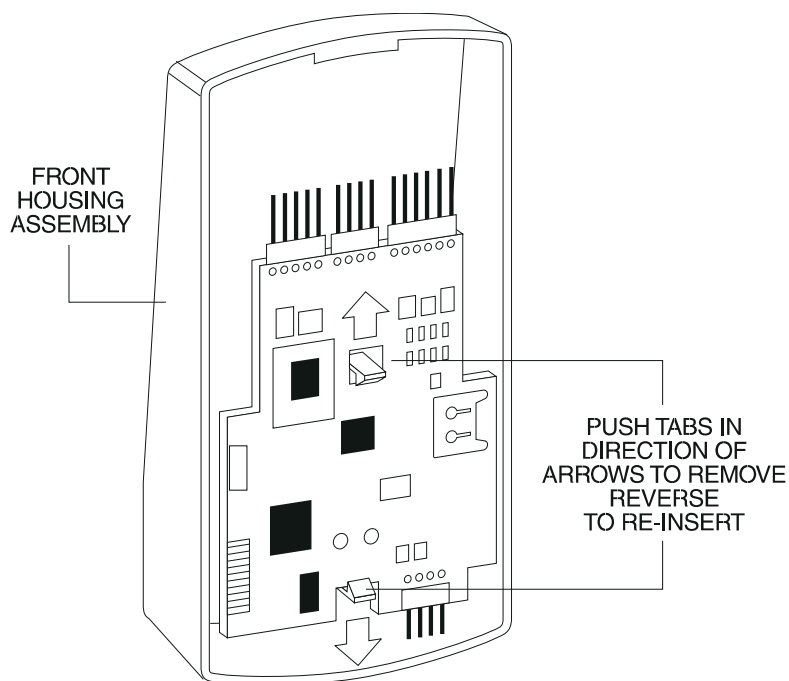


Figure 2-6 Removing/Inserting Printed Circuit Board

2.6 Defaulting prox.pad plus Memory

3. Fold up the main circuit board and remove the P4 connector (a 4-conductor harness) from the bottom of the board.
4. To re-insert, replace the main circuit board into the keypad/controller and the P4 connector to the main circuit board.
5. Connect the keypad/controller to the back housing.

If necessary, the prox.pad plus main memory can be defaulted. This procedure explains how to do this; see Figure 2-7 on the next page. You would default the memory, if, for instance, static discharges have corrupted the prox.pad plus unit, during shipping or installation. You can also do this if you have simply forgotten the Master Code and you need to enter program mode.

With the power ON, remove the case from the prox.pad plus front controller/keypad to access the main circuit board. (For a visual reference of the main printed circuit board and the related pin connectors, see Figure 2-2. Table 2-2 describes these pins in detail.) **(When handling the main printed circuit board, to guard against possible static discharges, touch a grounded object BEFORE touching the prox.pad plus unit.)**

1. With the power ON, press and hold the Program button (located on the rear side of the main printed circuit board) for two seconds.
The yellow LED flashes slowly.

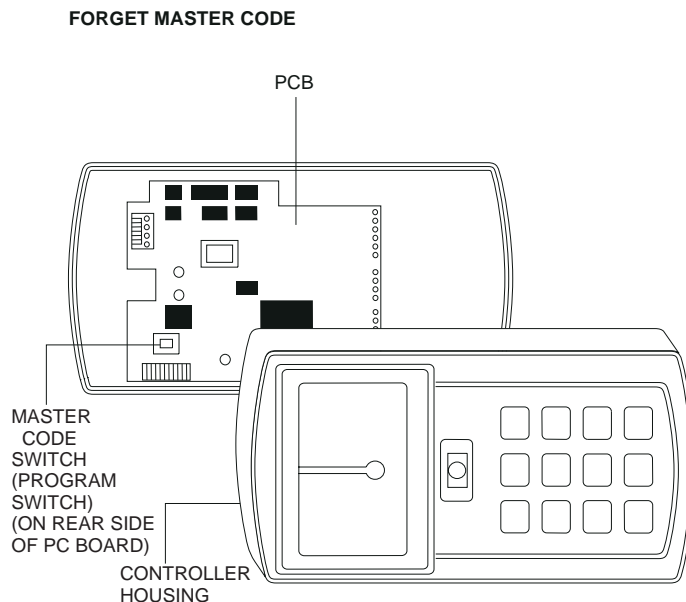


Figure 2-7 Program Button Location on Main Circuit Board

3. Enter the following on the keypad:
46 # 00000 # 00000 # **
 The yellow LED flickers for 10 seconds and then blinks slowly.
4. Once the memory set-up is complete, re-assemble the unit.

NOTE: CONNECTING DOOR LOOP INPUT—Before powering up the prox.pad plus unit, connect the Door Loops input to the “Loop Common.” This prevents “Forced Door” or “Propped Door” conditions from developing upon power-up.

Chapter 3: Wiring

Chapter 3 provides wiring diagrams and associated procedures.

3.1 Wiring the prox.pad plus Unit

Select one of these three wiring options, Alarm Shunt, Forced Door, or Propped Door, depending on how the prox.pad plus unit's AUX relay is to be employed for this installation (refer to Chapter 4 for programming information). Then refer to sections 3.1.1- 3.1.5 as appropriate.

3.1.1 Wiring the Door Contact Input

In order for the Alarm Shunt, Propped Door, and Forced Door features to work, a door contact switch must be used. Before wiring the AUX relay, connect a door contact to the keypad. See Figure 3-1 for details.

To solve the problem of people "tailgating" in behind personnel using valid access protocol, the Auto Re-Lock feature is provided. With Auto Re-Lock, a long door open time can be programmed. Auto Re-Lock overrides the lock output timer, resetting the door open time as soon as the prox.pad plus unit senses that the door is open. A long door open time allows people sufficient time to carry packages from the proximity reader/keypad to the door and open it before the timer runs out.

No programming is required to implement this feature.

After a valid access or egress, the prox.pad plus unit senses that the door switch is open and drops the main relay immediately. This disengages the lock, which locks behind the person regardless of how long it takes that person to get through the door.

NOTE: This feature requires that you use the "Door Contact" input as shown in Figure 3-1.

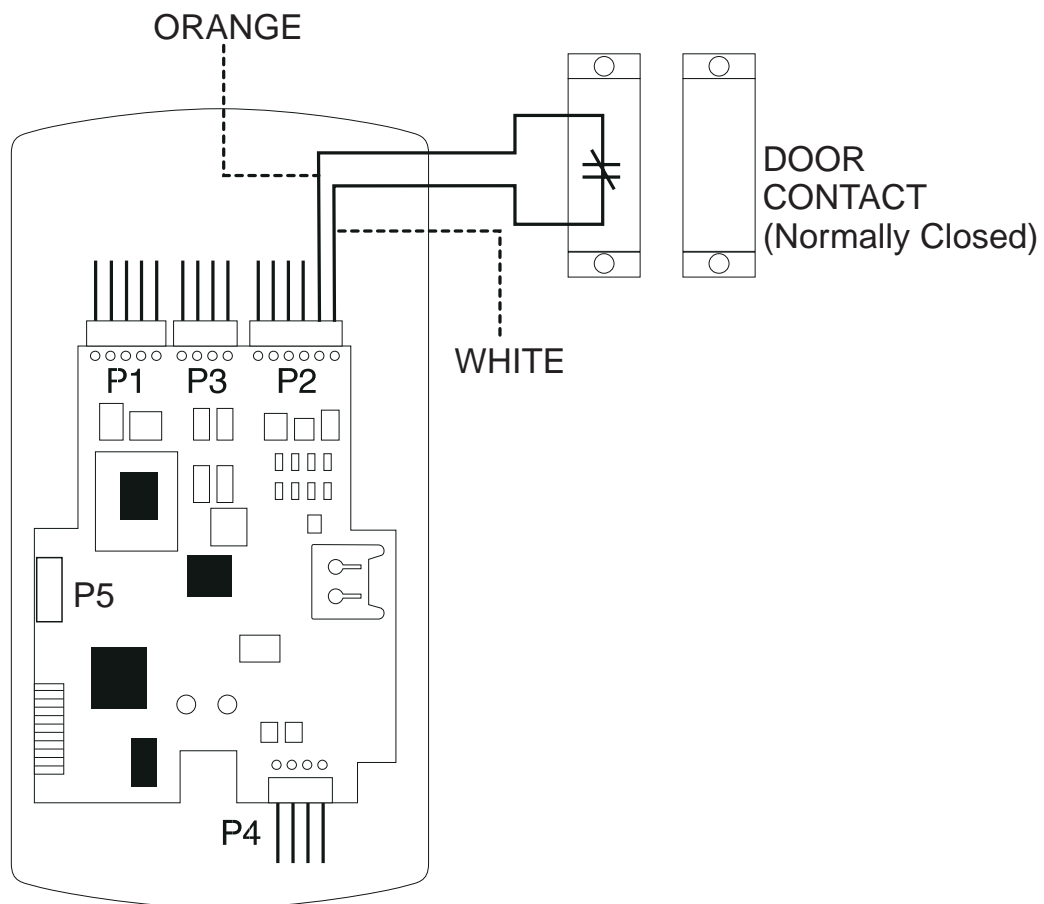


Figure 3-1 Wiring the Door Contact Input

3.1.2 Wiring the AUX Relay for Use as Alarm Shunt

The Alarm Shunt Relay function may be necessary when a separate existing security system is in place. The Alarm Shunt Relay keeps an alarm panel zone from going into alarm when the door is opened, after a valid code is entered. The Alarm Shunt function is assigned to the Aux relay by default. To incorporate this feature, follow the steps below; see Figure 3-2.

3.1.2.A Wiring the Alarm Shunt Relay

1. Turn OFF power to the prox.pad plus unit, and then unlatch the keypad from the plastic housing.
2. Locate connector P2 (the 6-pin connector) on the main circuit board and plug on the 6-pin harness. (The 2-pin jumper on pins 5 and 6 of connector P2 must be removed first.)
3. Connect the 6-conductor harness to connector P2 as shown in Figure 3-2.
4. Connect the blue wire to the “Common” side of the door contact.
5. Connect the green wire to the “Normally Open” side of the door contact.
6. Make a parallel connection to the green and blue wires and run the leads to the alarm panel. **NOTE: This feature requires that you use the “Door Contact” input as shown in Figure 3-1.**
7. Restore power to the keypad and test.

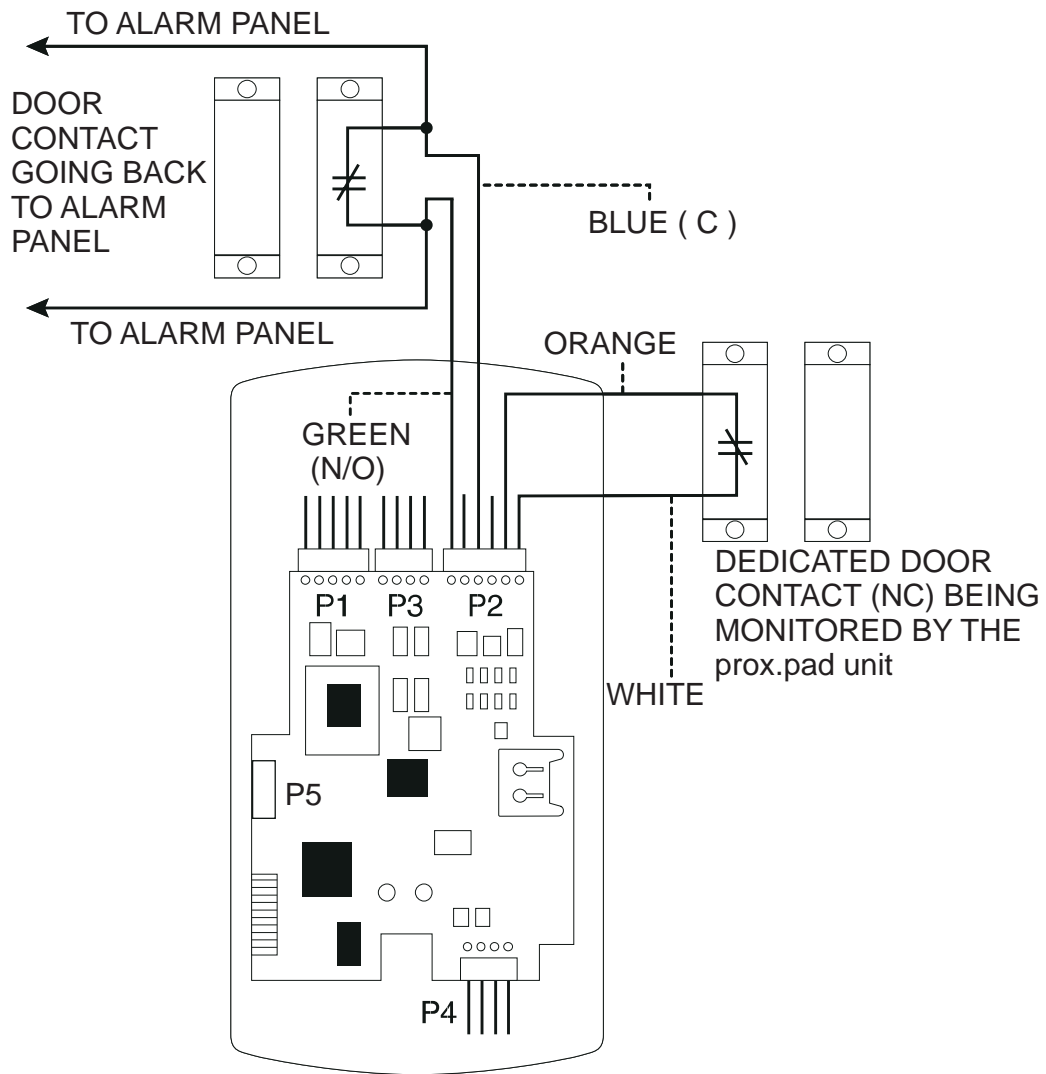


Figure 3-2 Wiring the Aux Relay for Alarm Shunt Operation

3.1.3 Wiring the AUX Relay for Use as Forced Door

The Forced Door output function informs personnel that the door has been opened without authorization. By default, the Forced Door output is assigned to Audio Alert #1. To use the Aux Relay, you must first assign it. See the command below, in the second note. The Aux relay is rated to handle two amps of current at 12 VDC, and can turn ON or OFF one leg of the power to a warning device. (Warning device not included with the IEI unit.) To incorporate this feature, follow the steps below; see Figure 3-2.

3.1.2.A Wiring the Forced Door Relay

1. Turn OFF power to the prox.pad plus unit, and then unlatch the keypad from the plastic housing.
2. Locate connector P2 (the 6-pin connector) on the main circuit board.
3. Connect the 6-conductor harness to connector P2. (The 2-pin jumper on pins 5 and 6 of connector P2 must be removed first. See Figure 3-3.)
4. Connect the green wire (NO) to V+ on the warning device.
5. Connect the blue wire (C) to V+ on the power supply.
6. Connect V- from the power supply to V- on the sounder. The gray wire is not used.
7. Restore power to the keypad and test.

NOTE: To use the default 10-second Forced Door Relay time, no programming is necessary. To change this default (from 10 to 990 seconds), use command **45 # ttt # 0 # **** after the unit is installed successfully; for details, see section 4.3.4.

NOTE: PROGRAMMING FOR FORCED DOOR:
To assign the Forced Door output to the Aux Relay, enter the following on the keypad:
10 # 4 # 2 # **
To disable audio alert #1, enter:
10 # 0 # 5 # **

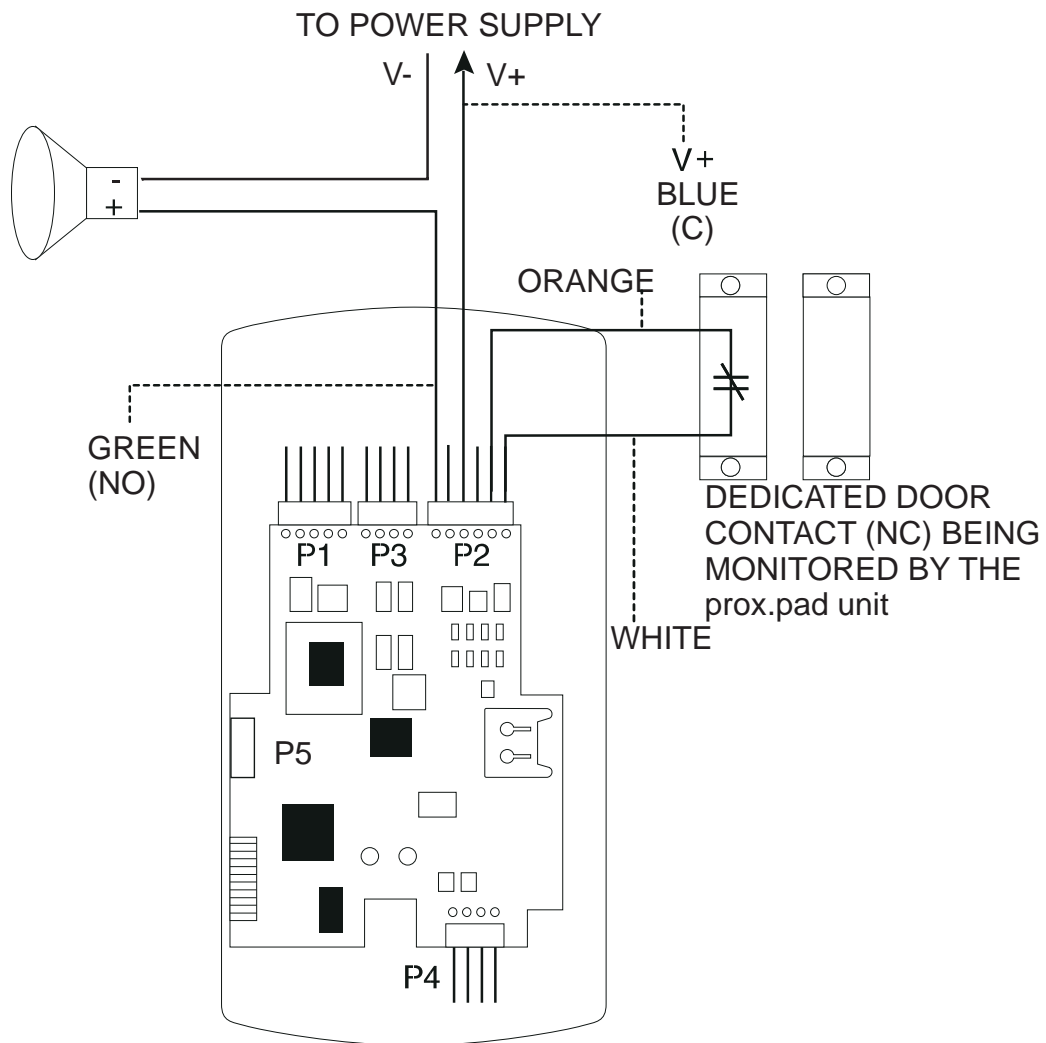


Figure 3-3 Wiring the Aux Relay for Forced Door Alarm

3.1.4 Wiring the AUX Relay for Use as Propped Door

The Propped Door Relay output function informs personnel that the door is being held open, or “propped” open, after a valid entry. By default, the Propped Door output is assigned to audio alert #2. To use the Aux Relay, you must first assign it. See command below. The Aux relay is rated to handle two amps of current at 12 VDC, and turns ON or OFF one leg of the power to a warning device. (Warning device not included with the IEI unit.) To incorporate this feature, follow the steps below; see Figure 3-3.

3.1.3.A Wiring the Propped Door Relay

1. Turn OFF power to the prox.pad plus unit, and then unlatch the keypad from the plastic housing.
2. Locate connector P2 (the 6-pin connector) on the main circuit board.
3. Connect the 6-conductor harness to connector P2. (The 2-pin jumper on pins 5 and 6 of connector P2 must be removed first. See Figure 3-4.)
4. Connect the green wire (NO) to V+ on the sounder.
5. Connect the blue wire (C) to V+ on the power supply.
6. Connect V- from the power supply to V- on the sounder. The gray wire is not used.
7. Restore power to the keypad and test.

NOTE: To use the default 30-second Propped Door Relay time, no programming is necessary. To change this default (from 30 to 990 seconds), use command **44 # ttt # 0 **** after the unit is installed successfully; for details, see section 4.3.3.

NOTE: PROGRAMMING FOR PROPPED DOOR:

To assign the Propped Door output to the Aux Relay, enter the following on the keypad:

10 # 3 # 2 # **

To disable audio alert #2, enter:

10 # 0 # 6 # **

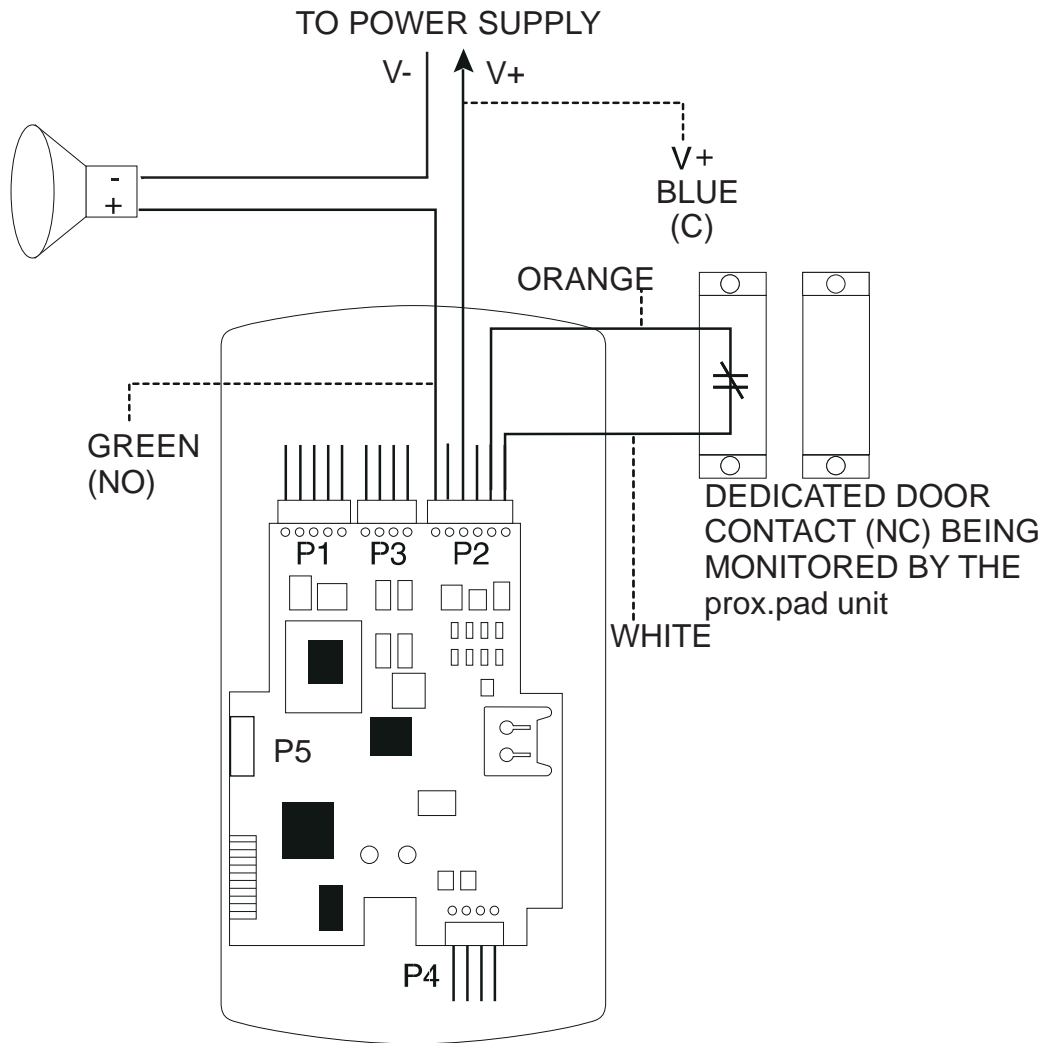


Figure 3-4 Wiring the Aux Relay for Propped Door Alarm

3.1.5 Wiring the REX Switch (Request to Exit)

The prox.pad plus unit can be wired to monitor a remote switching device, which is intended to be installed on the “secure” side of a door. The Request to Exit (REX) loop is a momentary input that engages the lock output for the same length of time for which it is programmed. This feature can be stored in the Transaction Log for viewing as REX.

If you elect to perform a secure installation where the controller is mounted on the secure side of the door, you can use the filler piece as a REX switch. To enable the internal REX switch, enter the following programming command: **30 # 7 # 1 # ****

For other installations, a separate REX switch must be purchased.

Other REX devices can be used to include a remote button placed at a receptionist’s desk, a press-to-exit switch on the inside of a door, or a passive infrared detector, allowing free and convenient egress. The external REX feature requires no programming; simply wire the unit as illustrated in Figure 3-5. To incorporate this feature, follow the steps below:

1. Turn OFF power to the prox.pad plus unit, and then unlatch the keypad from the plastic housing.
2. Locate connector P2 on the main circuit board.
3. Plug the 6-conductor harness into connector P2. (The 2-pin jumper on pins 5 and 6 of connector P2 must be removed first. See Figure 3-5.)
4. **If you do not wish to install the door contacts per Figure 3-5, twist the white wire and the orange wires together; this is mandatory. If this is not done, the REX input will not function.**

NOTE: The door contact **MUST** be closed for the REX feature to work properly.

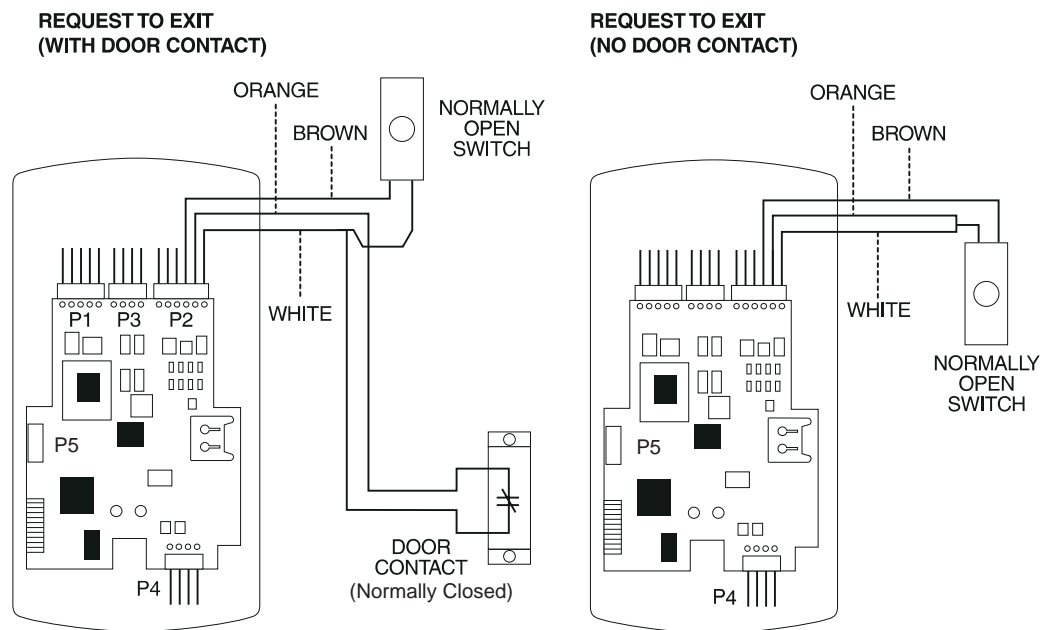


Figure 3-5 Wiring the REX Switch

3.1.6 Wiring the Main Relay

The door lock is wired to connector P1 on the prox.pad plus main circuit board. Wiring for this 5-pin connector is described in Table 2-2, Figure 3-6 provides an Electric Strike (Fail Secure) wiring diagram, Figure 3-7 a MagLock (Fail Safe) wiring diagram. Refer to the power supply recommendations in Table 1-1 if necessary.

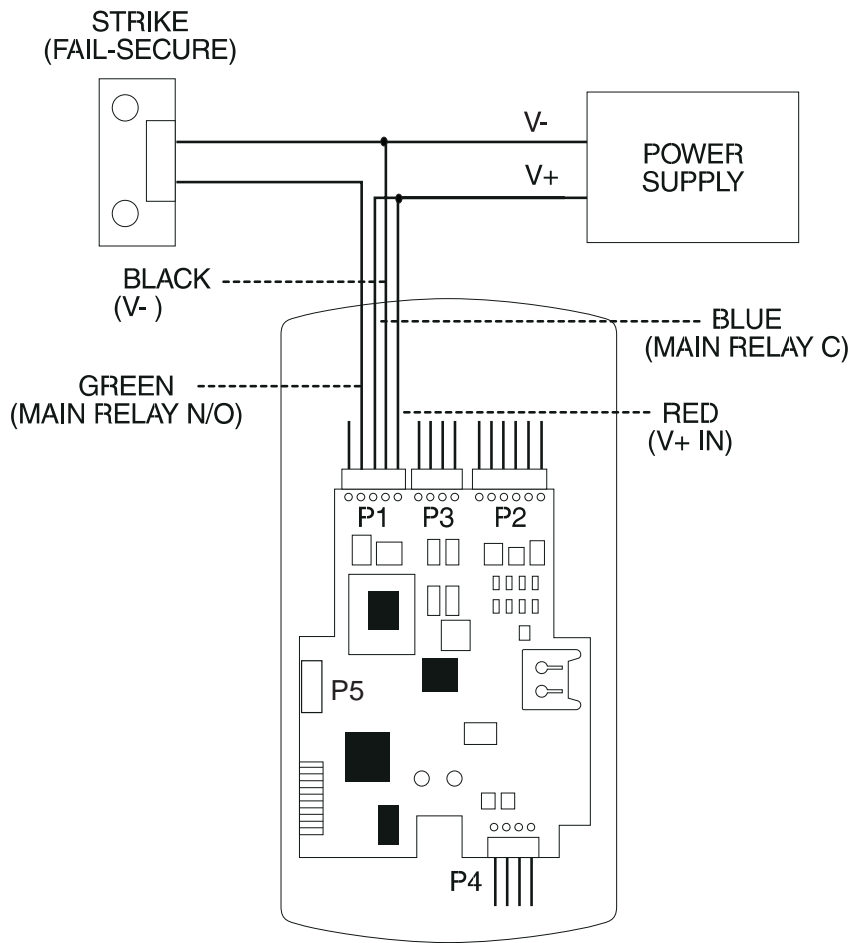


Figure 3-6 Electric Strike (Fail Secure) Wiring Diagram

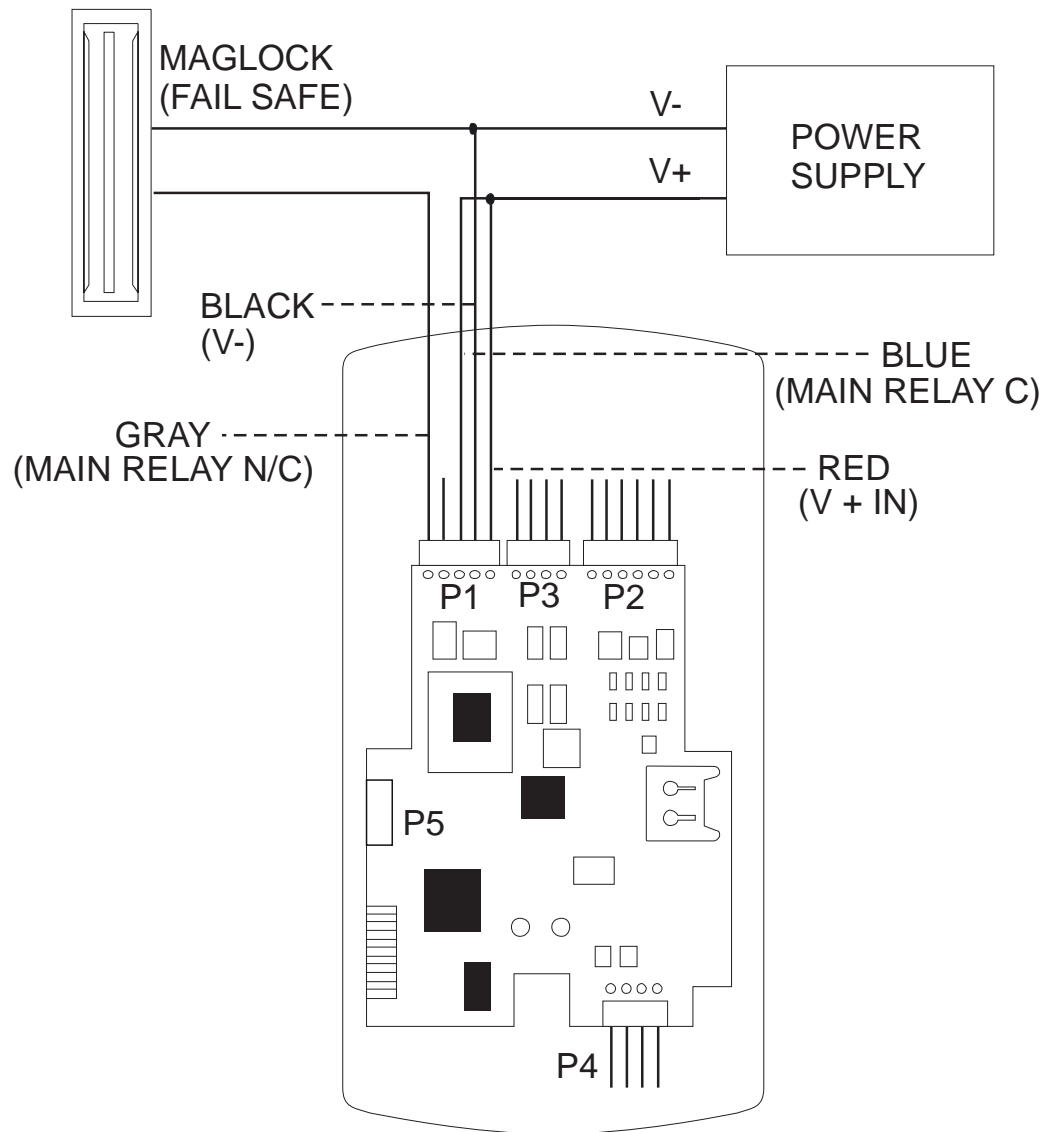


Figure 3-7 MagLock (Fail Safe) Wiring Diagram

3.2 prox.pad plus Communications

The prox.pad plus is equipped with RS-485 communications with a data rate of 19200 bits/sec. This allows you to connect the unit to a personal computer (PC) either via the computer's COM (serial) port or over a computer network to manage the system using Hub Manager Professional (version 5 or higher) software. To connect the prox.pad plus unit to a computer COM port (which is RS-232), an RS-232 to RS-485 converter is required. To connect the prox.pad plus unit via a computer network, the IEI Gateway device is required. **The maximum distance from the RS-485 device is 4,000 feet using the specified cable.** NOTE: The Terminator wire may not be required. Figures 3-8 and 3-9 show examples of both connection types. Please see the instructions for your RS-232 to RS-485 converter or the instructions for the IEI Gateway for details about those devices. For details, refer to EIA RS-485 specifications.

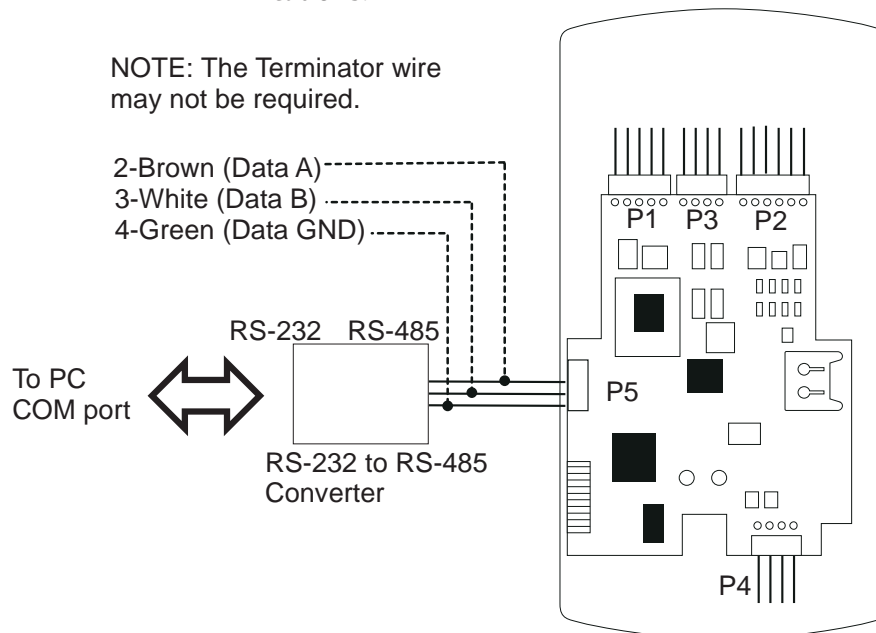


Figure 3-8 Connecting the prox.pad plus to a PC COM Port

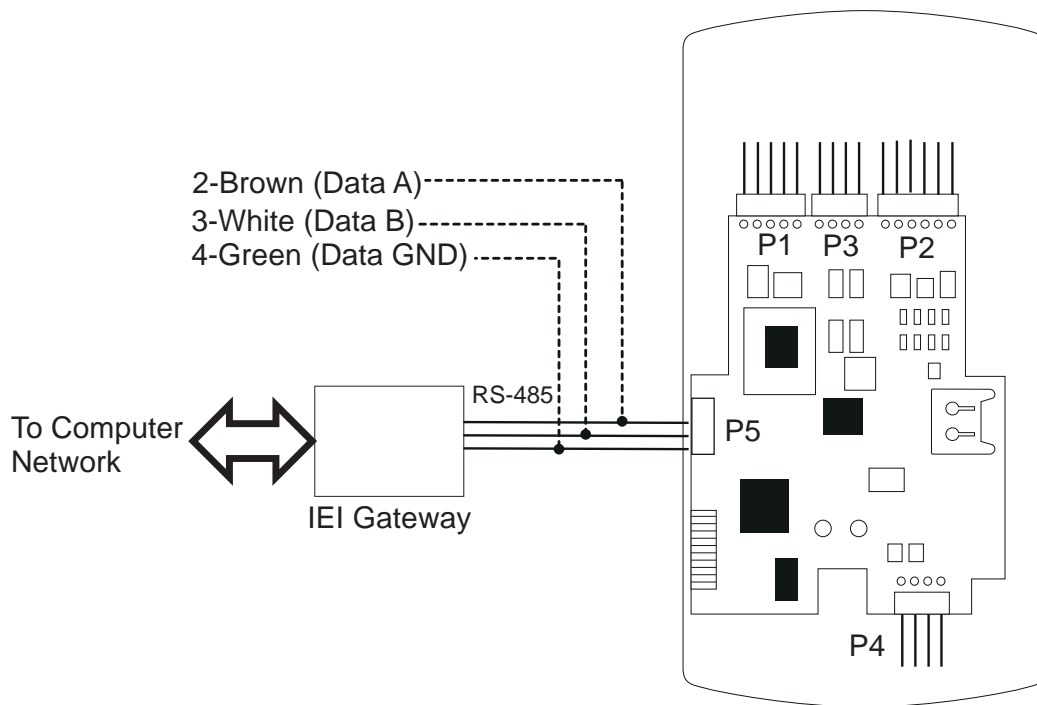


Figure 3-9 Connecting the prox.pad plus to a Network

3.3 Networking Multiple prox.pad plus Units Together

For multiple door applications, the prox.pad plus can be networked together. When networking prox.pad plus devices together on an RS-485 system, the prox.pad plus units are all wired in parallel. This networking capability is available when connecting directly to your personal computer's COM port or when communicating over a computer network with the IEI Gateway. Figure 3-10 shows an example of networking multiple units together. **The maximum number of devices on a network is 32.**

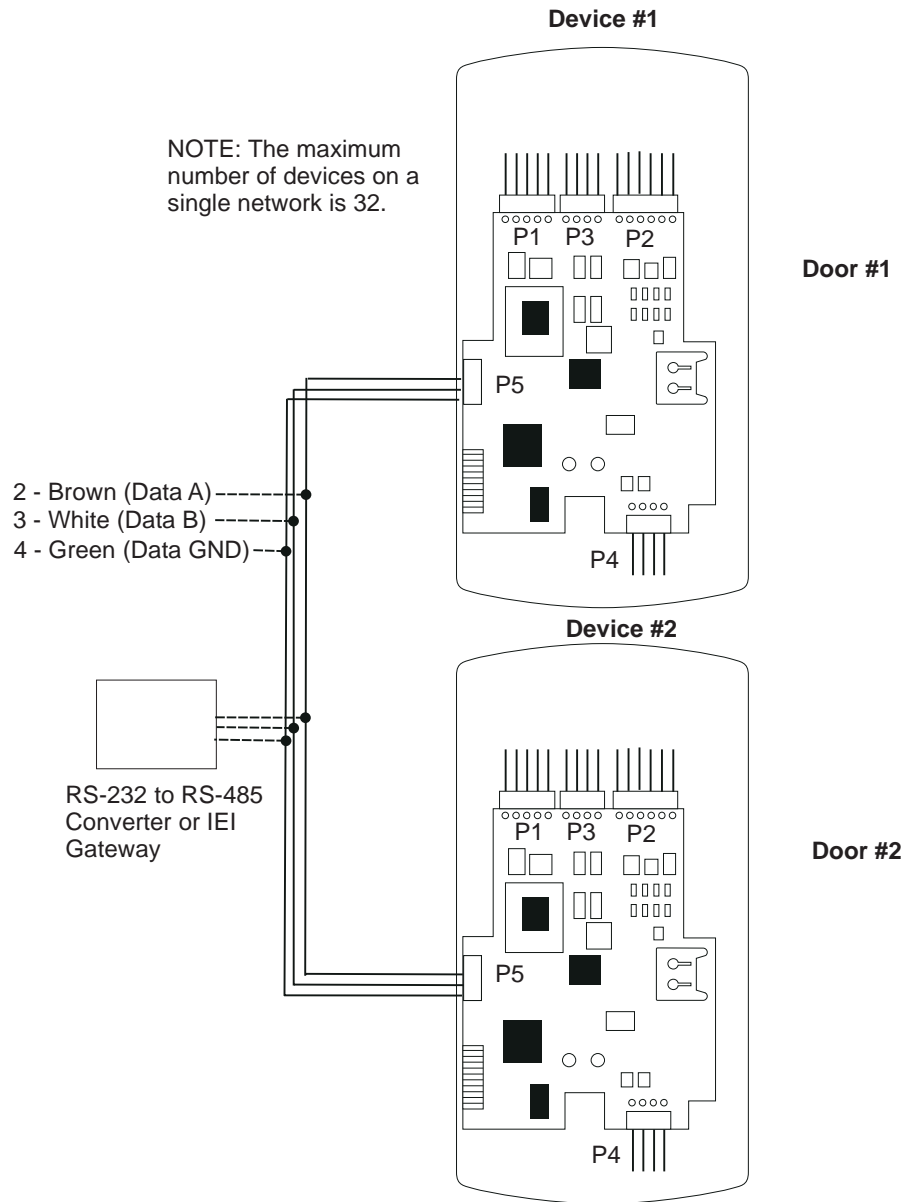


Figure 3-10 Networking Multiple prox.pad plus Units Together

3.4 Testing the prox.pad plus

At this point in a typical installation, it is assumed that the prox.pad plus unit has been mounted and wired successfully as described earlier and that testing can begin. **IEI recommends, however, that first-time installers test the prox.pad plus unit BEFORE actually mounting and wiring the unit to become familiar with its operation.**

3.4.1 Testing the Controller/Keypad

1. Connect the positive (+) lead of the power supply to the V+ input on the prox.pad plus controller/keypad.
2. Connect the negative (-) lead of the power supply to the V- input on the prox.pad plus controller/keypad.
3. Turn ON the power supply.
4. Ensure that the bi-color LED (red and green) on the prox.pad plus unit lights red.
5. On the prox.pad plus controller/keypad, press:

7890 # 123456 *

If all 12 key presses are verified, the prox.pad plus unit enters the self-test mode. The bi-color LED turns green. The red LED blinks alternately with the yellow LED and then both turn OFF. Next, the sounder beeps three times, pauses, and then beeps once more. If this does not occur, attempt to enter the self-test mode again by repeating step 5.

NOTE: If you are using the IEI DCD software, you can capture the self-test data on a PDA. This data contains information about the device.

6. Enter the master code on the keypad by pressing:
1234 *

The red LED turns OFF and the green LED turns ON for five seconds while the main relay energizes. To program the unit, see Chapter 4.

Chapter 4: Programming

4.1 Programming Overview

Chapter 4 provides information about programming the IEI prox.pad plus unit.

Optional Keypad Programming: The prox.pad plus unit can be programmed manually using the keypad on each unit and without the use of a personal computer (PC) and software. This chapter contains the optional keypad programming instructions. Keypad programming can be helpful to get a door or doors up and running prior to having the availability of the host computer. In all cases, the personal computer programming options supersede the keypad programming options.

4.1.1 Programming from the Keypad

The first step in programming the prox.pad plus unit is to place it into Program mode. You can enter Program mode with either the Master code or the Supervisor code. When the prox.pad unit is in Program mode, the yellow LED blinks slowly; when the yellow LED stops blinking and is OFF completely, the unit is no longer in Program mode. If an error is made in Program mode, the yellow LED remains steadily lighted; press * to clear the error condition and then re-enter the command. If the unit does not go into Program mode, refer to the Troubleshooting Chart in Chapter 5.

4.1.1.A Master Code (User Location #1)

The Master code is a special code stored in user location one. This code is used to enter Program mode, and has access to all programming commands.

To place the prox.pad plus unit in Program mode using the Master code, press:

99 # Master Code *

NOTE: "1234" is the default Master code, which IEI recommends that you change right away.

To change the Master code, enter:

**1 # new master code * new master code *
(example, 1 # 4321 * 4321 *)**

NOTE: Codes can be from 1 to 6 digits in length.

4.1.1.B Supervisor Code (User Location #2)

The Supervisor code is a special code stored in user location two. This code has limited access to Program mode, including commands:

- Adding/Deleting Users (commands #50, #51, #52, #53, #57, and #58)
- Enabling/Disabling Users (command #56)
- Changing Lock Output Time (command #11)
- Changing Keypad Platform Parameters 5 and 6 (command #32)

By default, user location two is empty, which means that if you need a Supervisor code, you must program one. To program a Supervisor code, press:

**2 # new supervisor code *
new supervisor code *
(example, 2 # 5678 * 5678 *)**

To enter Program mode using the Supervisor code, press:

99 # supervisor code *

4.1.1.C Master Code and Supervisor Code Special Features

The following is list of items that pertain only to the Master and Supervisor codes:

- The Master and Supervisor codes can only be programmed as standard user types
- The Master and Supervisor codes can be programmed as “card AND code” or “card OR code” users.
- The Master and Supervisor codes cannot be programmed as “card only.”

- When either the Master or Supervisor is programmed as “card AND code,” both are required to enter Program mode.
- When they are programmed for “card OR code,” only the card is required to enter Program mode.
- If the Master or Supervisor is programmed for “card OR code” and you want them to require both to enter Program mode, enable option 3 using command 30 (30 # 3 # 1 # * *).

4.1.1.D prox.pad plus Default Settings

Table 4-1 lists the default settings for the prox.pad plus unit as shipped from the factory. Subsequent sections in this chapter explain how to change these default settings or program additional functions.

Table 4-1. prox.pad plus Default Settings

Parameter	Default Setting
Main Relay	Lock Output
Auxiliary Relay	Alarm shunt function
Audio Alert #1	Forced Door
Audio Alert #2	Propped Door
Master Code (user one)	1234*
Main Relay energizes for	Five (5) seconds
Audible Keypress Feedback	ON
Propped Door Output activates after	Thirty (30) seconds
Forced Door Output activates for	Ten (10) seconds

Table 4-2. prox.pad plus LED Indicators/Sounder Operations

LED or Sounder	Visual/Audible Condition	Description
Yellow LED	Slow blink	Unit is in Program mode
	Rapid blink	Verify mode is active (checking that the last two values in sequence match)
	Steady	Program error; to clear, press * or error lockout
	Very rapid blink	Memory (eeprom) erase is in progress (commands 40/46, loop-back)
Bi-color LED	Steady red	Lock output deenergized
	Steady green	Lock output is energized (timed or latched)
	Red/green alternating	Awaiting second PIN during "Card AND Code" access attempt
	Green blink	Auto-unlock active
Sounder	Short beep (100 ms) every 2 seconds	Audio alert #2 is active
	Sounder 1/2 sec on, 1/2 sec off	Audio alert #1 is active
	Double beep	Lockout is canceled
	Pair of double beeps	Lockout is activated
	3 slow beeps (250 ms), then single beep	Self-test is complete

**Table 4-2. prox.pad plus LED Indicators/
Sounder Operations (continued)**

Sounder After PIN/Card	1 single beep	Valid card access
	1 long beep followed by 1 short beep	User disabled
	1 long beep followed by 2 short beeps	Bad timezone
	1 long beep followed by 3 short beeps	User lockout
	3 rapid beeps after code entered or card presented	Code or Card is not found
	4 quick beeps	First-In Auto-unlock
	6 quick beeps	Toggle mode is active

4.1.1.E Resetting the Master Code and System Defaults Only

Entering command 40 restores the system defaults, leaving the user data and transaction log intact. This is useful if the prox.pad plus unit has experienced programming problems, or you wish to delete earlier programming.

1. Place the prox.pad plus unit in Program mode.
Press:

99 # Master Code * (default is 1234)

A slow blinking yellow LED indicates that the unit is in Program mode. A steady yellow LED, in contrast, means that errors were detected during programming.

Error states can be cleared by pressing the asterisk * key.

2. Press:

40 # 00000 # 00000 # **

The yellow LED continues to blink slowly.

3. Press * to exit Program mode.

4.1.1.F Erasing Entire Memory/Resetting System Defaults

Entering command 46 deletes everything from the prox.pad plus memory including the user list but not the transaction log and restores the default settings. This is used as a last resort if you need to erase a specific user and could not retrieve the Programmed User List.

1. Place the prox.pad plus unit in Program mode.
Press:

99 # Master Code * (default is 1234)

A slow blinking yellow LED indicates that the unit is in Program mode. A steady yellow LED, in contrast, means that errors were detected during programming. Error states can be cleared by pressing the asterisk * key.

2. Press:

46 # 00000 # 00000 # **

The yellow LED continues to blink slowly.

3. Press * to exit Program mode.

4.2 Programming Users

4.2.1 Adding New or Changing Existing Codes/Cards

The most basic prox.pad plus programming is adding new codes or cards (users), or modifying existing codes or cards (users). Each user entry consists of three or four data values: a user type, a location and a keypad-PIN, and/or card.

Two methods can be used for adding new or changing existing codes/cards, (1) keypress sequences (manual entry), and (2) card presentations. Keypad PINs can be programmed only through a keypad sequence, while card PINs can be programmed manually or by presenting the card to the proximity reader at a specified time during programming.

Table 4-3 lists the specific types of users that can be programmed with the prox.pad plus unit and the following section describe the various ways to program users.

NOTE: When 26-bit cards are used and you choose to add new cards manually, the facility code **MUST** be entered into the unit first. The default facility code is 11. For the programming sequence used to enter the 3-digit facility code, see command 32, parameter 4 (see table in section 4.6).

4.2.2 Programming Code and Card Options

The prox.pad plus unit can be programmed to accept the four code/card combinations listed below.

- (1) Code ONLY (command 50)
- (2) Code AND Card (command 50 plus present card to proximity reader)
- (3) Card ONLY (command 50 or command 51)
- (4) Code OR Card (command 52)

NOTE: No user can have the same card and/or code PIN as another user.

4.2.2 Programming User Types

Table 4-3 identifies and describes the user types supported by the prox.pad plus unit.

Table 4-3. prox.pad plus User Types

User Type	Numeric ID	Description
Toggle	0	Toggle users latch the lock in the unlock position. Toggle mode is indicated by 6 quick beeps and a solid green LED.
Standard	1	Standard users use the lock duration programmed in command 11.
Log Dump	2	For this user-type, the door remains locked and the Transaction Log is dumped to the DCD PDA software through the IR LED when the appropriate code is entered. This code cannot be used to gain access through the door. The log is not erased, only printed.
Lockout	3	Lockout users "lock out" other users - see User Lockout (section 4.4.1). These codes do not unlock the door.
Extended Unlock	4	Extended Unlock Users are like Standard users except they use the unlock duration programmed in command 32, parameter 3. The default unlock time is 10 seconds.
Single Use Code	5	Single Use Codes are codes that can only be used once. After the code is used, it is deleted from the keypad. To verify a Single Use is programmed, enter the sequence [5# PIN *] and this looks up the PIN and generates a 1/2 second green flash if the PIN is programmed as a single use code. If the PIN is not found, the system generates three quick beeps and increments the invalid PIN counter. If PIN is found but is not programmed as a single use code, the system does not respond at all.

Table 4-3. prox.pad plus User Types (continued)

User Type	Numeric ID	Description
Relock	6	Relock codes are used to relock the door when a toggle or auto-unlock is active. Entering 00 # prior to a relock code allows auto-unlock to be re-triggered, when First In is enabled.
Emergency	7	Emergency users are special users that cannot be locked out and cannot be disabled. The user also uses the unlock duration programmed in command 32 parameter 3. The default unlock time is 10 seconds.

4.2.2.A Programming User Data, Command 50, Full Format

The full format of command 50 for programming user data is as follows:

50 # user-type # user location # keypad PIN * keypad PIN *

Programming a user's card with command 50 requires that you present the card to the proximity reader after entering the final asterisk *.

A single beep from the sounder indicates that the card has been read and the data added to the user's entry. If the yellow LED lights steadily after the card is presented, it usually indicates one of two problems: (1) an improper keypress (correct by entering properly), or (2) the number entered is in use by another user (correct by employing an unused PIN and card).

4.2.2.B Quick Program Feature

A “quick program” feature has been implemented for user data, however. You only need to enter the user’s location and the keypad PIN (or present card), in the format noted below. Employing the quick feature automatically selects a “Normal” user access type.

user location # new code * repeat code

OR

user location # ** <present card>

4.2.2.C Programming Code ONLY Use

You can program a user Code ONLY use with command 50. The program sequence is as follows:

**50 # user-type # user location #
new code * repeat code ***

4.2.2.D Programming Code AND Card Use

The format for programming a user for both Code AND Card use is as follows:

**50 # user-type # user location #
new code * repeat code * <present card>**

When a combination code/card user employs the prox.pad plus unit, that user can present the proximity card first at the proximity reader, or enter the code first at the prox.pad plus keypad as desired.

After the code/card user either presents the card at the reader or enters the code on the keypad, the red and green LEDs alternate. This indicates that the unit is awaiting the second part of the transaction before granting access. After the second part of the transaction is completed successfully, the bi-color LED turns solid green and the door opens.

4.2.2.E Programming Card ONLY Use

Card ONLY use can be programmed with command 50. The programming sequence is as follows:

**50 # user-type # user location # **
<present card>**

4.2.2.F Programming Code OR Card

Finally, you can program a user for either Code OR Card use as follows:

**52 # user-type # user location # keypad
PIN* keypad PIN * <present card>**

4.2.3 Batch Load Cards by Presentation

Command 53 provides a simple method of programming a group of consecutive users by presenting the appropriate prox cards. This method of programming cards does not require any knowledge of the prox card format as long as it contains 39 bits or less of data.

The format of the command is as follows:

**53 # user type # start location # * *
present cards one after another**

The card loading stops automatically once the current user location exceeds 2000. Pressing any key on the faceplate aborts the loading process.

All users programmed through this command are setup as "Card Only" users. Any existing card or keypad data for that user is erased prior to programming the new data. Entering the Master or Supervisor user as the first card in the sequence generates an error because the Master or Supervisor code cannot be programmed as a "Card Only" user.

If an existing card is presented, a programming error is generated. You clear the error condition by pressing the [*] (asterisk) and continue presenting cards. This is the only case where pressing a key on the faceplate does not abort the card programming sequence.

4.2.4 Enabling/Disabling Users Command

The `56 # set/clear#user Location#command` allows the Master Code or Supervisor Code to disable a particular user location without deleting that user.

To disable a user, enter:

56 # 1 # user location # **

To enable a user, enter:

56 # 0 # user location # **

- The Master Code can NEVER be disabled.
- The Master Code can disable the Supervisor user (user # 2).
- The Supervisor can disable users 3-2000.

The Master Code user cannot be disabled, and the supervisor user cannot disable his/her self. A disabled Supervisor cannot access Program mode; a non-programmed user cannot be enabled or disabled (generates a program error).

4.2.5 Batch Load Cards Manually (without presentation)

“Batch entry” allows you to enter multiple, sequential 26-bit HID cards into the prox.pad plus unit’s memory at one time. (Keeping IEF proximity cards in order is easy as the code is printed on the front of each card.)

NOTE: The facility code must be programmed into the unit before any batch entry can occur. The facility code **MUST** be programmed only once. The default facility code is 11. For the programming sequence used to enter the 3-digit facility code, see command 32, parameter 4 (see table in section 4.6). If you wish to program more than one batch of cards with different facility codes, re-program parameter 4 prior to each batch.

To add several users from the proximity reader, follow this procedure:

1. Place the prox.pad plus unit in Program mode. Press:
99 # Master Code * (default is 1234)
A slow blinking yellow LED indicates that the unit is in Program mode. A steady yellow LED, in contrast, means that errors were detected during programming. Error states can be cleared by pressing the asterisk * key.
2. On the prox.pad plus keypad, press:
57 # (total number of cards to be added) # (starting user location) # card number * repeat card number *

NOTE: Never enter one (1) or (2) as the starting user location since they are reserved for the Master code and Supervisor code, respectively.

3. On the prox.pad plus keypad, press * to exit Program mode. Up to 1998 users can be added this way at one time. (User 1 is reserved for the Master code, User 2 for the Supervisor code.)

4.2.6 Block Delete of Users

Command 58 lets you delete a block of users. To lessen the chance of accidental deletion, the command sequence requires a double entry of the starting user and number of users values. If the values entered do not match, a programming error occurs. The format of the new command is as follows:

58 # start user # start user # number of users * number of users *

The yellow led blinks rapidly during the deletion process; it can take several seconds to delete all 2000 users.

4.2.7 Deleting Users

To delete a user from the prox.pad plus unit's memory, you must know the user location in which the information is stored. Printing a Programmed Users List (as described in section 4.5) helps you determine this, if you are using the DCD software. If not, the programmer should have filled out a paper chart listing the memory location or register in which all users are stored.

To delete a user, follow the steps below.

1. Place the prox.pad plus unit in Program mode. Press :

99 # Master Code * (default is 1234)

A slow blinking yellow LED indicates that the unit is in Program mode. A steady yellow LED, in contrast, means that errors were detected during programming. Error states can be cleared by pressing the asterisk * key.

2. On the prox.pad plus keypad, enter the **user location** you wish to delete and a pound symbol #. To delete user 100, for example, press:

100 # ** (to delete user 100)

The yellow LED blinks slowly.

3. Press * to exit Program mode.

4.3 Programming Outputs

4.3.1 Changing the Lock Output Time

The factory default main relay time is five (5) seconds. Main Lock Output time can be set in one-second increments from 1-255 seconds using command 11.

1. Place the prox.pad plus unit in Program mode. Press:

99 # Master Code * (default is 1234)

A slow blinking yellow LED indicates that the unit is in Program mode. A steady yellow LED, in contrast, means that errors were detected during programming. Error states can be cleared by pressing the asterisk * key.

2. Enter the new Lock Output time, in seconds (from 1 to 255). For example, to enter 10 seconds, press:

11 # 10 # 0 # **

The yellow LED continues to blink slowly.

3. Press * to exit Program mode.

4.3.2 Assigning Outputs

The prox.pad plus unit is equipped with four virtual outputs and four physical outputs. The virtual outputs consist of the Lock Output, Alarm Shunt Function, Propped Door Output, and Forced Door Output. A virtual output is simply an output that can be assigned to a physical output. The physical outputs include the Main Relay, the Aux Relay, Audio Alert #1, and Audio Alert #2. The default output assignments are:

- Lock Output is assigned to the Main Relay
- Alarm Shunt Function is assigned to the Aux Relay
- Forced Door Output is assigned to Audio Alert #1
- Propped Door Output is assigned to Audio Alert #2

This feature is useful considering the product only has two relays; you can assign these relays to any of these functions. There are only a few things to keep in mind when assigning the outputs.

- Any virtual output can be assigned to any physical output.
- A virtual output can be assigned to multiple physical outputs.
- A physical output can only have one virtual output assigned to it.

To assign the outputs, use the following command:

10 # virtual output # physical output # **

The chart below shows the output options with the corresponding value.

Virtual Outputs	Physical Outputs
1 = Lock	1 = Main Relay
2 = Alarm Shunt	2 = Aux Relay
3 = Propped Door	5 = Audio Alert #1
4 = Forced Door	6 = Audio Alert #2

For example, to assign the Forced Door Output to the Aux Relay, enter the following command in Program mode:

10 # 4 # 2 # **

After entering this command, the Forced Door Output is still assigned to Audio Alert #1. If you do not want the audio alert to sound for Forced Door, you **MUST** disable Audio Alert #1. To disable an output, enter a 0 for the virtual output. To disable Audio Alert #1 enter following command:

10 # 0 # 5 # **

NOTE: The audio alerts use the local keypad sounder. Audio Alert #1 is indicated by a ½ second on, ½ second off beeping. Audio Alert #2 is indicated by a short beep every two seconds.

4.3.3 Setting Propped Door Output Time

Command #44 lets you set the Propped Door Output time.

1. Place the prox.pad plus unit in Program mode. Press:

99 # Master Code * (default is 1234)

A slow blinking yellow LED indicates that the unit is in Program mode. A steady yellow LED, in contrast, means that errors were detected during programming. Error states can be cleared by pressing the asterisk * key.

2. To program the Aux relay for Propped Door, enter the following on the keypad:

10 # 3 # 2 # **

3. Enter the desired Propped Door Output time. For example:

44 # ttt # 0 # **

where, ttt=propped door time, to nearest 10's seconds, entered as 10-990; default=30 seconds.

4. Press * to exit Program mode.

4.3.4 Setting Forced Door Output Time

Command #45 lets you set the Forced Door Output time.

1. Place the prox.pad plus unit in Program mode. Press:

99 # Master Code * (default is 1234)

A slow blinking yellow LED indicates that the unit is in Program mode. A steady yellow LED, in contrast, means that errors were detected during programming. Error states can be cleared by pressing the asterisk * key.

2. To program the Aux relay for Forced Door, enter the following on the keypad:

10 # 4 # 2 # **

3. Enter the desired Forced Door Output time. For example:
45 # ttt # 0 # **
where, ttt=forced door time, to nearest 10's seconds, entered as 10-990; default=30 seconds.
4. Press * to exit Program mode.

4.4 Programming Keypad Options and Parameters

4.4.1 User Lockout Option

The prox.pad plus unit supports two types of user lockouts: "Lockout By Location" and "Lockout By Group." The two lockouts share the following features: (1) entering Program mode always clears an active lockout (2) and neither the "master," the "supervisor," nor an "emergency" user can be locked out. The user lockout function, which is enabled by default, can be disabled through Command 30 option #5. The lockout type is selected through Command 30 option #8 and defaults to "Lockout By Location."

4.4.1.A Lockout By Location

In the Lockout By Location mode, the location of the Lockout Code in the user table determines which users are locked out. Entering a Lockout Code (when no lockouts are active) excludes all users programmed in locations greater than the location of that Lockout Code. For example, if user #20 is programmed as a Lockout Code and that user's PIN is entered, then users #21 and above are locked out.

Entering the same Lockout Code cancels the current lockout. If a different Lockout Code (programmed in a location less than the current lockout) is entered during an active lockout, the lockout is "lowered" to the location of that PIN. This means that to cancel a

lockout initiated by another user, the “new” user **must enter his PIN twice**. The first entry lowers the lockout and the second cancels the lowered lockout.

4.4.1.B Lockout By Group

Lockout By Group is an enhanced version of the lockout function. In this mode, each user is assigned to a lockout “group.” The user lockout group is set with command 32 ,parameter 6 and defaults to 4. The group set in parameter 6 is applied to all newly added users, and can be changed prior to adding each user if required.

Lockout groups can be from 0 to 15. User lockout group 0 is special because it allows users programmed with that group to be processed regardless of the current user lockout state (meaning group 0 users cannot be locked out). A good example of group 0 usage might be a Relock Code, which would allow a group 0 user to re-lock a door even if a user lockout is active. Exercise care (restraint) when creating group 0 users; if there are too many, the usefulness of user lockout diminishes.

Entering a Lockout Code (when no lockouts are active) sets the current lockout group to that user’s lockout group. Subsequently, whenever a valid PIN is entered, that user’s lockout group is compared to the currently active lockout group. It is the result of this test that determines whether the user is locked out.

Entering any lockout code while a lockout is active always cancels the current lockout. To activate another lockout, you must enter the lockout code again.

The prox.pad plus unit firmware can select one of four different lockout operations. The selection is made by setting the Lockout By Group “operand” in command 32, parameter 7 to one of the following values:

- 0 = lockout all other groups
- 1 = lockout just this group
- 2 = lockout higher numbered groups
- 3 = lockout lower numbered groups

When a “lockout just this group” is activated, all users in that group are locked out with the exception of those users programmed as Lockout Codes. This allows the user who initiated the lockout to cancel the lockout.

4.4.2 TimeZone/ Holiday Features

The prox.pad plus unit currently supports up to eight (8) timezones. Timezones are disabled by default and can be enabled with Command 30 option 9. To enable, enter:

30 # 9 # 1 # **

Auto-Unlock is also disabled by default and can be enabled with command 30, option 11. The default auto-unlock timezone is in location 8 and is 9:00 A.M. to 5:00 P.M. Monday through Friday. To make this timezone active as an auto-unlock, you **must** enable option 11. To enable, enter:

30 # 11 # 1 # **

Additionally, you cannot add timezones through the keypad directly (software is required); however, you can assign users to timezones and set a timezone as auto-unlock, after the timezone is added via software.

To program users to a certain timezone, you **must** first set the user timezone mask in command 32, parameter 5. Each user added after this parameter is set is assigned to that timezone. If you want to assign users to several different timezones, you **must** change parameter 5 prior to adding each user.

Take care using parameter 5 since it is an 8-bit number, and each timezone equals a certain bit value as follows:

- TZ1 = 1
- TZ2 = 2
- TZ3 = 4
- TZ4 = 8
- TZ5 = 16
- TZ6 = 32
- TZ7 = 64
- TZ8 = 128

To program a user to multiple timezones, add up the number of each timezone. For example: To add a user to timezones 1, 2, and 8, enter 131 ($1 + 2 + 128 = 131$) in parameter 5. Entering a value of 255 sets the user to 24 hours, which means you cannot assign a user to all eight (8) timezones. To set a timezone as auto-unlock, you **must** set the auto-unlock timezone mask using command 38. Example:

38 # autz # 1 # **

(autz=auto-unlock timezone (1-8). Entering 1 sets the timezone as auto-unlock and a 0 clears it.)

4.4.2.A Midnight Crossing TimeZones

The prox.pad plus unit supports “midnight crossing timezones,” which is always enabled. This means a timezone can cross the midnight boundary. For example: A timezone can start at 11:00 P.M. and end at 7:00 A.M.

There is another option for allowing timezones to cross over midnight if the next day is a holiday. For example, a timezone is set for 6:00 P.M. to 2:00 A.M. Monday-Friday and Friday is a holiday. If you enable this option (command 30, option 10), users can still gain access after midnight on Friday. If you disable this option, users do not have access after midnight.

This option is enabled by default, but can be disabled using command 30, option 10. To disable, enter:

30 # 10 # 0 # **

Entering 1 instead of 0 enables the option.

4.4.2.B Holidays

The prox.pad plus unit supports up to thirty-two (32) holidays. Holidays can be single days or block holidays (one block holiday counts as only one holiday; you can have up to thirty-two block holidays).

A block holiday is a group of days with a beginning and end date. This is useful if you want a whole week to be considered a holiday. A block holiday can be up to one year long.

4.4.2.C Daylight Savings Time

Daylight savings time is also supported and is enabled by default. This can be changed using command 30, option 13. To disable, enter:

30 # 13 # 0 # **

Entering 1 instead of 0 enables the option.

The prox.pad plus unit currently supports U.S. and European daylight savings formats, and this can be changed using command 30 option 15. U.S. is the default value. To specify U.S.A., enter 0, European 1:

30 # 15 # 0 # **

When set to U.S. format, daylight savings begins on the first Sunday in April at 2:00 A.M. (turn back one hour) and ends on the last Sunday in October at 2:00 A.M. (turn back one hour). When set to European format, daylight savings begins on the last Sunday in March at 2:00 A.M. (turn back one hour) and ends on the last Sunday in October at 2:00 A.M. (turn back one hour).

4.4.2.D Leap Year

The prox.pad plus unit supports leap year; on the appropriate leap years February 29th is a valid date.

4.4.2.E Time/Date Set

The time is set using command 41 and is in 24-hour format. The date is set using command 42. **NOTE:** The Time/Date is not reset with the default command. To set the Time, enter:

41 # hhmm # 0 # **

[hhmm=hour and minute (24-hour format)]

To set the Date, enter:

42 # mmddy # dow # **

[mmddy=month, day, year

dow=day of week (1=Sunday,

2=Monday, etc.)]

4.4.3 Turning Visual LED/Keypress Indicator ON/OFF

This visual LED/keypress indicator lights the visual LED once for each key press. This feature provides a visual acknowledgment that a particular key was pressed hard enough for the unit to understand. The factory-shipped default setting is ON, but it can be toggled ON and OFF as desired. **NOTE:** A common reason to turn this feature OFF is to prevent an unauthorized user from viewing visual feedback produced when an authorized user enters his/her code.

1. Place the prox.pad plus unit in Program mode.
Press:
99 # Master Code * (default is 1234)
A slow blinking yellow LED indicates that the unit is in Program mode. A steady yellow LED, in contrast, means that errors were detected during programming. Error states can be cleared by pressing the asterisk * key.
2. To enable this feature, press:
30 # 1 # 1 # **
The yellow LED continues to blink slowly.
3. To disable this feature, press:
30 # 1 # 0 # **
The yellow LED continues to blink slowly.
4. Press * to exit Program mode.

4.4.4 Turning Audio Keypress Feedback ON/OFF

The Audio Keypress Feedback command enables the sounder to beep once for each key press. This feature provides an audio acknowledgment that a particular key was pressed hard enough for the unit to understand. The factory-shipped default setting is ON, but it can be toggled ON and OFF as desired using command 30. **NOTE:** A common reason to turn this feature OFF is to prevent an unauthorized user from hearing the audio feedback emitted when an authorized user enters his/her code.

1. Place the prox.pad plus unit in Program mode.
Press:
99 # Master Code * (default is 1234)
A slow blinking yellow LED indicates that the unit is in Program mode. A steady yellow LED, in contrast, means that errors were detected during programming. Error states can be cleared by pressing the asterisk * key.
2. To enable this feature, press:
30 # 0 # 1 # **

The yellow LED continues to blink slowly.

3. To disable this feature, press:

30 # 0 # 0 # **

The yellow LED continues to blink slowly.

4. Press * to exit Program mode.

4.4.5 Error Lockout

The prox.pad plus controller maintains a count of the number of consecutive invalid keypad PINs and prox cards that have been entered. This count is reset by entering a valid keypad PIN, presenting a programmed prox card, pressing the program button, entering a valid [99 # Master code*] sequence, or by the expiration of the keypad timer.

Entering an incorrect Master code in a [99 # Master Code*] sequence does increment the invalid PIN entry count. This ensures that attempts to guess the Master code are not overlooked.

When the invalid entry counter reaches the user-specified level, the error lockout is activated. Error threshold is programmed through parameter 32 # 0 #, and is defaulted to three attempts.

Once the error lockout threshold is reached, the keypad is locked out and the yellow LED lights solidly. This duration defaults to 10 seconds, and is changed with command 32, parameter 1.

4.4.6 Timed Anti-Passback

The Timed Anti-Passback function is enabled by default. It lets you specify a length of time that must pass before the same prox card can be processed after being presented. The feature is included so that the card must be outside of the prox read field during the entire period of time. If the card is reintroduced into the field prior to expiration of the time delay, the time delay restarts with a full duration.

Presenting a different card (not necessarily a programmed card) causes the new card data to be processed immediately and also clears the Anti-Passback timer so that the first card presented now get processed again immediately.

This feature is selected through option 30 # 16 #; the duration of the time delay is set through parameter 32 # 8 #. The duration of the time delay can be set from ½ second to 60 seconds in ¼ second increments.

Disabling the Timed Anti-Passback function provides another feature that controls how often ANY prox card is processed. When option 30 # 16 # is disabled, the value in parameter 32 # 8 # indicates how often a card will be processed. Please note that the prox read function continues to attempt a card READ every 100 milliseconds, but a valid card read is only PROCESSED after the specified time delay elapses.

Also note that this function does not require the card to leave the read field. In fact one of the main uses of this feature is to adjust the processing rate of cards that remain in the field. Now you can extend the processing time to stop this type of unwanted toggling. All that must be done is to extend the value in command 32 #3 #.

Both of these features apply only to prox cards; there is no “Anti-Passback” processing of keypad PINs. “Anti-Passback” and the “card process timer” are also turned off in Program mode.

4.5 Using the Printing Features

The prox.pad plus unit in conjunction with the optional IEI PDA Data Collection Device (DCD) can capture a Transaction Log and a Programmed User List via the IR port. The Log Dump command is:

70 # 0 # 0 # **

The User Dump command is:

25 # 0 # 0 # **

4.5.1 Selecting Transaction Log Information

You can selectively program specific transaction events to print or not on the Transaction Log. By “masking” out certain events, you direct the unit not to save those events in memory and thus not be available for the log. The factory default is for all transaction events to be saved in memory and printed on the log. To turn OFF an event (keep it from being logged), enter:

73 # Event Code # 0 # **

To turn an event ON, enter:

73 # Event Code # 1 # **

Event #	Description
1	access denied - invalid PIN
2	program denied
4	REX
5	Propped Door
6	Door Closed
7	Forced Door
16	log dumped by user #N
17	access granted to user #N
19	access denied to user #N, bad timezone
20	toggle mode activated by user #N (latch set)
21	toggle mode de-activated by user #N (latch clear)
22	1st in auto-unlock triggered by user #N
23	door relocked by user #N
24	user lockout enabled by user #N
25	user lockout disabled by user #N
26	access denied to user #N - user is disabled

Event #	Description
27	card/code mismatch
29	program mode started by user #N
30	log erased by user #N
32	unprogrammed card data
33	unprogrammed code data
50	log retrieved
51	access denied to user #N, user group lockout

- Place the prox.pad plus unit in Program mode. Press:
99 # Master Code * (default is 1234)
A slow blinking yellow LED indicates that the unit is in Program mode. A steady yellow LED, in contrast, means that errors were detected during programming. Error states can be cleared by pressing the asterisk * key.
- Press:
73 # event # 0/1 # **
“0/1” in the command syntax is the ON/OFF instruction for the unit. Pressing 0 at a certain event means that that event is not logged and is not available to be printed. Pressing 1, in contrast, restores logging and printing for a particular event. “Event” is a two-digit number that represents a specific transaction as listed on the previous page. A steady yellow LED indicates an error; if this occurs, start again.
- Press * to exit Program mode. The yellow LED stops blinking.

4.5.2 Printing a Transaction Log

If you have the optional PDA DCD software, you can capture a Transaction Log on it via the prox.pad plus IR port. Transaction Logs can be printed using two different methods, (1) by programming a “dump” code into memory and (2) by placing the prox.pad plus unit into Program mode and manually entering the print Transaction Log command. For details, see the subsections 4.5.2.A and 4.5.2.B on the next page.

4.5.2.A Programming a Transaction Dump Code

1. Place the prox.pad plus unit in Program mode.
Press:
99 # Master Code * (default is 1234)
A slow blinking yellow LED indicates that the unit is in Program mode. A steady yellow LED, in contrast, means that errors were detected during programming. Error states can be cleared by pressing the asterisk * key.
2. For a **LOG DUMP USER** (Code Only), press:
50 # 2 # user location # code * code *
For a **CARD DUMP**, press:
50 # 2 # user location # ** <present card>
and then present the card at the proximity reader.
(NOTE: A Log Dump User can also be a “card AND Code” or “Card OR Code” user.)
3. Press * to exit Program mode.

NOTE: Entering the programmed dump code or card again subsequently causes the unit to send a Transaction Log to the optional PDA DCD program.

4.5.2.B Printing a Transaction Log Manually

1. Place the prox.pad plus unit in Program mode.
Press:
99 # Master Code * (default is 1234)
A slow blinking yellow LED indicates that the unit is in Program mode. A steady yellow LED, in contrast, means that errors were detected during programming. Error states can be cleared by pressing the asterisk * key.
2. Hold the PDA up to the prox.pad plus IR port steadily (about one or two inches away; the IR port is located to the right of the yellow LED) and then press:
70 # 0 # 0 # **

3. Press * to exit Program mode. The 70 command is logged in the transaction buffer (in memory), providing a reference as to when the log was printed. Refer to the DCD software instructions for details.

4.5.2.C Erasing a Transaction Log

The Transaction Log should be erased from memory after being printed to prevent conflicting logs. To erase the log, enter the following sequence:

```
99 # Master Code * 76 # 0000 # 0000 #  
**
```

Then press * to exit Program mode.

4.5.2.D Printing a Programmed Users List

The Programmed Users List showing all user access information can be printed to the optional PDA software via the unit's IR port. The Print Programmed Users List command is 25.

The prox.pad plus unit can store up to 2,000 user IDs in memory at one time. Each user ID can be a card, a PIN code, or a combination card/PIN code. User data is stored in numbered registers, with register one being known as "user one," register two "user two," etc.

User data is stored in the available memory registers automatically by the unit; you do not have to place data in any particular order. You can store codes or cards in the first five registers and skip some registers, leaving them empty on purpose; you can then continue programming from registers that are out of sequence. This is an important concept since the printed list identifies the memory register (location) for each user's data. It does not print user locations that are not programmed.

1. Place the prox.pad plus unit in Program mode. Press:

99 # Master Code * (default is 1234)]

A slow blinking yellow LED indicates that the unit is in Program mode. A steady yellow LED, in contrast, means that errors were detected during programming. Error states can be cleared by pressing the asterisk * key.

2. Hold the PDA up to the prox.pad plus IR port steadily (about one or two inches away; the IR port is located to the right of the yellow LED) and then press:

25 # 0 # 0 # **

3. When the list is complete, press * to exit Program mode. Refer to the DCD software instructions for details.

By default, this command dumps all users, including empty user locations. The user dump select option (command 30, option 17) lets you change this. If you enable option 17, only programmed users are dumped. To enable, press:

30 # 17 # 1 # **

4.6 Programming Commands

If you need to change any of the program default values or wish to add functions, first enter Program mode and then enter the desired program command. Defaults are in bold.

Action Desired	Press	Details										
To enter Program mode	99 # (Master Code) *	Yellow LED blinks slowly (default Master Code = 1234)										
1. Change Master Code Code-only operation (example, 4321 Master Code)	1 # (new code) * (repeat code) * 1 # 4321 * 4321 *											
2. Assign outputs	10 # virtual output # physical output # **											
	<table border="0"> <tr> <td>Virtual Output</td> <td>Physical Output</td> </tr> <tr> <td>1 - Lock</td> <td>1 - Relay 1 (Main)</td> </tr> <tr> <td>2 - Alarm Shunt</td> <td>2 - Relay 2 (Aux)</td> </tr> <tr> <td>3 - Propped Door</td> <td>5 - Audio Alert #1</td> </tr> <tr> <td>4 - Forced Door</td> <td>6 - Audio Alert #2</td> </tr> </table>	Virtual Output	Physical Output	1 - Lock	1 - Relay 1 (Main)	2 - Alarm Shunt	2 - Relay 2 (Aux)	3 - Propped Door	5 - Audio Alert #1	4 - Forced Door	6 - Audio Alert #2	Entering a zero (0) for a virtual output disables the physical output
Virtual Output	Physical Output											
1 - Lock	1 - Relay 1 (Main)											
2 - Alarm Shunt	2 - Relay 2 (Aux)											
3 - Propped Door	5 - Audio Alert #1											
4 - Forced Door	6 - Audio Alert #2											
3. Set lock output duration	11 # tt # 0 # * *	tt = number of seconds to operate lock on access (1 through 255) defaults to 5 seconds										
4. Delete users	user-location # **											

Action	Press	Details																																
5. Set/clear keypad options	30 # 0 # 0 # **																																	
	<table> <tr> <td>Option</td> <td>Set/Clear</td> </tr> <tr> <td>0-audio keypress feedback,</td> <td>0=off, 1=ON</td> </tr> <tr> <td>1-visual keypress feedback,</td> <td>0=off, 1=ON</td> </tr> <tr> <td>2-auto entry enable,</td> <td>0=OFF, 1=on</td> </tr> <tr> <td>3-Card and PIN required for Program mode</td> <td>0=OFF, 1=on</td> </tr> <tr> <td>5-user lockout enable</td> <td>0=off, 1=ON</td> </tr> <tr> <td>7-internal REX select</td> <td>0=OFF, 1=on</td> </tr> <tr> <td>8-user lockout select</td> <td>0=BY LOCATION, 1=by group</td> </tr> <tr> <td>9-timezones select</td> <td>0=OFF, 1=on</td> </tr> <tr> <td>10-holiday timezone mid-night crossing</td> <td>0=off, 1=ON</td> </tr> <tr> <td>11-auto-unlock select</td> <td>0=OFF, 1=on</td> </tr> <tr> <td>12-first-in auto-unlock</td> <td>0=OFF, 1=on</td> </tr> <tr> <td>13-daylight savings time select</td> <td>0=off, 1=ON</td> </tr> <tr> <td>15-daylight savings time format</td> <td>0=USA, 1=European</td> </tr> <tr> <td>16-anti-passback</td> <td>0=off, 1=ON</td> </tr> <tr> <td>17-user dump select</td> <td>0=all users 1=programmed users only</td> </tr> </table>	Option	Set/Clear	0-audio keypress feedback,	0=off, 1= ON	1-visual keypress feedback,	0=off, 1= ON	2-auto entry enable,	0=OFF , 1=on	3-Card and PIN required for Program mode	0=OFF , 1=on	5-user lockout enable	0=off, 1= ON	7-internal REX select	0=OFF , 1=on	8-user lockout select	0= BY LOCATION , 1=by group	9-timezones select	0=OFF , 1=on	10-holiday timezone mid-night crossing	0=off, 1= ON	11-auto-unlock select	0=OFF , 1=on	12-first-in auto-unlock	0=OFF , 1=on	13-daylight savings time select	0=off, 1= ON	15-daylight savings time format	0=USA , 1=European	16-anti-passback	0=off, 1= ON	17-user dump select	0=all users 1=programmed users only	
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6a. Print programmed user list	25 # 0 # 0# **																																	
6b. Print programmed user list (starting at a certain user)	25 # 0 # start user # **																																	

Action	Press	Details																										
7. Change keypad parameters	32 # parameter # value # **	See options below																										
	<table> <thead> <tr> <th>Parameter</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>0-error lockout threshold</td> <td>1-50 (def=3)</td> </tr> <tr> <td>1-error lockout duration</td> <td>1-255 (def=10 sec)</td> </tr> <tr> <td>3-extended unlock time</td> <td>1-255 (def=10 sec)</td> </tr> <tr> <td>4-site ID (for cmds 51, 57)</td> <td>0-255 (def=11)</td> </tr> <tr> <td>5-user timezone mask (for programming users through the faceplate)</td> <td>0-255 (def=255)</td> </tr> <tr> <td>6-user lockout group</td> <td>0-15 (def=4)</td> </tr> <tr> <td>7-lockout by group operand</td> <td>0-3 (def=0) (see below)</td> </tr> <tr> <td></td> <td>0=lockout users in all other groups</td> </tr> <tr> <td></td> <td>1=lockout users in this group (except lockout users)</td> </tr> <tr> <td></td> <td>2=lockout users in higher numbered groups</td> </tr> <tr> <td></td> <td>3=lockout users in lower numbered groups</td> </tr> <tr> <td>8-Anti-Passback delay</td> <td>2-240 (1/4 sec increments, def=4 or 1 sec)</td> </tr> </tbody> </table>	Parameter	Value	0-error lockout threshold	1-50 (def=3)	1-error lockout duration	1-255 (def=10 sec)	3-extended unlock time	1-255 (def=10 sec)	4-site ID (for cmds 51, 57)	0-255 (def=11)	5-user timezone mask (for programming users through the faceplate)	0-255 (def=255)	6-user lockout group	0-15 (def=4)	7-lockout by group operand	0-3 (def=0) (see below)		0=lockout users in all other groups		1=lockout users in this group (except lockout users)		2=lockout users in higher numbered groups		3=lockout users in lower numbered groups	8-Anti-Passback delay	2-240 (1/4 sec increments, def=4 or 1 sec)	
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	3=lockout users in lower numbered groups																											
8-Anti-Passback delay	2-240 (1/4 sec increments, def=4 or 1 sec)																											
8. Set/clear auto-unlock mask	38 # autz # set/clear # * *	autz - auto-unlock timezone (1-8) Entering a 1 sets the timezone as auto-unlock and a 0 clears it																										
9. Restore system defaults (master user and system options/parameters only)	40 # 00000 # 00000 # * *																											

Action	Press	Details
10. Set system time	41 # hhmm # 0 # **	hhmm=hour/minute, 24-hr format
11. Set system date	42 # mmddy # dow # **	mmddy=month, date, year; dow=day of week, 1=Sunday, etc.
12. Set door number	43 # nnnnn # 0 # **	nnnnn=door number Default=0001 (max number=65535)
13. Set propped door output time	44 # ttt # 0 # **	ttt=propped door time, to nearest 10's seconds, entered as 00-990; default=30 secs entering 00 disables propped door
14. Set forced door output time	45 # ttt # 0 # **	ttt=forced door time, to nearest 10's seconds, entered as 00-990 (00 latches it); default=10 secs
15. Clear eeprom memory and restore default settings	46 # 00000 # 00000 # **	

Action	Press	Details
	User Types 0 toggle code 1 standard access 2 log dump 3 lockout 4 extended lockout 5 single use 6 relock code 7 emergency	
16a. Add code only user	50 # type # location # key pin * key pin *	“code only” user
16b. Add card only user by presentation	50 # type # location # ** <present card>	“card only” user by presentation
16c. Add card AND code user	50 # type # location # key pin * key pin * <present card>	“card AND code” user
16d. Delete user	50 # 0 # location # **	delete user
17. Program 26-bit “card only” user without presenting card	51 # type # location # card pin * card pin *	Location MUST be greater than 2; Master/Supervisor cannot be set as “card only”
18. Program “card OR code” user	52 # type # location # key pin * key pin * * <present card>	
19. Program consecutive “card only” users by presentation	53 # type # start user # ** <present card> <present card> ...	Start user MUST be greater than 2; Master/Supervisor cannot be set as “card only”

Action	Press	Details
20. Enable/disable users	56 # enable/disable # user # **	0 = Enables that user 1 = Disables that user; Master user cannot be disabled; an unprogrammed user cannot be enabled or disabled (generates a program error)
21. Program block of 26-bit "card only" users without presenting cards	57 # number of users # start user # card pin * card pin *	Start user MUST be greater than 2; Master/Supervisor cannot be set as "card only"; uses site ID set in command 32, parameter 4
22. Delete block of consecutive users	58 # start user # start user # number of users * number of users *	
23. Dump transactions to IR port	70 # 0 # 0 # **	This command MUST be used while in Program mode

Action	Press	Details
24. Set/clear event log mask	73 # event # set/clear # **	See options below; all events are logged by default unless stated otherwise below
	Event 1 access denied - invalid PIN 2 program denied 4 REX 5 Propped Door 6 Door Closed 7 Forced Door 16 log dumped by user #N 17 access granted to user #N 19 access denied to user #N, bad timezone 20 toggle mode activated by user #N (latch set) 21 toggle mode de-activated by user #N (latch clear) 22 1st in auto-unlock triggered by user #N 23 door relocked by user #N 24 user lockout enabled by user #N 25 user lockout disabled by user #N 26 access denied to user #N - user is disabled 27 card/code mismatch 29 program mode started by user #N 30 log erased by user #N 32 unprogrammed card data 33 unprogrammed code data 50 log retrieved 51 access denied to user #N, user group lockout	Events 30 and 50 cannot be disabled Events 32 and 33 are disabled by default
25. Reset (erase) transaction log	76 # 0000 # 0000 # **	
26. To exit Program mode	* (after final command)	Yellow stops flashing

Chapter 5: Troubleshooting

Chapter 5 furnishes a Troubleshooting Chart, diagnostic flow charts, a power supply integrity test, and information to correct possible water problems.

5.1 Before Calling IEI

Whenever your prox.pad plus unit experiences difficulty, before calling IEI for help, first refer to the Troubleshooting Chart for answers. If the Troubleshooting Chart does not help, perform the following:

1. Write down the time and date that the problem occurred, or the time and date when you first noticed the problem. Also note what the unit was doing when the problem occurred or was first noticed.
2. Note all other relevant information, paying particular attention to recent updates, new or inexperienced installers/programmers, or any recent hardware changes.
3. Attempt to isolate the problem.
4. Refer to the "Troubleshooting Chart" and flow charts in this chapter. They are designed such that many common problems can be easily diagnosed and corrected by users without IEI assistance.
5. Contact your supervisor or the "technical subject expert" at your facility for assistance for help if you cannot diagnose and correct the problem yourself using steps 1-4 above
6. Contact IEI for help only if using steps 1-5 above fails to resolve the problem. Make sure that you have a written description of the problem (and any steps you may have taken attempting to remedy the problem) before calling for help. **Write**

down the version number of your prox.pad plus unit before calling IEI for help.

Table 5-1. Troubleshooting Chart

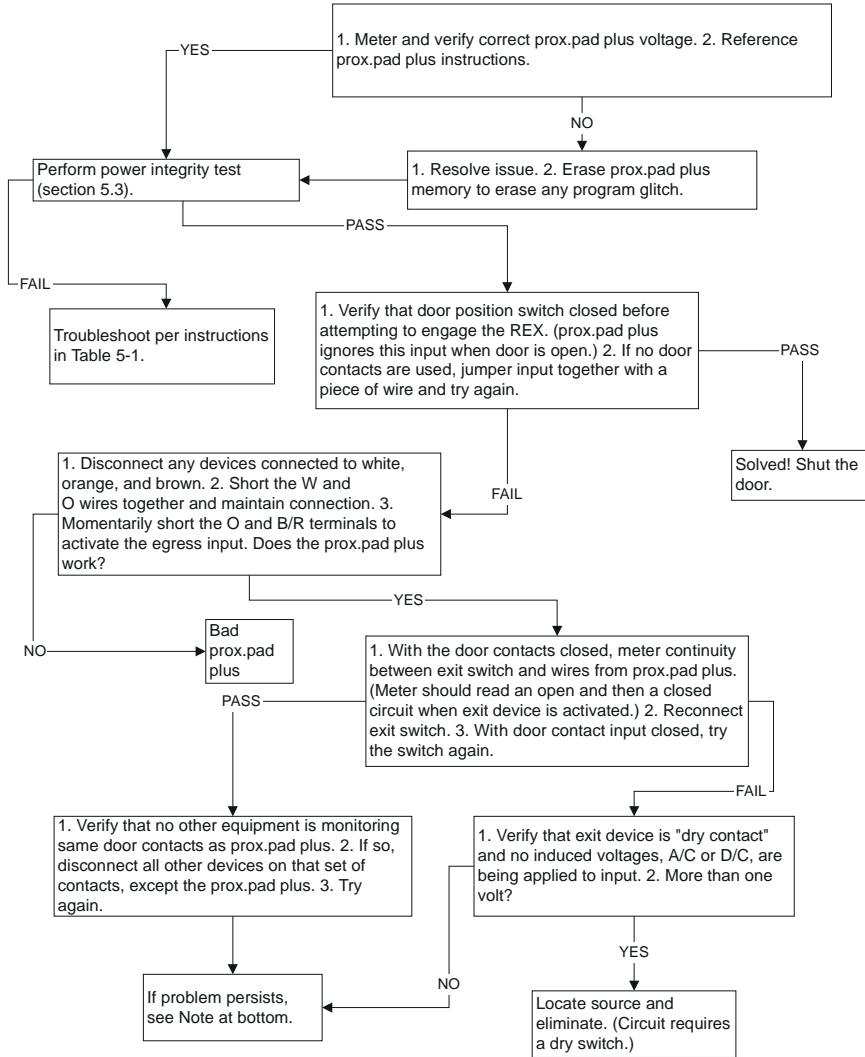
Problem	Probable Cause	Solution
Red LED turns green when access accepted, but door does not open	Various: power supply voltage problems, locking device power supply not set correctly	1. Check power supply voltage. 2. Monitor voltage at unit's V+ and V- terminals (on P1) with meter, enter a valid code, and ensure that voltage remains constant while locking device attempts to unlock and relock. If voltage varies 1/4 volt or more during this test, this is a problem you must correct; look for the following: -verify that power supply is rated sufficiently for all equipment being powered -verify that locking device, if on same power supply, is set up for current being drawn (example: if a lock draws 300mA at 24VDC, same lock may draw 600mA at 12VDC, especially if the unit requires that jumpers be placed in a different configuration -place meter across lock power wires at lock and ensure the lock is receiving proper voltage
prox.pad plus unit experiences reduced read range problems	Various: unit is mounted on a metal surface, or other equipment producing RF interference	For metal surface problems, see section 2.2.3; for RF interference problems, see section 2.2.4.

Table 5-1. Troubleshooting Chart (continued)

Problem	Probable Cause	Solution
<p>prox.pad plus unit not entering program mode when 99 # Master code * is pressed on the prox.pad plus keypad or installer/programmer forgets the "master code"</p>	<p>Various: master code has been changed, is incorrect, or new code not programmed correctly</p>	<ol style="list-style-type: none"> 1. With power to the prox.pad plus unit turned ON, remove the main circuit board from the unit as described in section 2.5. 2. Locate the "Program" button (SW1) underneath the main circuit board and press it for about 2 seconds. Take care if you must pull the circuit board out of the plastic housing. Handle the board by its edges, otherwise, your fingers can short the solder points. Figure 2-7 illustrates the location of this button. (When handling the main printed circuit board, to guard against possible static discharges, touch a grounded object BEFORE touching the prox.pad plus unit.) (The yellow LED blinks slowly, indicating that program mode is active.) 3. To program a new master code, press: 1# new-code * repeat-code * The code can be 1-6 digits, with repeated numbers acceptable. 4. To exit program mode, press *. 5. Continue programming as described in Chapter 4.

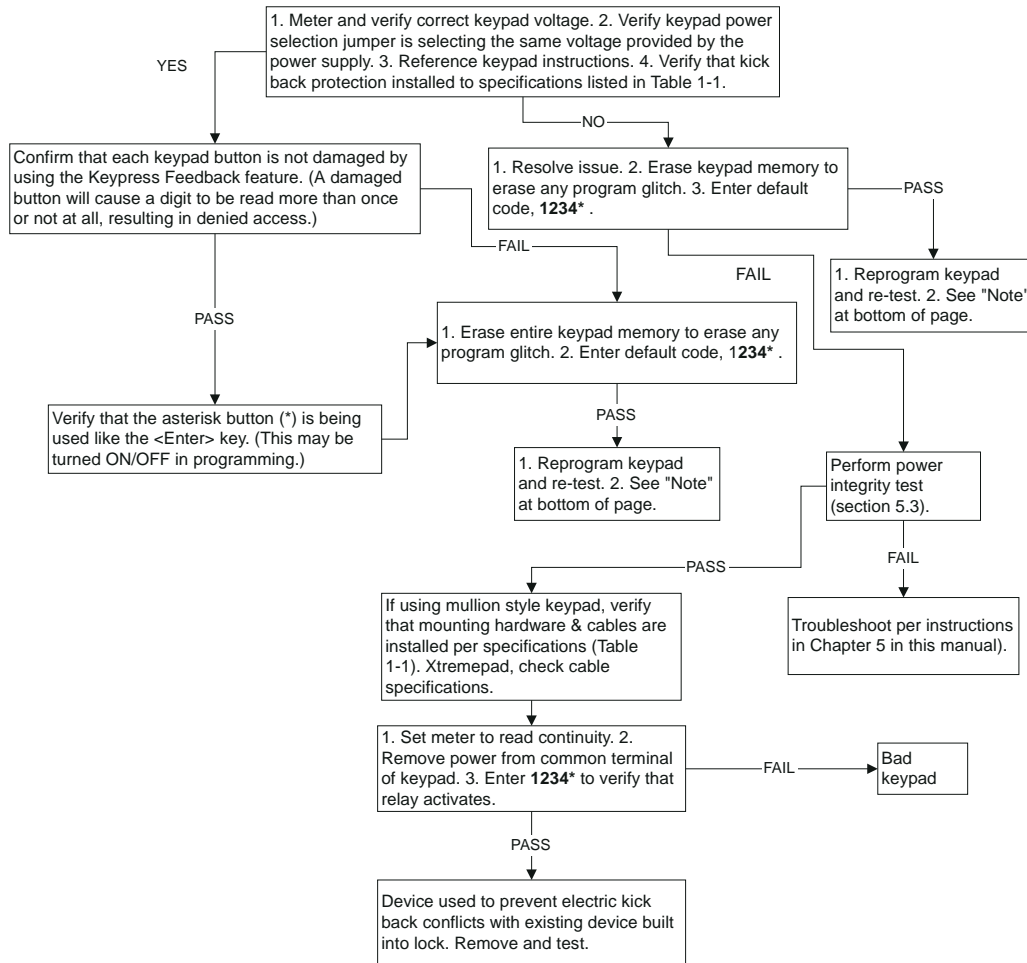
5.2 Flow Charts

External Request to Exit Input Not Activating prox.pad plus



NOTE: A glitch in the prox.pad plus program might result from using a power supply that is not filtered and regulated properly. For extra filtering suggestions, call IEI technical support.

**Programmed Codes Stop Working;
Keypad Buttons Not Working**



NOTE: A glitch in the keypad program might result from using a power supply that is not filtered and regulated properly. For extra filtering suggestions, call IEI technical support.

5.3 Performing Power Supply Integrity Test

This test confirms whether or not the power source is providing sufficient amperage to support all the equipment. It indicates whether or not a stable electrical environment exists by revealing fluctuating voltages during operations. A fluctuation in voltage exists when the equipment draws more amperage than the power supply offers.

As the prox.pad plus unit cycles the equipment ON and OFF, power must remain constant. If a voltage fluctuation of one-quarter volt or more occurs during testing, in either the positive or negative direction, the test results indicates a “fail” response. If the voltage retains proper amplitude (remains constant), the test indicates a “pass” response.

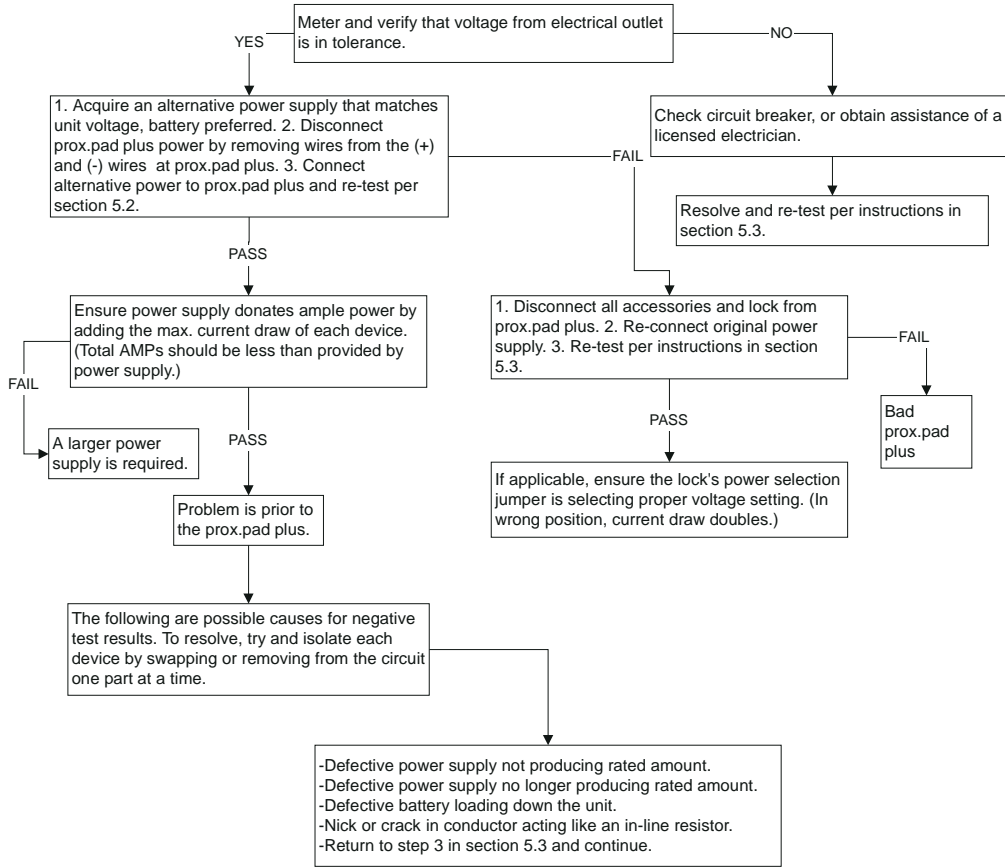
1. Set the meter to read voltage and place meter probes on the red and black wires of P1, located on the prox.pad plus unit. You may have to reference Figure 2-2 for details. If the prox.pad plus unit consists of two parts, a reader and a controller, the terminals are located on the controller. The voltage reading is monitored throughout the entire test.
2. With power being applied to the entire prox.pad plus unit, enter a valid code on the prox.pad plus keypad. The REX input can be used in place of a valid code; the test results remain the same. Reference the keypad circuits diagram for REX input, located in Chapter 2 of this manual.
3. Observe the meter as the keypad cycles the system ON and OFF. The voltage should remain constant during this operation, indicating that the electrical system is stable and adequate.

Constant voltage during the test indicates a "PASS" response. If the voltage changes more than one-quarter of a volt (.25), the test indicates a "FAIL" response.

4. If the test indicates a "FAIL" response, refer to the "Power Supply Integrity Test Indicating Fluctuating Voltage" flow chart on the next page to troubleshoot the unit. If the test indicates a "PASS" response, return to the "External Request to Exit Input Not Activating prox.pad plus" flow chart and resume your work.

Power Supply Integrity Test Indicating Fluctuating Voltage

Fluctuating voltage encountered while performing the test in section 5.3 is the result of defect in the electrical system. This flow chart pertains to units consisting of one power supply providing for one prox.pad plus, one electric lock, and any accessories (for example, motion egress detector).



NOTE: A glitch in the prox.pad plus program might result from using a power supply that is not filtered and regulated properly. For extra filtering suggestions, call IEI technical support.

5.4 Correcting Possible Water Problems

Approximately 3% of all returns (RMAs) are caused by water damage. prox.pad plus units that are mounted outdoors require certain preventive steps to avoid being damaged by water. This section discusses the reasons water can accumulate in keypads and the steps to prevent this.

5.4.1 Silicone

1. Use silicone to seal wire runs and mounting holes.
2. Do NOT seal the cover and base together.

Keypads are designed to direct any water that enters the two constituent pieces, base and cover, towards the bottom and out a drain or weep hole.

5.4.2 Wire Run

Bend the wires before they enter the case to form a drip loop. Often water follows the wires to the connection point of the circuit board and shorts out the terminals to which the wires are connected.

Chapter 6: Miscellaneous Information

6.1 Customer Service Policy

Chapter 6 contains miscellaneous information, such as IEI's customer service policy, returned merchandise authorization policy, and consumables information.

IEI has a Customer Service department to meet the varied service needs of its customers. Examples of department functions include:

- Telephone troubleshooting with technical experts
- Technical assistance to solve specific application questions is handled by the Sales department

IEI's Customer Service department can help customers expedite shipments, contact the proper personnel, or help with special customer requests. To contact IEI's Customer Service department, call (800) 343-9502. A Customer Service Representative is available from 8:00 a.m. to 7:00 p.m. (EST) to:

- check on installation
- request technical assistance
- report a problem
- return products

6.2 RMA Policy

“RMA” stands for Returned Merchandise Authorization.

1. **A warranty claim must be made promptly and must be received during the applicable warranty period by IEI or your authorized IEI distributor.**
2. If it becomes necessary to return a product for repair and/or adjustment, prior authorization from IEI or your IEI-authorized distributor **must** be obtained. Instructions as to how and where these products should be shipped will be provided by IEI or your IEI-authorized distributor.
3. Any product or component returned for examination and/or warranty repair shall be sent to IEI in Canton, Massachusetts, or any of their authorized representatives. All items **must** be returned at the customer’s cost (freight prepaid), quoting a return authorization number which is available from the Service department. All products or components repaired or replaced under warranty will be returned to the customer at IEI’s cost using UPS (United Parcel Service) or an equivalent service.
4. In all cases, IEI or your IEI-authorized distributor has sole responsibility for determining the cause and nature of failure, and IEI’s or the distributor’s determination with regard thereto shall be final.
5. All parts that are replaced under warranty will become the property of IEI.

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