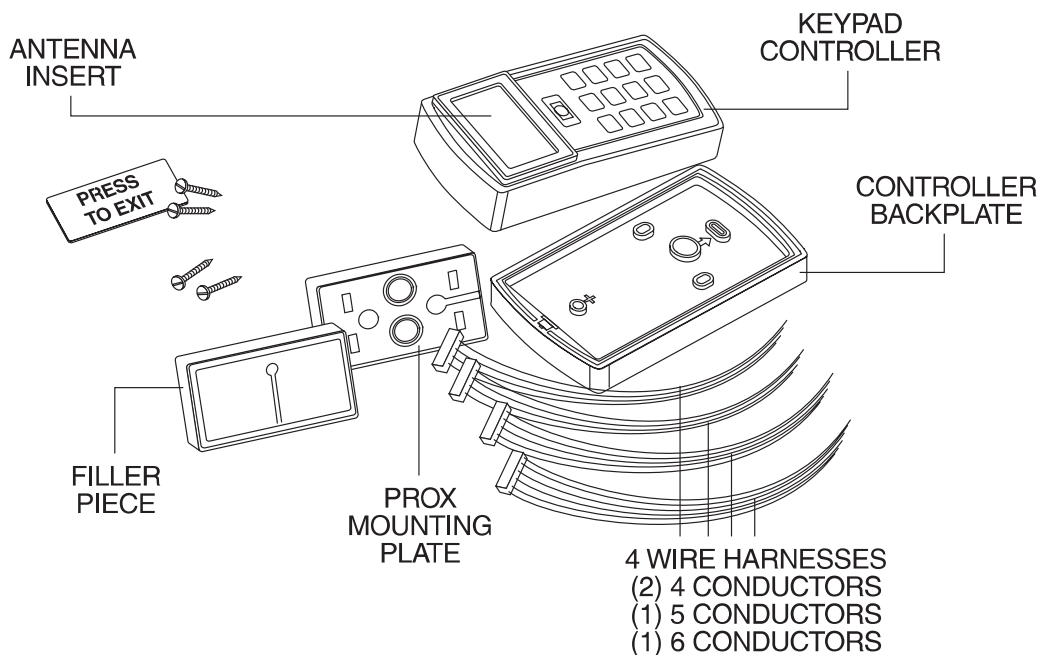


IEI prox.pad™

Proximity Reader/Keypad Access Control



Installation/Programming Manual

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prox.pad Installation/Programming Manual
Part Number 6055676, Rev. 2.0
Fax Document Number: 5748

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Chapter 1: Introduction/ Installation

1.1 About this Manual

This manual is designed for installers of the International Electronics prox.pad Standalone Proximity Reader/Keypad Access Control. The device has three operating modes, Stand-Alone (see Chapter 2), Wiegand Front End (see Chapter 3), and Hub Front End (see Chapter 4). All wiring and programming instructions for a particular mode are grouped in a separate chapter along with related illustrations.

Installation instructions are common to all three modes, and are provided in this chapter.

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 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

Should you experience any difficulty installing the prox.pad unit, please contact your IEI representative, or IEI at the number listed on page ii. **Before calling**

1.6 Warranty

IEI for installation assistance, refer to Chapter 5, Troubleshooting. This chapter includes a list of common system problems, possible causes, and corrective actions plus easy-to-use diagnostic flow charts.

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. You can also download an electronic version of this manual from this site.

International Electronics Incorporated (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 Merchandise 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.

This warranty shall expire two years after shipping date for prox.pad Keypads. Except as stated above, **IEI** makes no warranties, either expressed or implied, as to any matter whatsoever, including, without limitation to, the condition of its products, their merchantability, or fitness for any particular application.

1.7 Items Supplied from the Factory

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

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

1.8 Items the Installer Must Supply

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

- The prox.pad unit works with these four types of cards:
 - Prox Card II
 - IsoProx II
 - Duo Prox II
 - Proxkey FOB
- an appropriately rated DC Power Supply (12 VDC) (filtered and regulated recommended)
- 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 10 feet away from the keypad/controller)
- the Wiegand interface cable [ALPHA 1295C (22AWG) 5-conductor, stranded, either overall shield or equivalent] (this is required ONLY if using a separate Wiegand control panel)
- 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

1.9 General Description

1.9.1 Design Function

The IEI prox.pad Proximity Reader/Keypad Door Access Control provides card and/or keypad access control for a single door. The unit can be installed in a one-stage configuration (which is typical for most users), or a higher security, two-stage (or “remote”) configuration.

In the “secure” (or remote) configuration, the antenna can be detached and mullion-mounted up to a maximum of 10 feet away from the controller/keypad. For installation details, see section 1.15.3.

The prox.pad unit is compatible with all HID proximity cards, with up to 37 bits. Batch programming without the need for the card can be done only with 26-bit HID cards. All programming is performed using the built-in keypad.

These four specific types of users can be programmed with the prox.pad unit:

- 0-Toggle/latch lock
- 1-Normal access
- 2-log Dump
- 3-Lockout

For convenience, proximity cards can be programmed efficiently in a “batch” mode. A user-programmable lock time of 1-99 seconds plus a “latch/toggle” mode are included.

1.10 Operating Modes

During initial installation, the installer programs the prox.pad unit for one of three operating modes, "Standalone," "Wiegand Front End," or "Hub Front End." Only ONE operating mode can be selected at any one time. If you desire Standalone mode (the default, out-of-the-box, mode), no programming is required.

In "Standalone" mode, all decisions to open the door remain with the prox.pad unit, and Wiegand output is turned OFF (for details, see Chapter 2).

In "Wiegand Front End" mode, the card data is sent to the separate Wiegand central panel. This panel then makes all door open/close decisions and lights/turns off the prox.pad LEDs accordingly (for details, see Chapter 3).

In "Hub Front End" mode (also known as "HFE" or "IM" mode), the prox.pad unit is used as a front end with an IEI Hub, Hub+ or Hub Max controller, as well as a front end to a 212 controller such as the one packaged in the 212XT package. Either standard 26-bit or Corporate 1000 prox cards can be employed during HFE mode. No other format cards can be used. The PIN data is extracted from these card types and sent to the Hub, Hub+, or Hub Max controller for verification (for details, see Chapter 4).

In all operating modes, the prox.pad unit maintains programmability so that prox.pad system parameters can be set. The default factory setting during programming is for the unit to "time out" after 45 seconds of inactivity.

1.11 prox.pad Operation

Once installed and programmed successfully, in Stand-alone mode, the prox.pad 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.

If the prox.pad unit is programmed for “Wiegand Front End” mode or “Hub Front End” mode, either the Wiegand panel or the Hub, Hub+, or HubMan controller makes the access decision and controls the lock relays; all relay outputs on the prox.pad unit are disabled.

The prox.pad 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 controller allows for printing of the Transaction Log and the Programmed User List to an optional hand-held IR printer. Section 2.8 discusses printing reports.

Table 1-1. prox.pad Specifications

ELECTRICAL	
Power Supply/Current Requirements	10-15 VDC, linear filtered and regulated power supply (not including door locking device or peripherals); 500 mA
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)
Wiegand Interface Cable	ALPHA 1295C (22AWG) 5-conductor, stranded, either overall shield or equivalent (this is required ONLY if using a separate Wiegand control panel)
Power Supply Cable	18AWG - 22AWG 2-wire stranded (depends upon distance)
Door Lock Cable	18AWG - 22AWG 2-wire stranded (depends upon distance)
Door Monitor Cable	18AWG - 22AWG 2-wire stranded (depends upon 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 4A)
	Aux Relay - Form C (switches up to 1A)
MONITOR INPUTS	
	Door Position (Normally Closed, dry contact)

OTHER OUTPUTS	
	Infrared output to optional IR printer
	Wiegand output to separate control panel
SOUNDER	4000 Hz, defeatable
LEDs	
	Bi-Color (red/green)
	Amber
COMPATIBLE PROXIMITY CARDS	
	All HID cards up to 37 bits, including the following:
	Prox Card II
	IsoProx II
	Duo Prox II
	Proxkey FOB
UNIT CAPACITY	
Users (Standalone)	2,000 users maximum; each user can have a card/tag, a PIN code, or a card/tag PLUS a PIN code
Transactions (Standalone)	1,000 transactions maximum; each transaction includes time, date, user "slot number," and event
Strike Time (Standalone)	1-99 seconds
Strike Mode (Standalone)	Access Time or Toggle/Latch
ALARM OUTPUT (Standalone)	
	One of three functions can be wired: Alarm Shunt Relay, Forced Door Relay, or Propped Door Relay

NOTE: IEI recommends that first-time installers test the prox.pad unit BEFORE actually mounting and wiring the unit to become familiar with its operation (see section 2.6).

1.12 Installation Configurations

It is the installer's responsibility to determine the appropriate prox.pad 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 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 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 case.
- **Secure** installation (or "two-stage" configuration), for higher security. In this configuration, the prox.pad 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.

1.13 Other Installation Considerations

Sections 1.13.1 - 1.13.5 describe important considerations the installer must decide upon before actually starting to install and wire the prox.pad unit.

1.13.1 Power Supply/Current Requirements

Power for the prox.pad 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 unit and the selected locking device. When using one power supply for both the prox.pad 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.

1.13.2 Gang Box and Mounting

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

1.13.3 Mounting the Unit on Metal

The prox.pad 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 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.

1.13.4 RF Interference

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

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

1.14 Checking the Cables

Figure 1-1 below provides a detailed illustration of the prox.pad's wiring harness. Figure 1-2 illustrates the Pin connectors on the main circuit board; Table 1-2 describes these four Pin connectors, P1, P2, P3, and P4.

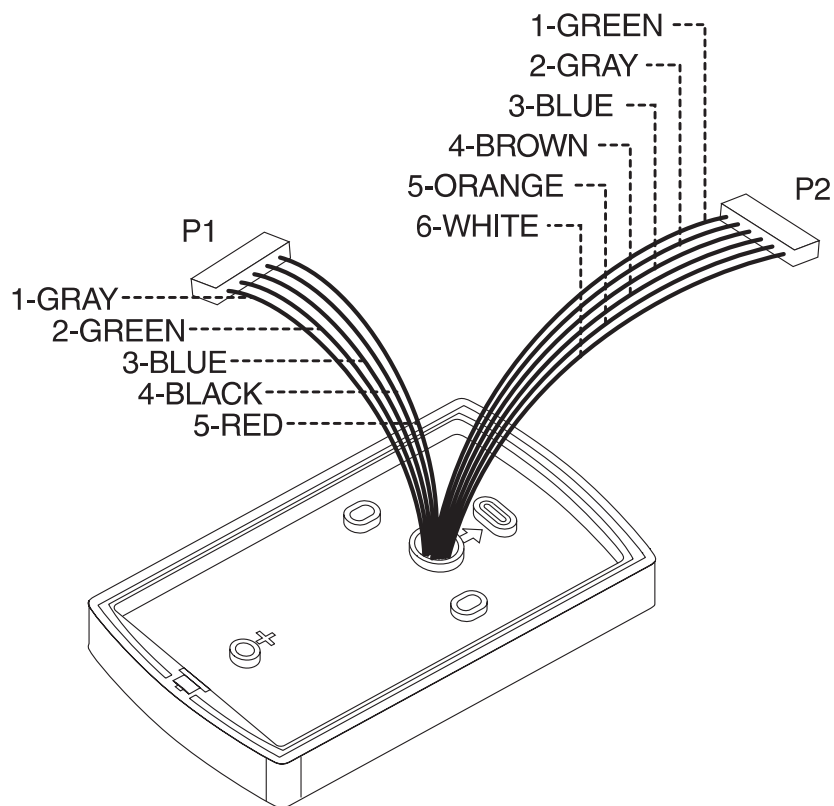


Figure 1-1 prox.pad Wiring Harness

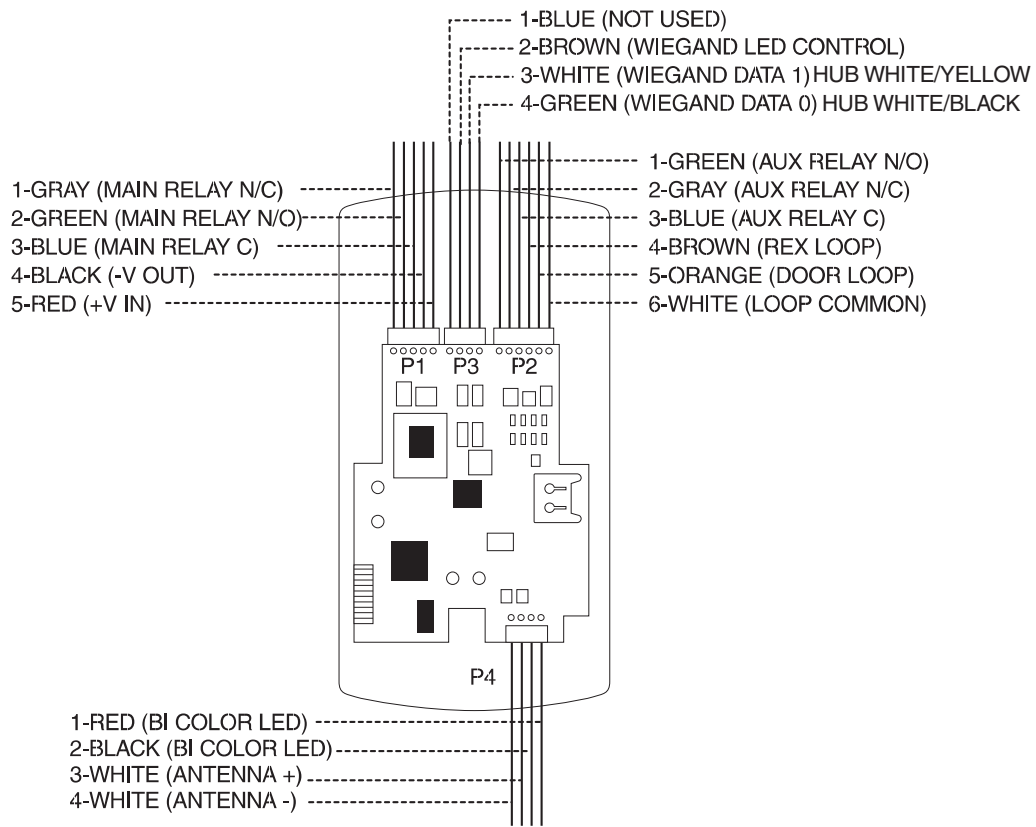


Figure 1-2 Identifying Pin Connectors

Table 1-2. prox.pad 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
P2 (6-pin connector, top right-most location)	5	RED	Power In, +12 VDC
	Pin	Wire Color	Use
	1	BLUE	Not used
	2	BROWN	Wiegand LED Control, user-assigned
	3	WHITE	Wiegand Data 1
P3 (4-pin connector, Wiegand operation, top middle location)	4	GREEN	Wiegand Data 0
	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)
P4 (4-pin connector, bottom location)	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.		
	Pin	Wire Color	Use
	1	RED	Bi-Color LED (Red +)
	2	BLACK	Bi-Color LED (Green +)
3	WHITE	Antenna (no polarity)	
4	WHITE	Antenna (no polarity)	

Table 1-3. 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	IR Printer (IEI part number 0291000)
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)

1.15 Mounting the prox.pad Unit

Select one of these three installation configurations, wall mount, glass mount, or secure as appropriate for this installation. Then refer to sections 1.15.1 - 1.15.3.

1.15.1 Performing a Wall Mounted Installation

This section provides general considerations when performing a wall mounted installation. Typically, the prox.pad unit is mounted on a flat, level surface (dry-wall, 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 unit is wall mounted outside the access area on the unsecure side of the door.

Figure 1-3 illustrates the components on the prox.pad 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 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 unit.
3. Disconnect the controller backplate of the prox.pad 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. Connect the front keypad/controller to the back housing.
6. Pull the prox.pad wiring through the wiring exit as appropriate.
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).

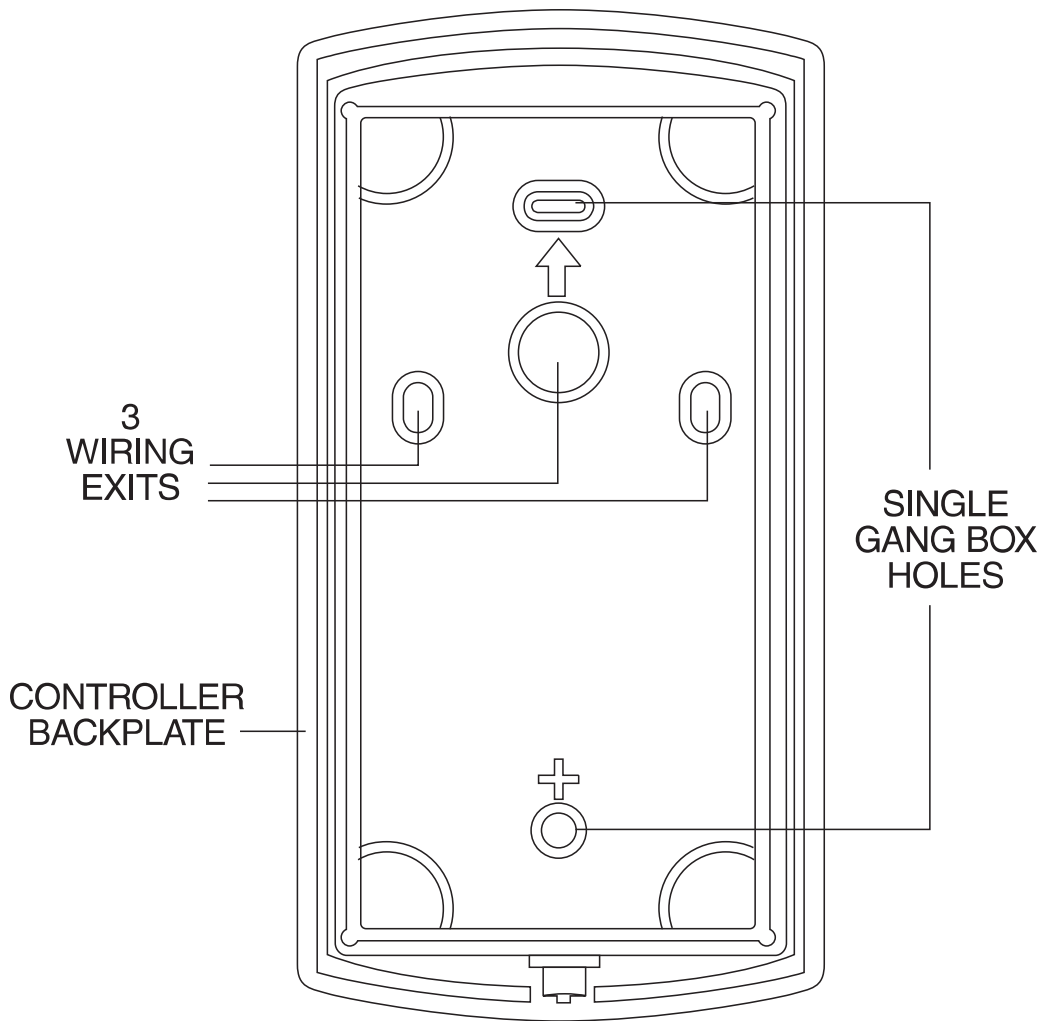


Figure 1-3 Performing a Wall Mounted Installation

1.15.2 Performing a Glass Mounted Installation

Figure 1-4 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 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 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).

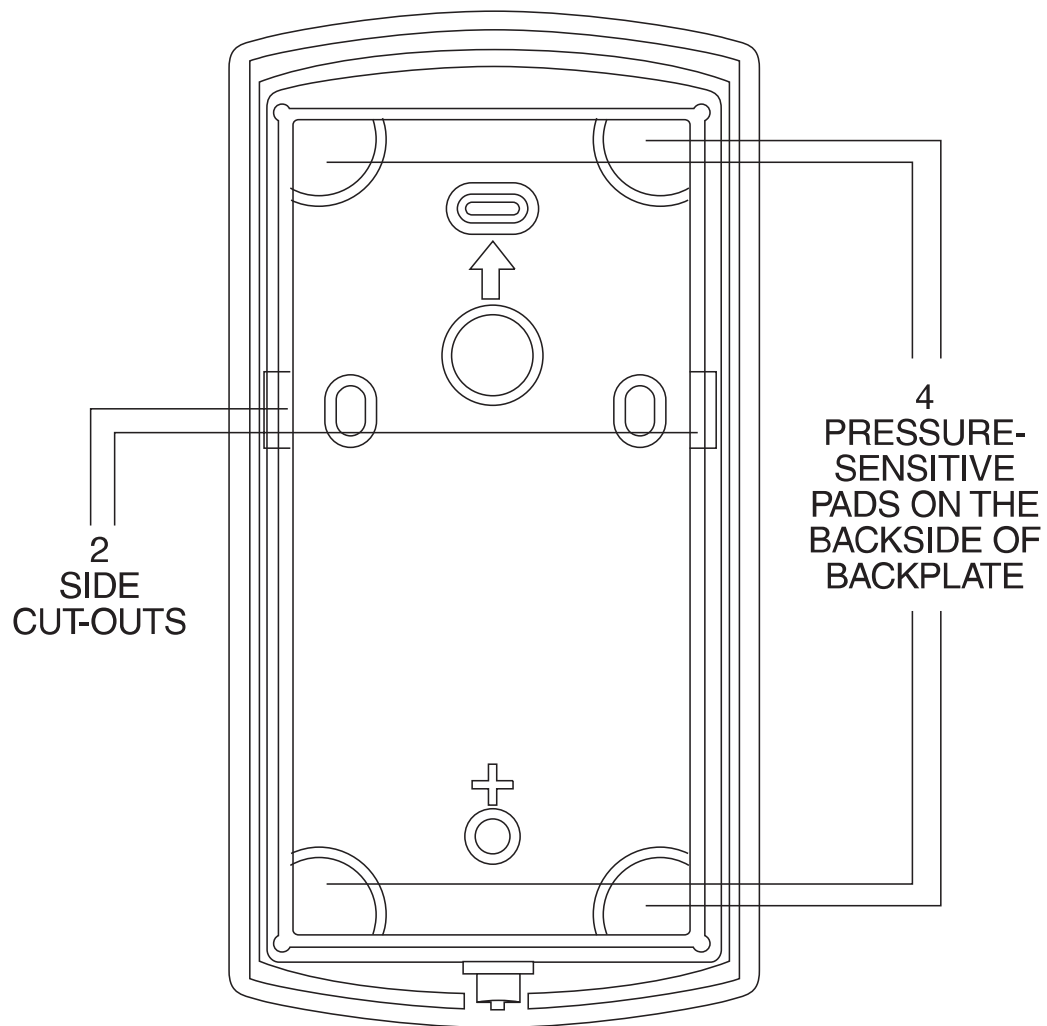


Figure 1-4 Performing a Glass Mounted Installation

1.15.3 Performing a Secure Installation

In this configuration, the prox.pad 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 keypad/controller as described below:
 - Disconnect the backplate of the prox.pad 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 unit. Remove the main printed circuit board by pressing the two spring tabs in the direction of the arrows as shown in Figure 1-5. 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 1-5) until the sensor housing “pops out.”
2. Prepare the wiring and extension wiring as follows:
 - Cut off the plastic end of the prox.pad 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.

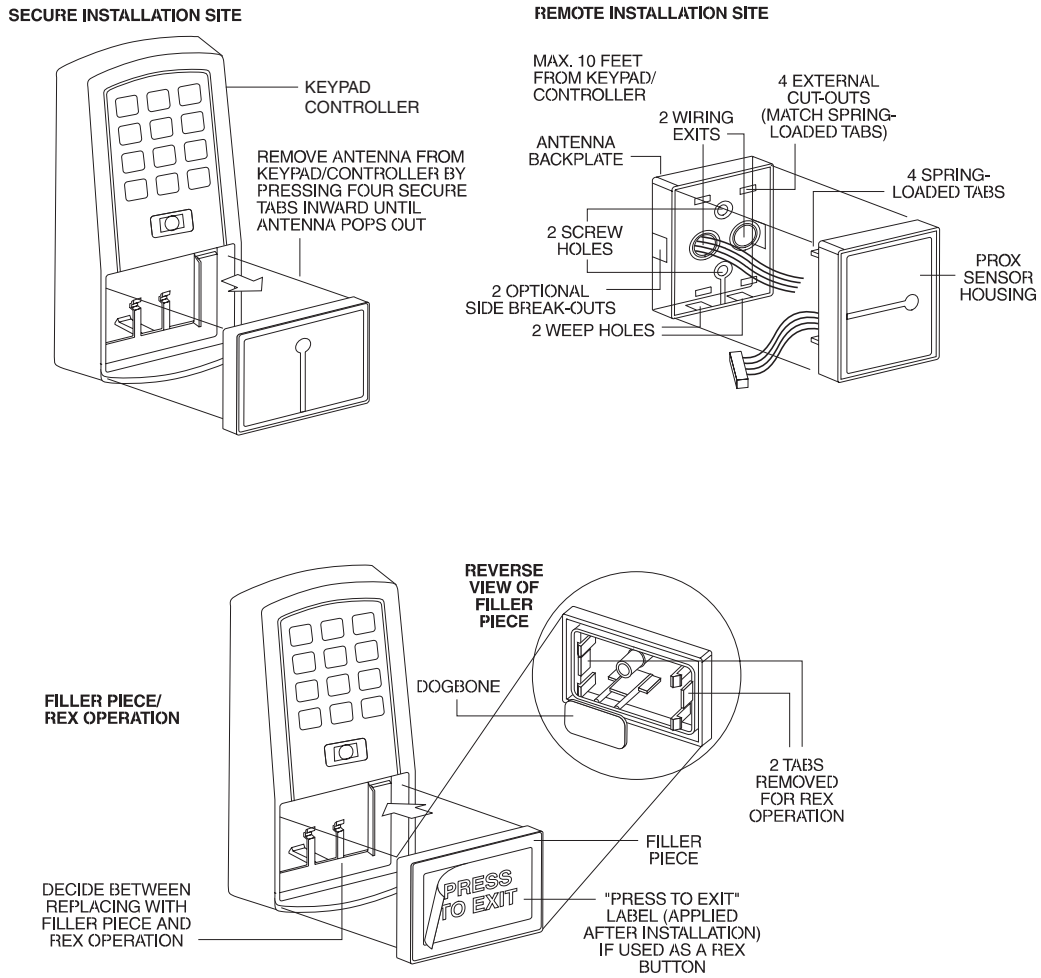


Figure 1-5 Performing a Secure Installation

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 1-5. 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).

1.16 Inserting Circuit Boards

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

1. Disconnect the back housing of the prox.pad 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 unit.)** Remove the main printed circuit board by pressing the two spring tabs in the direction of the arrows as shown in Figure 1-6. Be careful with the wires.

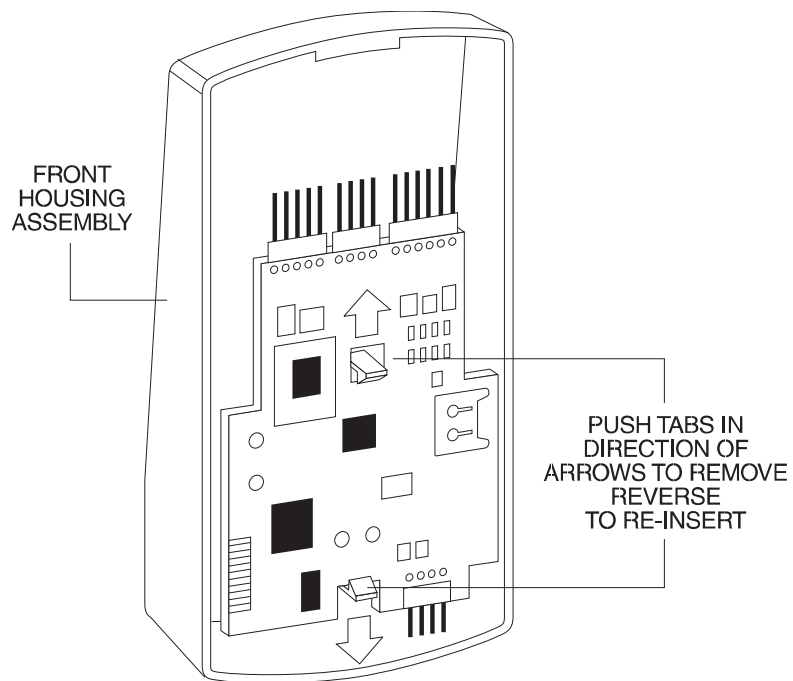


Figure 1-6 Removing/Inserting Printed Circuit Board

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.

1.17 Defaulting prox.pad Memory

If necessary, the prox.pad main memory can be defaulted. This procedure explains how to do this; see Figure 1-7 on the next page. You would default the memory, if, for instance, static discharges have corrupted the prox.pad 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 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 1-2. Table 1-2 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 unit.)**

2. 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.

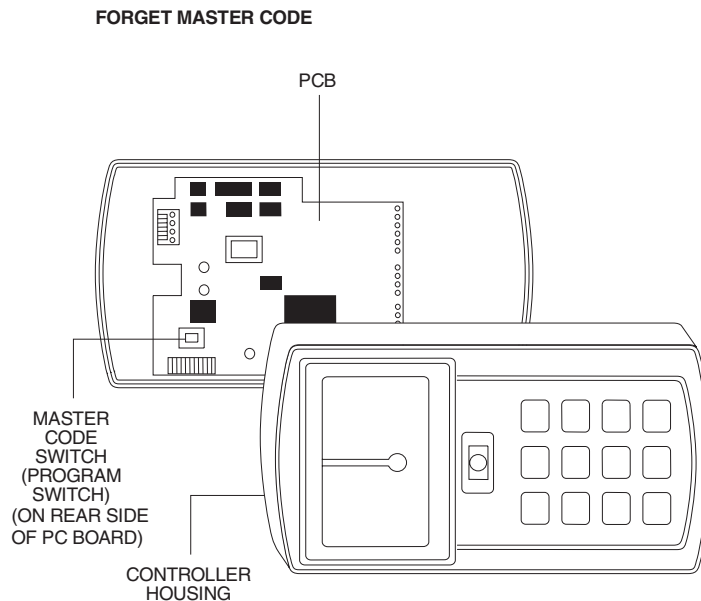


Figure 1-7 Program Button Location on Main Circuit Board

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 unit, connect the Door Loops input to the “Loop Common.” This prevents “Forced Door” or “Propped Door” conditions from developing upon power-up.

Chapter 2: Standalone Mode

Chapter 2 describes Standalone mode and supplies wiring diagrams, general programming information, and a programming chart specific to Standalone mode.

2.1 Standalone Mode Description

Standalone mode is the default, out-of-the-box mode of the prox.pad unit as shipped. No programming is required to place the unit in Standalone mode. In this mode, all decisions to open the door remain with the prox.pad unit, and Wiegand Front End and Hub Front End outputs are turned off.

Once installed and programmed successfully, in Stand-alone mode, the prox.pad 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.

2.1.1 New Stand-alone Features

The following is a list of new Standalone mode features, each of which is discussed in detail later in this chapter.

- Batch Load by Presentation (26 bit to 39 bit) in Stand-Alone mode
- Delete a block of users in Stand-Alone mode
- Timed Anti-Passback in Stand-Alone mode
- Set the duration for Anti-Passback between 1/2 sec to 60 sec in 1/4 sec increments
- Invalid PIN Lockout (IPL) in Stand Alone mode

- Set threshold between 1 and 50 invalid attempts before the IPL event is triggered.
- Triggers Forced Door (local sonalert or AUX relay for silent alert)

OR

- Triggers Timed Lockout
- (Set the timed lockout between 5 sec and 21 min in 5 sec increments)
- The Access By Facility feature has been extended to include both 26 bit and Corporate 1000 cards. The type of card being used, and the Facility code **must** be set prior to operation.

NOTE: Uses and Installation Configurations IEI prox.pad Proximity Reader/Keypad Door Access Control can be installed either indoors or outdoors; for installation details, see section 1.15.

2.2 Inputs/Outputs

Two monitor inputs, "Door Position" [Normally Closed (N.C) dry contact] and "Request to Exit" [REX, Normally Open (N.O.) dry contact] are supplied.

Additionally, these two relay outputs are supplied, "Lock Relay - Form C," which switches up to 4A (Main), and "Aux Relay - Form C," which switches up to 1A (Aux).

Data output to an optional Infrared (IR) printer via the IR interface and Wiegand output for use with a separate central access control panel are also provided on-board the prox.pad unit.

2.3 Unit Capacity

The prox.pad unit can accommodate up to 2,000 users. Each user can have a card/tag, a PIN code, or a card/tag plus a PIN code. The specific four user access configurations include (for details, see section 2.7.3):

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

A maximum of 1,000 time-stamped transactions can be stored in the prox.pad unit. Each transaction includes these parameters: Time, Date, User "slot number," and event. A complete Transaction Log can be printed to an optional IR printer via the built-in IR interface. For printing details, see section 2.8. The type of Transaction Log is "First In, First Out." The oldest transaction gets deleted when the new one is added.

2.4 Alarm Output Selection

During initial installation, the prox.pad unit's AUX relay output is wired to trigger ONE of three events. Consequently, the installer must know which of these events is appropriate for each installation.

- Alarm Shunt Relay
- Forced Door Relay
- Propped Door Relay

Separate instructions and wiring diagrams for each of the above applications are provided in Chapter 1.

NOTE: The capability provided by the internal local sounder (an audible alarm) is separate from the 1A AUX relay. The sounder can trigger regardless of how the AUX relay is programmed.

2.5 Wiring the prox.pad Unit

Select one of these three wiring options, Alarm Shunt, Forced Door, or Propped Door, depending on how the prox.pad's alarm output is to be employed for this installation. Then refer to sections 2.5.1 - 2.5.3 as appropriate.

2.5.1 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. No programming is required for a new unit out-of-box, or if the unit is ever defaulted using programming commands 40# and 46#. The prox.pad controller assigns the AUX relay to the Alarm Shunt Relay automatically upon any valid access or egress. To incorporate this feature, follow the steps below; see Figure 2-1.

2.5.1.A Wiring the Alarm Shunt Relay

1. Turn OFF power to the prox.pad 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 2-1.
4. Connect the green wire to the "Common" side of the door contact.
5. Connect the blue 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 2-1.**

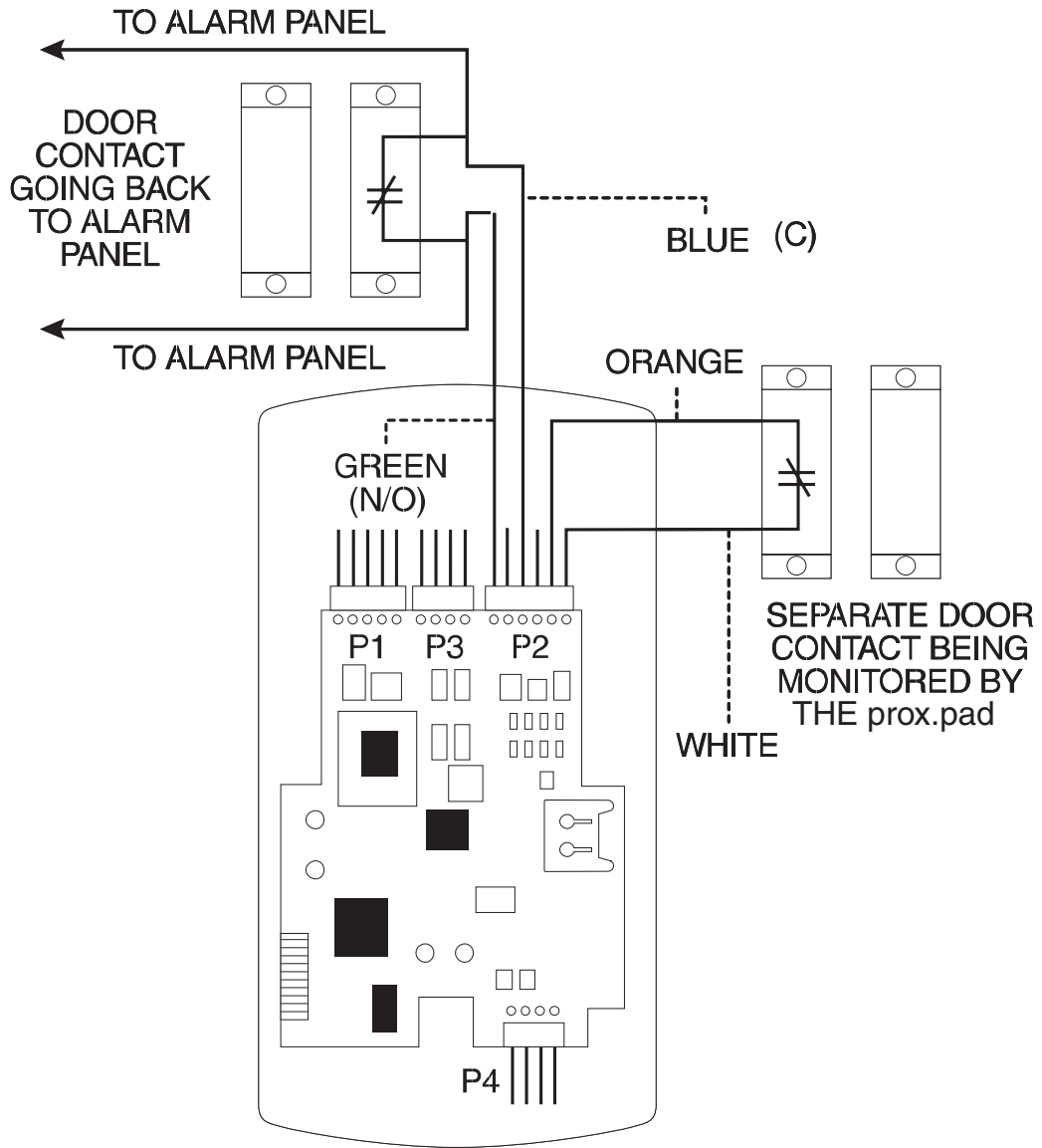


Figure 2-1 Wiring the Aux Relay for Alarm Shunt Operation

2.5.2 Wiring the AUX Relay for Use as Forced Door

The Forced Door output function informs personnel that the door has been opened without authorization. The Aux relay is rated to handle one amp 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 2-2.

2.5.2.A Wiring the Forced Door Relay

1. Turn OFF power to the prox.pad 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.)
4. Connect the green wire to V+ on the warning device.
5. Connect the blue wire to V+ on the power supply.
6. Connect V- from the power supply to V- on the sounder. The gray wire is not used.

NOTE: To use the default 10-second Forced Door Relay time, no programming is necessary. To change this default (from 10 to 900 seconds), enter the appropriate programming after the unit is installed successfully; for details, see section 2.7.

NOTE: PROGRAMMING FOR FORCED DOOR
—To program for Forced Door, enter the following on the keypad: **15 # 2 # 0 # ****

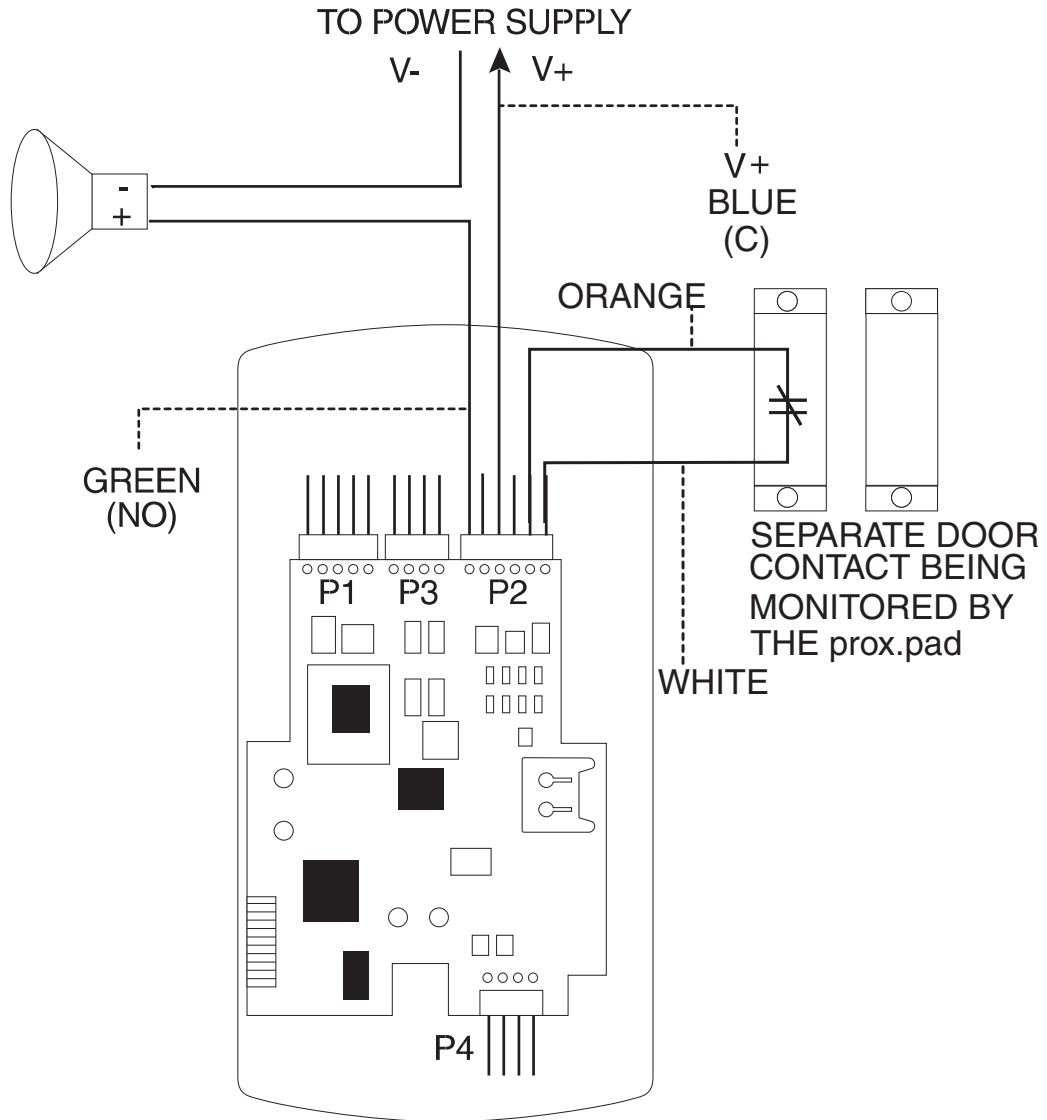


Figure 2-2 Wiring the Aux Relay for Forced Door Alarm

2.5.3 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. The Aux relay is rated to handle one amp 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 2-3.

2.5.3.A Wiring the Propped Door Relay

1. Turn OFF power to the prox.pad 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.)
4. Connect the green wire to V+ on the sounder.
5. Connect the blue wire to V+ on the power supply.
6. Connect V- from the power supply to V- on the sounder. The gray wire is not used.

NOTE: To use the default 30-second Propped Door Relay time, no programming is necessary. To change this default (from 30 to 900 seconds), enter the appropriate programming after the unit is installed successfully; for details, see section 2.7.

NOTE: PROGRAMMING FOR PROPPED DOOR—To program for Propped Door, enter the following on the keypad: **15 # 3 # 0 # ****

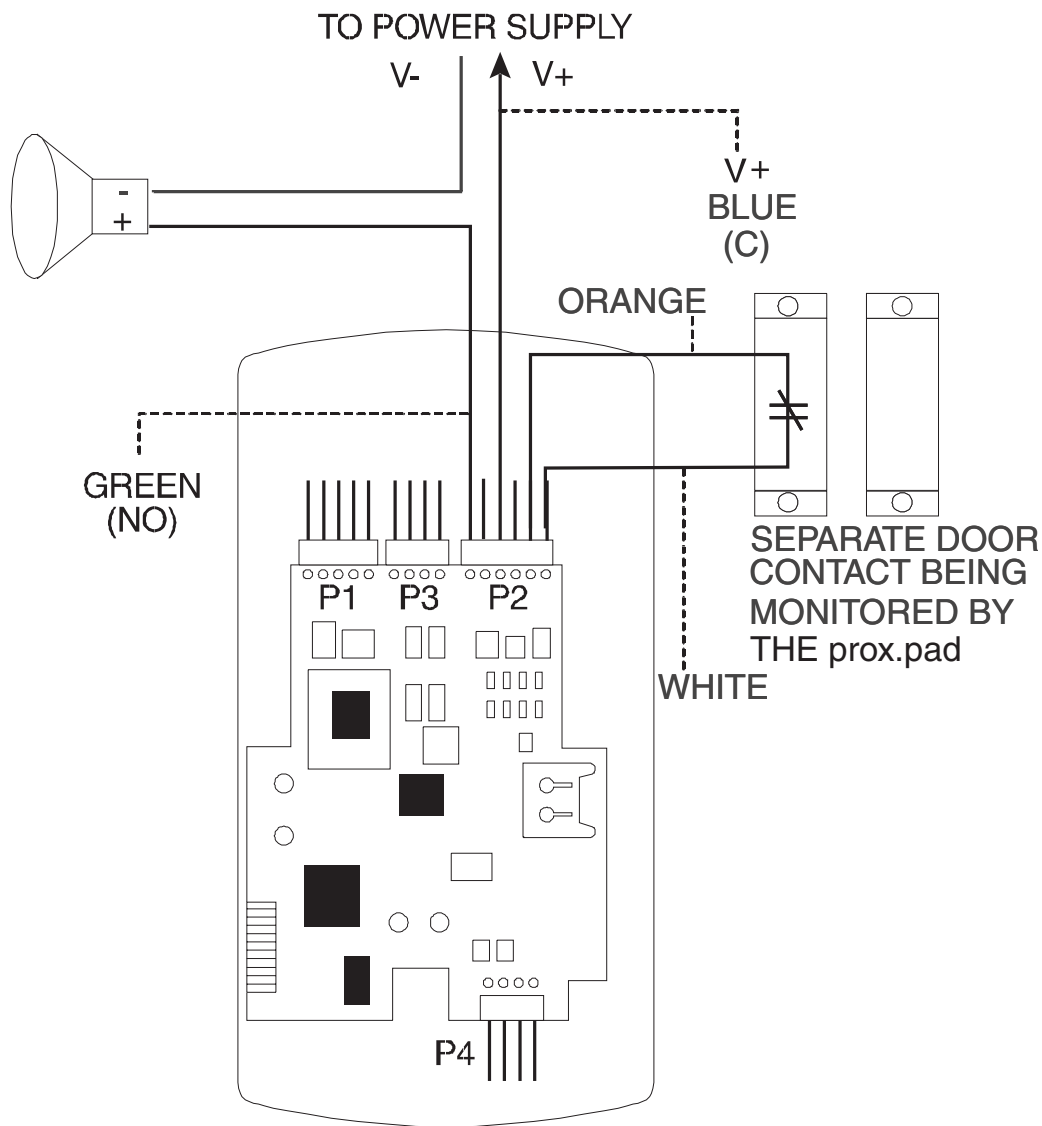


Figure 2-3 Wiring the Aux Relay for Propped Door Alarm

2.5.4 Wiring the Door Contact Input

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 main relay timer, resetting the door open time as soon as the prox.pad unit senses that the door is open. A long door open time allows people sufficient time to carry packages from the proximity reader/key-pad 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 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 2-4.

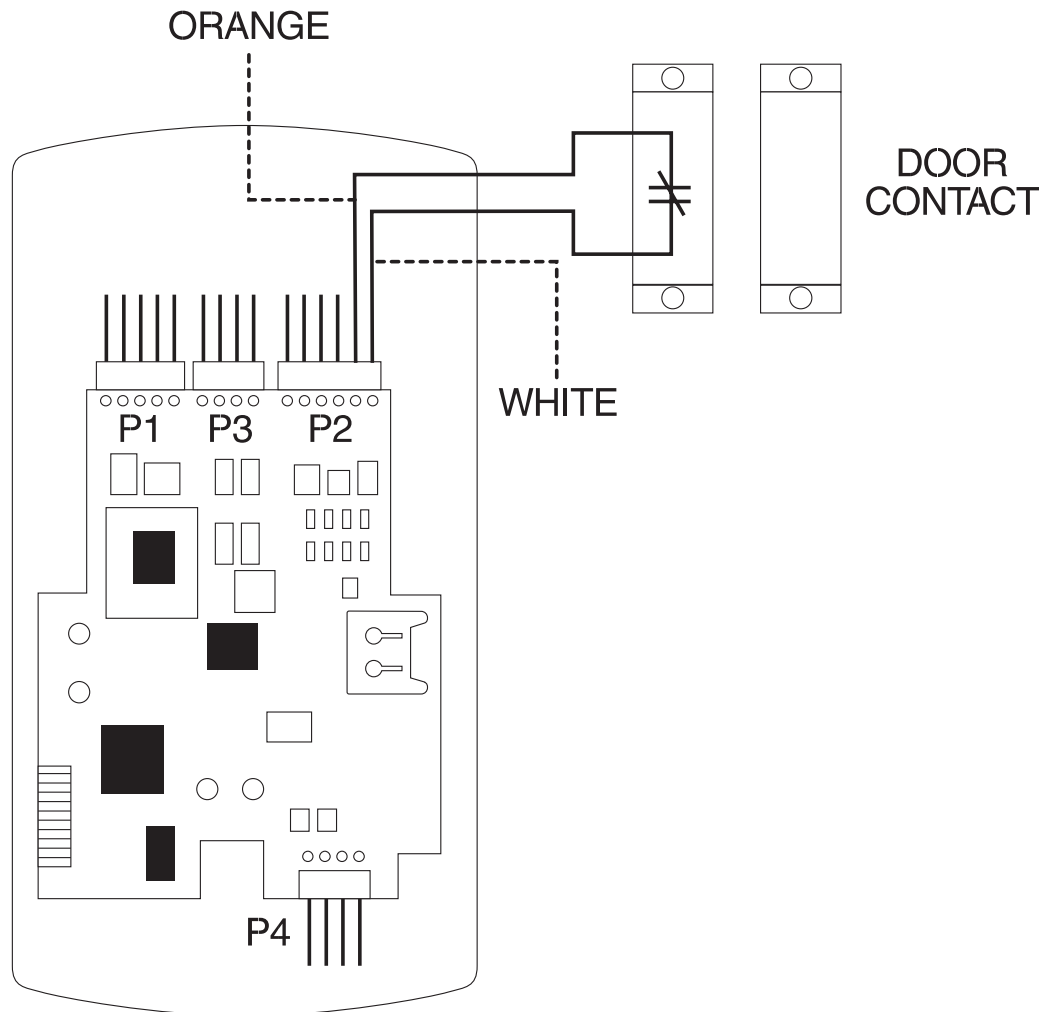


Figure 2-4 Wiring the Door Contact Input

2.5.5 Wiring the REX Switch (Request to Exit)

The prox.pad unit can be wired to monitor a remote switching device, which is intended to be installed on the “safe” side of a door. The Request to Exit (REX) switch is a momentary input closure that engages the main relay for the same length of time for which the main relay is programmed. This feature can be stored in the Transaction Log for viewing.

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. 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 REX feature requires no programming; simply wire the unit as illustrated in Figure 2-5. To incorporate this feature, follow the steps below:

1. Turn OFF power to the prox.pad 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.)
4. **If you do not wish to install the door contacts per Figure 2-5, 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.

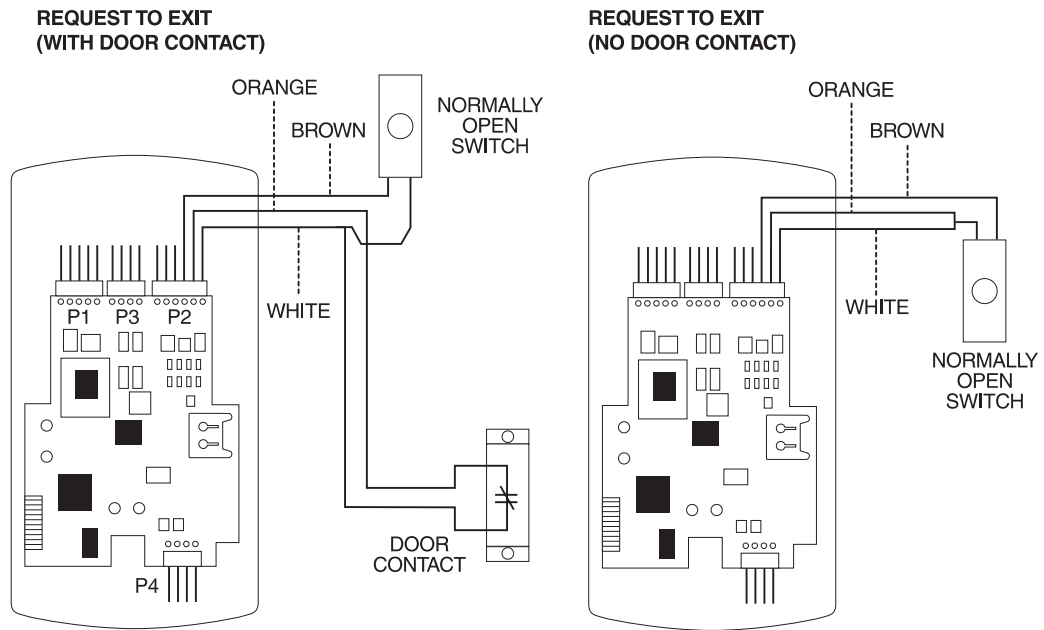


Figure 2-5 Wiring the REX Switch

2.5.6 Wiring the Main Relay

The door lock is wired to connector P1 on the prox.pad main circuit board. Wiring for this 5-pin connector is described in Table 1-2, Figure 2-6 provides an Electric Strike (Fail Secure) wiring diagram, Figure 2-7 a MagLock (Fail Safe) wiring diagram. Refer to the power supply recommendations in section 1.13.1 if necessary.

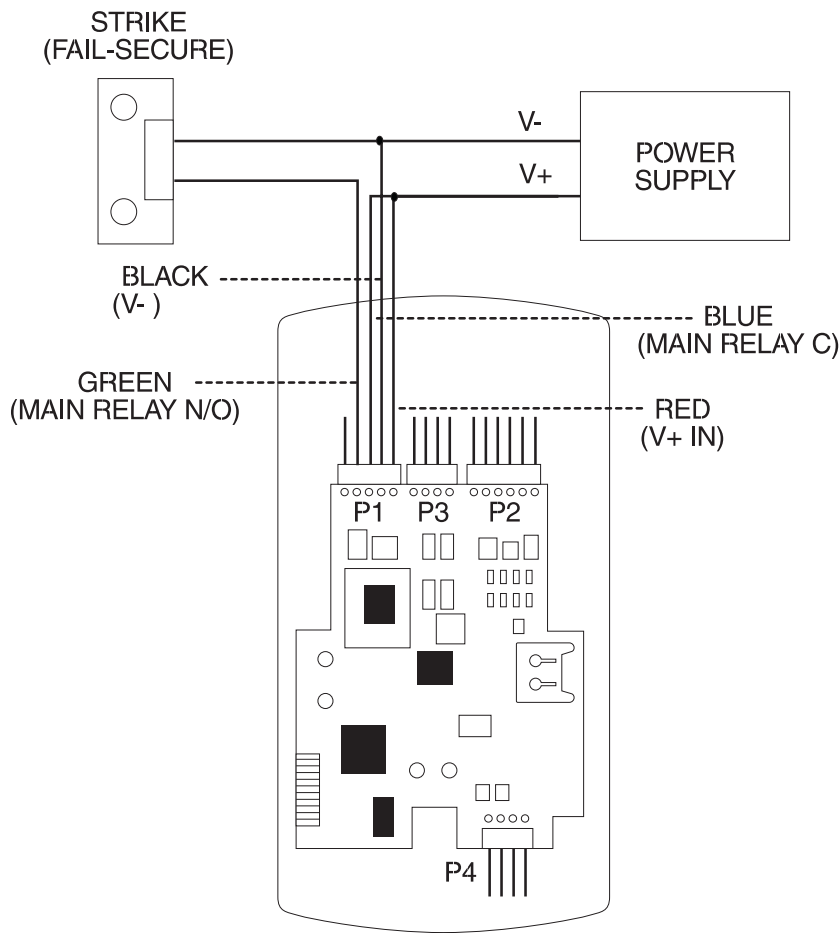


Figure 2-6 Electric Strike (Fail Secure) Wiring Diagram

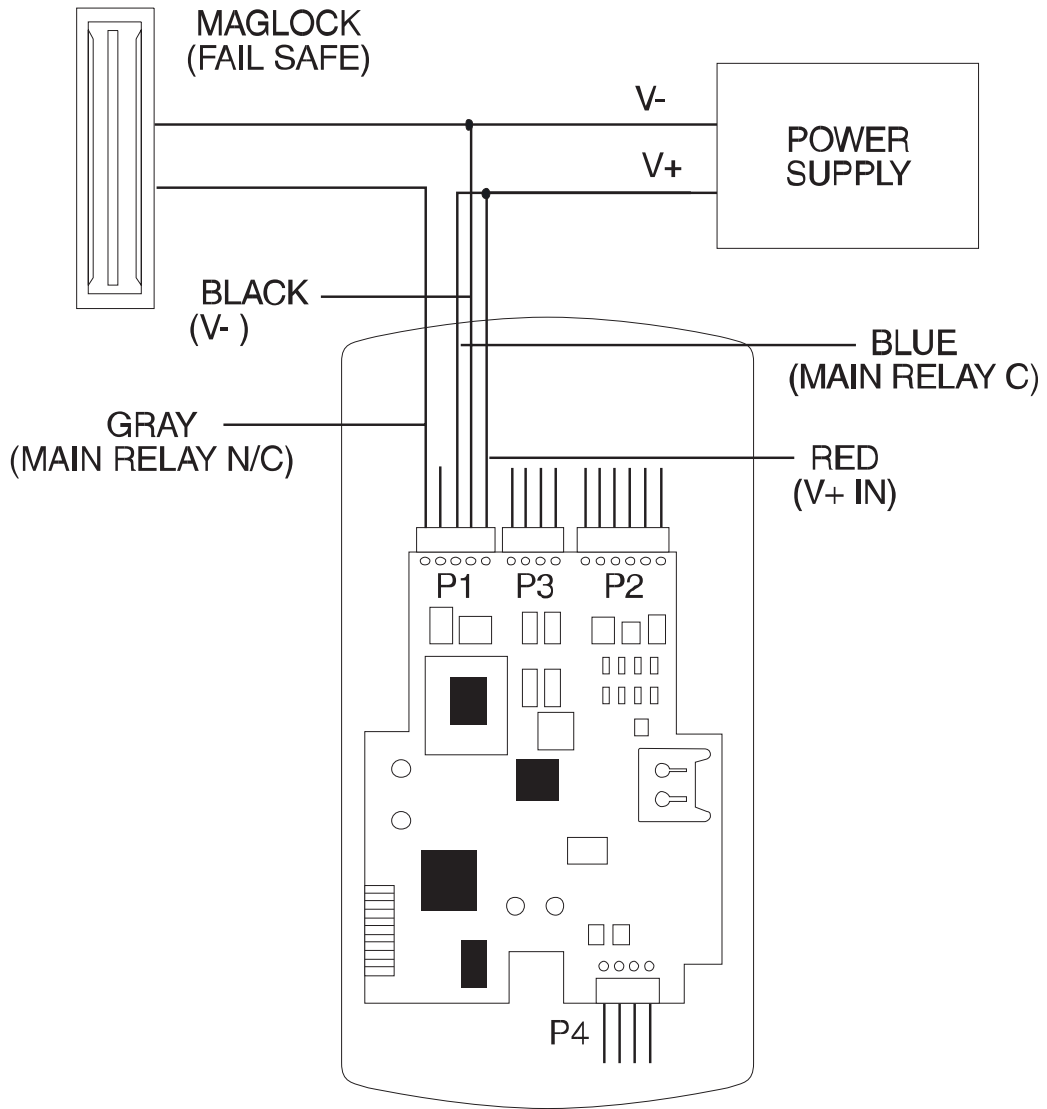


Figure 2-7 MagLock (Fail Safe) Wiring Diagram

2.6 Testing the prox.pad

At this point in a typical installation, it is assumed that the prox.pad 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 unit BEFORE actually mounting and wiring the unit to become familiar with its operation.**

2.6.1 Testing the Controller/Keypad

1. Connect the positive (+) lead of the power supply to the V+ input on the prox.pad controller/keypad.
2. Connect the negative (-) lead of the power supply to the V- input on the prox.pad controller/keypad.
3. Turn ON the power supply.
4. Ensure that the bi-color LED (red and green) on the prox.pad unit lights red.
5. On the prox.pad controller/keypad, press:
7890 # 123456 *

If all 12 key presses are verified, the prox.pad 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.

6. Enter the master code on the keypad by pressing:
99 # Master Code * (default is 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 section 2.7.

2.7 Programming in Standalone Mode

Section 2.7 provides information about programming the IEI prox.pad unit. **Certain parameters must be programmed upon initial installation, such as changing the default Master Code (section 2.7.1.A.)** Section 1.17 describes how to default the memory, to recover from possible static discharges, which may be required.

2.7.1 Programming from the Keypad

The first step in programming the prox.pad unit is to place it into program mode. You can verify that the unit is in program mode as the yellow LED blinks slowly; when the yellow LED stops blinking and is OFF completely, the unit is no longer in program mode. If the desired programming is not understood by the unit or is entered incorrectly, the yellow LED remains steadily lighted; this signals that you should press * to clear the error condition and then re-enter the code. If the unit does not go into program mode, refer to the Troubleshooting Chart in Chapter 5.

2.7.1.A Master Code

To place the unit in program mode, you must first enter 99 # followed by the “master code,” which is the code that is stored in the user slot. (If you forget the master code, pressing the SW 1 or Program button on the main circuit board accomplishes the same thing. See the second problem/solution in Table 5-1 for details.)

To place the prox.pad unit in program mode, press:

99 # Master Code *

NOTE: “1234” is the default master code, which IEI recommends that you change right away.

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.

prox.pad user codes consist of a minimum of one digit and a maximum of six digits. A complete list of program commands is supplied in Table 2-4. Attempting to enter a user code into memory that had been entered previously into a different register, causes the yellow LED to stop blinking and remain steadily lighted. If this occurs, try entering a different user code. Repeating digits in the same code is acceptable.

It may be necessary to change the default main relay time upon initial installation. This would allow personnel sufficient time to get from the proximity reader to the door before the main relay re-locks the door. For details, see section 2.7.1.C.

2.7.1.B prox.pad Default Settings

Table 2-1 lists the default settings for the prox.pad unit as shipped from the factory. Subsequent sections in this chapter explain how to change these default settings or program additional functions.

Table 2-1. prox.pad Default Settings

Parameter	Default Setting
Auxiliary Output	Alarm shunt
Master Code (user one)	1234*
Main Relay energizes for	Five (5) seconds
Audible Keypress Feedback	ON
Local Propped Door Sounder activates after	Thirty (30) seconds
Local Forced Door Sounder activates for	Ten (10) seconds
Printer Output Port	IR (infrared) port

Table 2-2. prox.pad 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; production test failure (accompanied by long beep); entry error lockout (no keypress feedback)
	Very rapid blink	Memory (eeprom) erase is in progress (command 46, production test); data save/restore to/from test fixture eeprom (command 1106/1107)
	“Pulsing” rapid blink	Batch program of cards in progress (command 56); block delete of users (command 58)
	Bi-color LED	Steady red
	Steady green	Lock is energized (timed or latched)
	Red drop out	Lock locked, user lockout is active; red LED drops out for 100 ms every second; a latched lock will override lockout indicator
	Green with red blink	Lock latched and user lockout is active
	Fast green flash	IR dump in progress (user/log)
	Quick double red/green flash	Prox card read correctly
	Alternating red/green	Waiting for second PIN or “card and code” user
	Solid green with red flicker	Lock toggle is unlocked and user lockout active
	Rapid red, yellow, green sequencing	Power on/reset, multiple sequences spaced seconds apart, indicating watchdog reset

LED or Sounder	Visual/Audible Condition	Description
	Red blink	User lockout is active and lock locked; red LED drops out for 100 ms every second; normal users cannot change the state of the relay
Sounder	Very quick beep (10 ms) with yellow LED blink every second	Eeprom read error during get system parameters; can be turned off by running self-test
	Short beep (100 ms) every 2 seconds	Propped door is active
	Sounder 1/2 sec on, 1/2 sec off	Forced door is active
	Pair of double beeps during production test	Indicates kernel has reset system parameters, a third beep indicates that text strings have been loaded
	3 slow beeps (250 ms)	Indicates self-test; a fourth beep indicates system in standalone mode
	3 rapid beeps after PIN entered	PIN not found
	3 very rapid beeps after card presented (standalone mode)	PIN not found, facility code/company ID mismatch and access by facility mode enabled; incorrect start sentinel for selected card type (option #20)
	Single long beep after PIN entered	Value entered too big, cannot be represented in 16 bits (Wiegand mode)
	Single long beep after card presented in Hub Front End mode	Invalid card type (incorrect start sentinel for selected card type, option #20); PIN data of corporate 1000 card exceeds 999,999; facility code/company ID mismatch and option #21 enabled
	1 short beep	Valid card access

2.7.1.C Changing the Main Relay Time

Setting the main relay time for the master code simultaneously sets the time for users in register one through register two-thousand. The factory default main relay time is five (5) seconds. Main relay time can be set in one-second increments from one (1) second to ninety-nine (99) seconds using command 11.

1. Place the prox.pad 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 main relay time, in seconds (from 1 to 99). For example, to enter 10 seconds, press:

11 # 10 # 0 # **

The yellow LED continues to blink slowly.

3. Press * to exit program mode.

2.7.1.D Resetting the Master Code and System Defaults Only

Entering command 40 erases everything from the prox.pad memory except the user list and transaction log and restores the default settings. This is useful if the prox.pad unit has experienced programming problems, or wish to delete earlier programming.

1. Place the prox.pad 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.

2.7.1.E Erasing Entire Memory/Resetting System Defaults

Entering command 46 deletes everything from the prox.pad 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 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.

2.7.1.F 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 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.

2.7.1.G 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 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.

2.7.1.H Adding New or Changing Existing Codes/Cards

The most basic prox.pad 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. These four specific types of users can be programmed with the prox.pad unit:

- Toggle/latch lock (0)
- Normal access (1)
- log Dump (2)
- Lockout (3)

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. For the programming sequence used to enter the 3-digit facility code, see Table 2-4, item 8.

The following procedure adds a new code/card, or lets you change an existing code/card.

1. Place the prox.pad 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 the user location number that represents the user to be added or changed followed by a pound symbol #. For example, user number two would be entered as **2 #**, user two-thousand as **2000 #**.
3. **CODE:** Enter the one- to six-digit code and an asterisk *, for example, **5*** or **532346***. The yellow LED blinks rapidly, indicating that you should verify the new code by entering it again (along with an asterisk). If the unit accepts the code, the yellow LED begins blinking slowly.
CARD: Press ** on the keypad and then go to the proximity reader and present the card.
3. To add more card or change more cards, return to step 2.
4. Press * to exit program mode.

2.7.1.I Adding Cards via Batch Entry

“Batch entry” allows you to enter multiple, sequential 26-bit HID cards into the prox.pad unit’s memory at one time. (Keeping IEI 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. For the programming sequence used to enter the 3-digit facility code, see Table 2-4, item 8.

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

1. Place the prox.pad 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 keypad, press:
56 # (total number of cards to be added) # (starting user location) # card number * repeat card number *

NOTE: Never enter one (1) as the starting user location since it is reserved for the master code.

3. On the prox.pad keypad, press * to exit program mode.
Up to 1,999 users can be added this way at one time. (User 1 is reserved for the Master code.)

2.7.3 Programming for BOTH Code and Card The prox.pad 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.

2.7.3.A Code/Card Users

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

2.7.3.B 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).

2.7.3.C 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.

loc # PIN * PIN *

OR

loc # ** <present card>

2.7.3.D 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 # keypad PIN
* keypad PIN ***

2.7.3.E 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 # keypad PIN
* keypad PIN * <present card>**

2.7.3.F Programming Card ONLY Use

Card ONLY use can be programmed with command 50, with the keypad PIN values omitted from the sequence. For instance, to program user 200 as a "Normal" access user with Card ONLY, press:

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

2.7.3.G 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>**

2.7.4 Programming a Toggle User

A user can be programmed as a toggle code and/or card, which provides that user the ability to unlock the door for an indefinite period. When a toggle user then enters the toggle code or card, the prox.pad unit toggles the relay ON; entering a toggle code again toggles the relay OFF.

If the main relay is toggled ON/OFF, the event is stored in the Transaction Log; when printed, the log shows "TGL ON" or "TGL OFF" as appropriate; also shown is the time, date, door number, and user. To program a toggle user, follow the steps below.

1. Place the prox.pad 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. **CARD:** On the prox.pad keypad, enter:
0 # user location # ** <present card>
where 0 (zero) is the user type.
3. **CODE:** on the Proximity keypad, enter:
0 # user location # code * code *
4. **CARD and CODE:** enter:
0 # user location # code * code *
<present card>
5. Press * on the prox.pad keypad to exit program mode.

2.7.5 Programming User Types

Table 2-3 identifies and describes the four user types supported by the prox.pad unit. NOTE: All examples show programming the four user types as “card only” users. All four user types can also be programmed as code only, code and card, and code or card.

Table 2-3. prox.pad User Types

User Type	User-Type	Description
Toggle/latch lock	0	For this user-type, the door opens for an indefinite period, until that or another toggle code is entered (this is useful for deliveries, for example). Example: 50 # 0 # user location # ** <present card>
Normal access	1	This is the default user type. Opens the door for the duration of the Main Relay time. Example: 50 # 1 # user location # ** <present card>
Log Dump	2	For this user-type, the door remains locked and the Transaction Log is dumped to an optional IR printer via the IR port when the appropriate code is entered. This code cannot be used to gain access through the door. This log is not erased, only printed. Example: 50 # 2 # user location # ** <present card>
Lockout	3	For this user-type, the keypad “freezes,” disallowing all other codes plus the door remains in the current state. During a lockout state, card access does not continue to work. If it is locked, it remains locked. If it is unlocked, it remains unlocked until another Lockout code is entered, releasing it from Lockout mode. NOTE: This user-type should be reserved as a supervisor or override function. Example: 50 # 3 # user location # ** <present card>

2.7.6 Deleting Users

To delete a user from the prox.pad unit's memory, you must know the memory register in which the information is stored. Printing a Programmed Users List (as described in section 2.8.2.D) helps you determine this, if your system is equipped with an optional IR printer. 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 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 keypad, enter the **user number** you wish to delete and a pound symbol #. To delete user 100, for example, press:
100 # **
The yellow LED blinks slowly.
3. Press * to exit program mode.

2.7.7 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# 14#; the duration of the time delay is set through parameter 32# 3#. 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# 14# is disabled, the value in parameter 32# 3# 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.

2.7.8 Batch Load 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 less than 39 bits of data.

The format of the new 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 user as the first card in the sequence generates an error because the master 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.

2.7.9 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.

2.7.10 Invalid PIN Lockout

The Invalid PIN Lockout (IPL) feature is enabled/disabled through option 30# 18#, and is **disabled** by default.

The prox.pad controller maintains a count of the number of consecutive invalid keypad PINs 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.

Presenting a valid but non-programmed prox card does not affect (clear or increment) the current invalid PIN entry count. However, 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 invalid PIN lockout is activated. The IPL threshold is programmed through parameter 32#4#, and is defaulted to five attempts.

One of two possible actions occurs once the IPL is triggered, (1) a timed lockout, or (2) the activation of the Forced Door output. The action taken is based the current setting of option 30# 19#. Activation of the

invalid PIN lockout is noted in the log with a new event, "IP LOCKOUT."

2.7.10.A Forced Door Output

If option 30#19# is set to 1, the IPL operates the Forced Door output using the system's current Forced Door settings (AUX output, duration, audio alert, etc). Once the Forced Door is activated, the invalid PIN entry counter clears. Now another IPL can occur as soon as the threshold level is reached again.

2.7.10.B Timed Lockout Function

Setting option 30#19# to 0 selects the Timed Lockout function. This function disables all keypad PIN entries with the exception of the [99 # Master Code*] sequence for the duration of the lockout. The duration of the lockout is specified through parameter 32#5# using 5-second increments.

To setup a 10-second timed lockout, set parameter 32#5# to 2. The use of 5-second increments means that the maximum IPL duration is 21 minutes and 15 seconds (255 * 5 seconds).

Normal PIN-related indicators are disabled during a timed IPL. To determine the IPL state, enter a "known" invalid PIN such as [123456 *]. This should generate the usual three beeps, indicating the PIN is not found. If the beeps do not occur, then IPL is active. Also note that invalid PINs entries are not logged during an active IPL.

2.7.10.C Clearing an Active Timed IPL

There are a number of ways to clear an active timed IPL: (1) pressing the program button or disconnecting power to the system always clears a lockout; (2) presenting a valid prox card programmed as either a "Card Only" or "Card OR Code" user type also cancels an active timed lockout.

NOTE: Presenting a prox card programmed as "Card AND Code" does not clear the lockout as the entry of the required keypad PIN is ignored.

There is a special situation when using the [99 # Master Code *] sequence to clear a timed IPL. If an invalid 99# Master Code* is entered as part of the sequence to clear the IPL, a good 99# Master Code* sequence does not cancel the current lockout. This prevents someone from attempting to guess the master code to cancel the lockout.

Once the IPL is activated by an invalid master code, it remains active until the IPL expires or is cancelled by some other means. Entering [99 # Master Code *] with the correct master code causes the red LED to "dropout" while the IPL is active.

Note that a continuous red dropout is used to indicate an active User Lockout condition. This should not cause confusion because only a single red dropout occurs after the [99 # Master Code *] sequence is entered.

2.8 Using the Printing Features

The prox.pad unit in conjunction with an optional IR (infrared) hand-held printer can print a Transaction Log and a Programmed User List via the IR port. The Log Dump command is **70 # 0 # 0 # ****.

2.8.1 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 # **

The following transaction events can be set/cleared (saved/not saved) and therefore printed/not printed.

Event Code	Transaction Event
01	Access Denied
02	Program Denied
03	Program Mode
04	REX (Request to Exit)
05	Door Ajar
06	Door Closed
07	Forced Door
08	Log Erased
09	Facility Access
16	Print
17	Access
20	TGL ON (Toggle ON)
21	TGL OFF (Toggle OFF)
24	Lo ON (Lockout ON)
25	Lo OFF (Lockout OFF)
27	MSMTCH (Mismatch on Card and Code entry)

1. Place the prox.pad 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:
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.
3. Press * to exit program mode.
The yellow LED stops blinking.

2.8.2 Printing a Transaction Log

If you have an optional IR printer, you can print a Transaction Log on it via the prox.pad’s 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 unit into program mode and manually entering the print Transaction Log command. For details, see the sub-sections 2.8.2.A and 2.8.2.B on the next page.

2.8.2.A Programming a Transaction Dump Code

1. Place the prox.pad 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 **CODE DUMP**, 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.
3. Press * to exit program mode.

NOTE: Entering the programmed dump code or card again subsequently causes the unit to print a Transaction Log to the optional IR printer.

2.8.2.B Printing a Transaction Log Manually

1. Place the prox.pad 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 optional IR printer up to the prox.pad 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. Figure 2-8 shows a sample Transaction Log.

```

05/04/99
# Time Action
1 20:32 User 0015 Print
2 20:23 User 0011 ACCESS
3 20:22 User 0011 ACCESS
4 20:22 REX
5 20:22 Forced door
6 20:22 User 0011 ACCESS
7 20:21 Forced door
8 20:21 User 0011 ACCESS
9 20:21 Forced door
0 20:20 User 0002 ACCESS
1 20:20 User 0002 ACCESS
2 20:19 User 0002 ACCESS
3 20:19 User 0003 ACCESS
4 20:19 User 0004 LO OFF
5 20:19 User 0004 LO ON
6 20:19 User 0004 LO OFF
7 20:18 User 0004 LO ON
8 20:18 User 0006 TG OFF
9 20:18 User 0006 TG ON
0 20:18 User 0006 TG OFF
1 20:17 User 0005 Print
2 20:17 User 0006 TG ON
3 20:16 User 0008 ACCESS
4 20:16 User 0008 ACCESS
5 20:16 User 0011 ACCESS
6 20:11 User 0013 TG OFF
7 20:11 User 0013 TG ON
8 20:11 User 0012 LO OFF
9 20:11 User 0012 LO ON
0 20:11 User 0012 LO OFF
1 20:09 User 0012 LO ON
2 20:09 User 0013 TG OFF
3 20:09 User 0012 LO OFF
4 20:09 User 0012 LO ON
5 20:09 User 0013 TG ON
6 20:09 User 0013 TG OFF
7 20:09 User 0013 TG ON
8 20:09 User 0013 TG OFF

```

Figure 2-8 Transaction Log

The top line of the Transaction Log is the self-explanatory DATE. The second line contains the three column headings, #, Time, and Action. The first left-most column (#) is an event line number, which increments from 1 to 0 (actually 10) and repeats. The second column is the event TIME in 24-hour format. The third column is the ACTION that describes a particular event, USER, REX, FORCED DOOR, etc. Page 2-38 contains a complete list of transaction events. The column to the right of action is the prox.pad-generated, four-digit USER LOCATION. This is the location in memory where the user data is stored. The right-most column describes the type of EVENT, Print, Access, LO ON, etc.

2.8.2.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 # 00000 # 00000 # **

Then press * to exit program mode.

2.8.2.D Printing a Programmed Users List

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

The prox.pad 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 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 optional IR printer up to the prox.pad 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 # **

- When the list is complete, press * to exit program mode. Figure 2-9 shows a sample Programmed Users List. To maintain a more detailed record, simply write down each user's name beside the corresponding line number.

```

Door_#0001-----
Programmed Users
0001 SN    1256
0002 BT    147 011/06789
0003 BN    2580 011/06788
0004 BD    369 011/06794
0005 BL    789 011/06790
0008 EN    456 011/06792
0011 SN    987

```

Figure 2-9 Programmed User List

The top line of the Programmed User List is the DOOR NUMBER on which the prox.pad unit is installed. The second line is the TITLE of the list. The list proper is composed of four columns, oriented from left to right. The first, left-most column is the four-digit USER NUMBER. The second column is the two-digit USER TYPE. The first letter denotes the access modes (S, B, E), the second letter the user type (T, N, D, L).

- S = Single PIN
- B = BOTH code and card
- E = EITHER code OR card
- T = Toggle function is allowed for this user
- N = Normal user
- D = Print dump feature is allowed for this user
- L = Lockout feature is allowed for this user

The third column is the CODE NUMBER.

The right-most and fourth column is the combination SITE CODE/CARD NUMBER. (The Site Code is not entered manually; it is embedded on the proximity card. 011 is the default for IEL cards.)

2.9 Standalone Program 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.

Table 2-4. Standalone Programming Commands

Action Desired	Press	Details																		
To enter program mode	99 # (Master Code)	Yellow LED blinks slowly																		
1. Change master code Code-only operation (example, 4321 master code)	1 # (new code) * (repeat code) * 1 # 4321 * 4321 *																			
2. Set main relay time	11 # tt # 0 # **	tt=1-99 seconds in a two-digit format																		
3. Set AUX relay output	15 # output # 0 # **	0=disabled, 1=shunt , 2=forced door, 3=propped door																		
4. Delete users	user-location # **	(See section 2.7.6)																		
5. Print a transaction log	70 # 0 # 0 # **																			
6. Set/clear standard option	30 # option # s/c # **	See options 0-13 below																		
	<table> <thead> <tr> <th>Option</th> <th>Set/Clear</th> </tr> </thead> <tbody> <tr> <td>0, audio keypress feature</td> <td>0=OFF, 1=ON</td> </tr> <tr> <td>1, visual keypress feature</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, standalone/front end operation</td> <td>0=standalone 1=front end</td> </tr> <tr> <td>4, access by facility code</td> <td>0=OFF, 1=ON</td> </tr> <tr> <td>5, forced door audio alert</td> <td>0=OFF, 1=ON</td> </tr> <tr> <td>6, propped door audio alert</td> <td>0=OFF, 1=ON</td> </tr> <tr> <td>7, internal rex switch</td> <td>0=OFF, 1=ON</td> </tr> </tbody> </table>	Option	Set/Clear	0, audio keypress feature	0=OFF, 1=ON	1, visual keypress feature	0=OFF, 1=ON	2, auto entry enable	0=OFF , 1=ON	3, standalone/front end operation	0=standalone 1=front end	4, access by facility code	0=OFF , 1=ON	5, forced door audio alert	0=OFF, 1=ON	6, propped door audio alert	0=OFF, 1=ON	7, internal rex switch	0=OFF , 1=ON	
Option	Set/Clear																			
0, audio keypress feature	0=OFF, 1=ON																			
1, visual keypress feature	0=OFF, 1=ON																			
2, auto entry enable	0=OFF , 1=ON																			
3, standalone/front end operation	0=standalone 1=front end																			
4, access by facility code	0=OFF , 1=ON																			
5, forced door audio alert	0=OFF, 1=ON																			
6, propped door audio alert	0=OFF, 1=ON																			
7, internal rex switch	0=OFF , 1=ON																			

Table 2-4. Standalone Programming Commands (continued)

Action Desired	Press	Details																				
	<table border="0"> <tr> <td>Option</td> <td>Set/Clear</td> </tr> <tr> <td>8, US/EU date format</td> <td>0=US, 1=European</td> </tr> <tr> <td>9, wiegand red LED enable</td> <td>0=OFF, 1=ON</td> </tr> <tr> <td>10, wiegand red led active state</td> <td>0=LOW, 1=HIGH</td> </tr> <tr> <td>11, wiegand green led enable</td> <td>0=OFF, 1=ON</td> </tr> <tr> <td>12, wiegand green led active</td> <td>0=LOW, 1=HIGH</td> </tr> <tr> <td>13, daylight savings time</td> <td>0=OFF, 1=ON</td> </tr> <tr> <td>14, prox card anti-passback select</td> <td>0=OFF, 1=ON</td> </tr> <tr> <td>18, invalid PIN lockout select</td> <td>0=OFF, 1=ON</td> </tr> <tr> <td>19, invalid PIN lockout action</td> <td>0=Timed Lockout, 1=Forced Door Output</td> </tr> </table>	Option	Set/Clear	8, US/EU date format	0=US , 1=European	9, wiegand red LED enable	0=OFF, 1=ON	10, wiegand red led active state	0=LOW , 1=HIGH	11, wiegand green led enable	0=OFF, 1=ON	12, wiegand green led active	0=LOW , 1=HIGH	13, daylight savings time	0=OFF, 1=ON	14, prox card anti-passback select	0=OFF, 1=ON	18, invalid PIN lockout select	0=OFF, 1=ON	19, invalid PIN lockout action	0=Timed Lockout , 1=Forced Door Output	
Option	Set/Clear																					
8, US/EU date format	0=US , 1=European																					
9, wiegand red LED enable	0=OFF, 1=ON																					
10, wiegand red led active state	0=LOW , 1=HIGH																					
11, wiegand green led enable	0=OFF, 1=ON																					
12, wiegand green led active	0=LOW , 1=HIGH																					
13, daylight savings time	0=OFF, 1=ON																					
14, prox card anti-passback select	0=OFF, 1=ON																					
18, invalid PIN lockout select	0=OFF, 1=ON																					
19, invalid PIN lockout action	0=Timed Lockout , 1=Forced Door Output																					
7a. Print programmed user list	25 # 0 # 0 # **	(See section 2.8.2.D)																				
7b. Print programmed user list (starting at a certain user)	25 # 0 # start user # **																					
8. Change platform parameters	32 # parameter # value # **	See options 0-5 below																				
	<table border="0"> <tr> <td>Parameter</td> <td>Value</td> </tr> <tr> <td>0, wiegand pulse count</td> <td>1-255 (8-160µs)</td> </tr> <tr> <td>1, wiegand interpulse</td> <td>1-255 (spacing 32-640µs)</td> </tr> <tr> <td>2, 26-bit facility code</td> <td>0-255 (default = 1)</td> </tr> <tr> <td>3, process card timer</td> <td>2-240 in ¼ second increments</td> </tr> </table>	Parameter	Value	0, wiegand pulse count	1-255 (8-160µs)	1, wiegand interpulse	1-255 (spacing 32-640µs)	2, 26-bit facility code	0-255 (default = 1)	3, process card timer	2-240 in ¼ second increments	<p>Facility code must be set to enter cards manually (IEI default = 11)</p> <p>(defaults to 4 -1 second)</p>										
Parameter	Value																					
0, wiegand pulse count	1-255 (8-160µs)																					
1, wiegand interpulse	1-255 (spacing 32-640µs)																					
2, 26-bit facility code	0-255 (default = 1)																					
3, process card timer	2-240 in ¼ second increments																					

Table 2-4. Standalone Programming Commands (continued)

Action Desired	Press	Details						
	<table border="0"> <tr> <td data-bbox="527 573 678 600">Parameter</td> <td data-bbox="857 573 927 600">Value</td> </tr> <tr> <td data-bbox="527 604 764 659">4, invalid PIN lockout threshold</td> <td data-bbox="857 604 1008 659">1-50 attempts (default=5)</td> </tr> <tr> <td data-bbox="527 663 764 718">5, invalid PIN lockout duration</td> <td data-bbox="857 663 1008 743">1-255 in 5-second increments</td> </tr> </table>	Parameter	Value	4, invalid PIN lockout threshold	1-50 attempts (default=5)	5, invalid PIN lockout duration	1-255 in 5-second increments	(defaults to 60 secs, 5 minutes)
Parameter	Value							
4, invalid PIN lockout threshold	1-50 attempts (default=5)							
5, invalid PIN lockout duration	1-255 in 5-second increments							
9. Set system time	41 # hhmm # 0 # **	hhmm=hour/minute, 24-hr format						
10. Set system date	42 # mmddy # dow # **	mmddy=month, date, year; dow=day of week, 1=Sunday						
11. Set door number	43 # nnnn # 0 # **	nnnn=door number in a four-digit format						
12. Set propped door time (this sets time for both Aux Relay and local sounder)	44 # ttt # 0 # **	ttt=propped door time, to nearest 10's seconds, entered as 30-990; default=30 secs						
13. Set forced door time (this sets time for both Aux Relay and local sounder)	45 # ttt # 0 # **	ttt=propped door time, to nearest 10's seconds, entered as 30-990; default=10 secs						
14. Delete memory except user list and restore system defaults (also see command 46)	40 # 00000 # 00000 # **	(See section 2.7.1.D)						
15. Delete all memory and reset system defaults	46 # 00000 # 00000 # **	(See section 2.7.1.E)						

Table 2-4. Standalone Programming Commands (continued)

Action	Press	Details
16. Program user: Code ONLY	50 # user-type # user location # code * repeat code * NOTE: You can program the four types of users shown to the right (refers to items 16-19).	0-Toggle/latch lock, 1-Normal access, 2-log Dump, and 3-Lockout.
17a. Program user: Code AND Card	50 # user-type # user location # code * repeat code ** <present card>	
17b. Program user: Card ONLY	50 # user-type # user location # ** <present card>	
18. Program user manually: Card ONLY (26-bit cards ONLY)	51 # user-type # user location # card PIN * card PIN *	The card PIN appears on the card (facility code must be entered first; see 32 # 2 # command)
19. Program user: Code OR Card	52 # user-type # user location # code * repeat code * <present card>	
20. Program consecutive "card only" users	53 # type # start user # ** <present card> <present card> ...	By presentation
21. Perform batch entry of users (26-bit cards ONLY)	56 # total count # user location # card PIN * card pin *	"Total count" = total number of cards to be entered; card PIN appears on card; a facility code must be entered first (see command 32, option # 2)
22. Delete block of consecutive users	58 # start user # start user # number of users * number of users *	
23. Print Transaction Log via IR port	70 # 0 # 0 **	(See section 2.8.2.B)

Table 2-4. Standalone Programming Commands (continued)

Action Desired	Press	Details																																				
24. Set transaction log mask (set/clear event logging); set=1, clear=2	73 # event # set/clear # **	(See section 2.8.1); see options 01-27 below; all are set to 1=ON																																				
	<table border="0"> <thead> <tr> <th>Code</th> <th>Transaction Event</th> </tr> </thead> <tbody> <tr><td>01</td><td>Access Denied</td></tr> <tr><td>02</td><td>Program Denied</td></tr> <tr><td>03</td><td>Program Mode</td></tr> <tr><td>04</td><td>REX (Request to Exit)</td></tr> <tr><td>05</td><td>Door Ajar</td></tr> <tr><td>06</td><td>Door Closed</td></tr> <tr><td>07</td><td>Forced Door</td></tr> <tr><td>08</td><td>Log Erased</td></tr> <tr><td>09</td><td>Facility Access</td></tr> <tr><td>10</td><td>IP Lockout, invalid PIN lockout occurred</td></tr> <tr><td>16</td><td>Print</td></tr> <tr><td>17</td><td>Access</td></tr> <tr><td>20</td><td>TGL ON (Toggle ON)</td></tr> <tr><td>21</td><td>TGL OFF</td></tr> <tr><td>24</td><td>Lo ON (Lockout ON)</td></tr> <tr><td>25</td><td>Lo OFF</td></tr> <tr><td>27</td><td>MSMTCH (Mismatch)</td></tr> </tbody> </table>	Code	Transaction Event	01	Access Denied	02	Program Denied	03	Program Mode	04	REX (Request to Exit)	05	Door Ajar	06	Door Closed	07	Forced Door	08	Log Erased	09	Facility Access	10	IP Lockout, invalid PIN lockout occurred	16	Print	17	Access	20	TGL ON (Toggle ON)	21	TGL OFF	24	Lo ON (Lockout ON)	25	Lo OFF	27	MSMTCH (Mismatch)	
Code	Transaction Event																																					
01	Access Denied																																					
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04	REX (Request to Exit)																																					
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06	Door Closed																																					
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08	Log Erased																																					
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16	Print																																					
17	Access																																					
20	TGL ON (Toggle ON)																																					
21	TGL OFF																																					
24	Lo ON (Lockout ON)																																					
25	Lo OFF																																					
27	MSMTCH (Mismatch)																																					
25. Reset/erase transaction log	76 # 00000 # 00000 # **	(See section 2.8.2.C)																																				
26. To exit Program mode	* (after final command)	Yellow stops flashing																																				

Chapter 3: Wiegand Front End Mode

Chapter 3 describes Wiegand Front End mode and supplies wiring diagrams and a programming chart specific to Wiegand mode.

3.1 Wiegand Front End Mode Description

In “Wiegand Front End” mode, the card data is sent to the separate Wiegand central panel. This panel then makes all door open/close decisions and lights/turns off the prox.pad LEDs accordingly. All relay outputs on the prox.pad unit are disabled.

In all operating modes, the prox.pad unit maintains programmability so that prox.pad system parameters can be set. The default factory setting during programming is for the unit to “time out” after 45 seconds of inactivity.

3.2 Wiring the Wiegand Front End

Space reserved for text on this topic.

3.2.1 Wiring to the Wiegand Panel

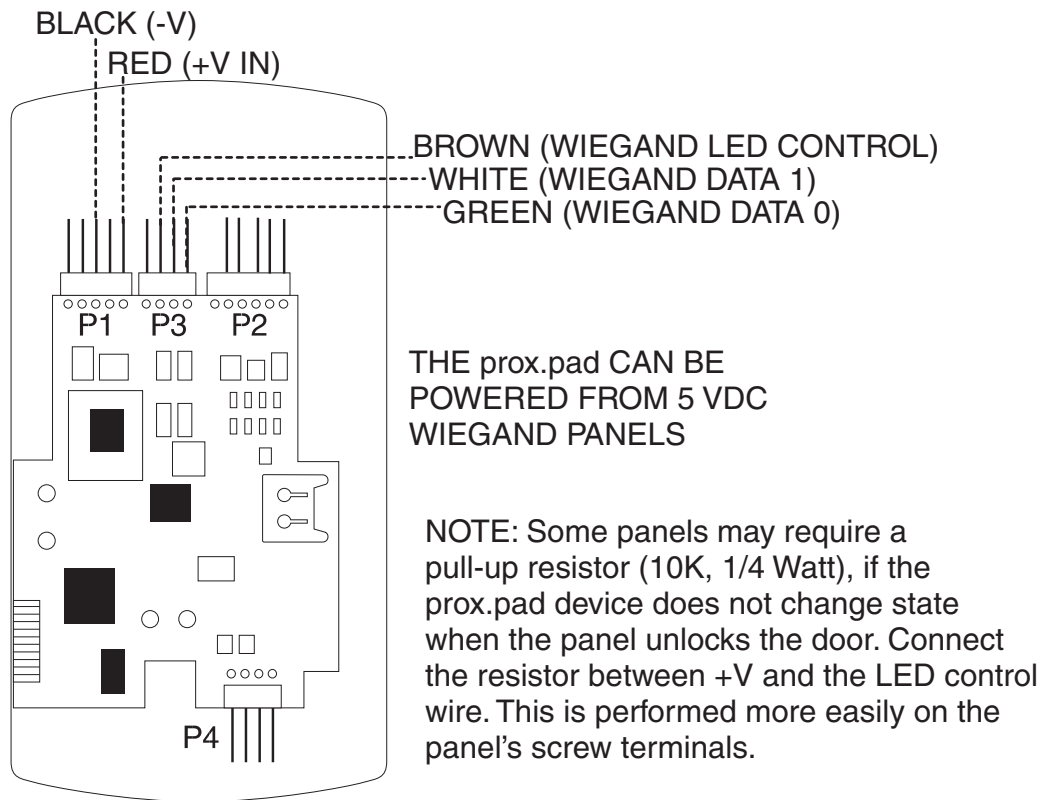


Figure 3-1 Wiring the Wiegand Panel

3.3 Wiegand Front End Programming

3.3.1 Mode and Wiegand Front End Select

3.3.2 Wiegand Keypad Data

The system now supports the transmission of keypad PINs while operating in Wiegand Front End mode. The prox.pad controller attempts to process any digit sequence terminated with the [*] key as 26-bit Wiegand data.

The current facility code (parameter 32# 2#) is used in the creation of the data stream. Entering a keypad PIN causes the unit to generate three quick beeps, which indicates an invalid PIN and no data is sent. A keypad PIN cannot be expressed in 16 bits (any PIN over 65535).

In Wiegand Front End mode, the prox.pad controller sends the code data to the Wiegand panel. The specific panels that IEI has evaluated to date (the Northern N-1000 and N-500) see the keypad data as card data, so it is not possible to perform CARD AND CODE operation (requiring both) to gain access.

3.3.3 Card Data

When the card is presented, the raw card data is sent to the Wiegand panel; when the PIN is entered followed by the *, 26-bit data is sent to the panel. Card and code data are sent separate from each other but are interpreted at the Wiegand panel as card data for both types. If software is available for the panel and you wish to use the keypad to gain access, you **must** enter the desired code, in the CARD data field for that user. This is mandatory no matter how much you would like to enter such data into the keypad PIN number field.

3.3.4 Corporate 1000 Need this.

3.3.5 LED Active States

Table 3-1. prox.pad LED Indicators/Sounder Operations, Wiegand Mode

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; production test failure (accompanied by long beep); entry error lockout (no keypress feedback)
	Very rapid blink	Memory (eeprom) erase is in progress (command 46, production test); data save/restore to/from test fixture eeprom (command 1106/1107)
Bi-color LED	Steady red	Lock is locked
	Steady green	Lock is energized (timed or latched)
	Quick double red/green flash	Prox card read correctly
	Rapid red, yellow, green sequencing	Power on/reset, multiple sequences spaced seconds apart, indicating watchdog reset

LED or Sounder	Visual/Audible Condition	Description
Sounder	Very quick beep (10 ms) with yellow LED blink every second	Eeprom read error during get system parameters; can be turned off by running self-test
	Pair of double beeps during production test	Indicates kernel has reset system parameters, a third beep indicates that text strings have been loaded
	3 slow beeps (250 ms)	Indicates self-test; a fourth beep indicates system in standalone mode
	Single long beep after PIN entered	Value entered too big, cannot be represented in 16 bits (Wiegand mode)
	1 short beep	Valid card access

3.4 Wiegand 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. (IEI: Customized for Wiegand.)

Table 3-2. Wiegand Programming Commands

Action Desired	Press	Details																				
To enter program mode	99 # (Master Code)	Yellow LED blinks slowly																				
1. Change master code Code-only operation (example, 4321 master code)	1 # (new code) * (repeat code) * 1 # 4321 * 4321 *																					
2. Set/clear standard option	30 # option # s/c # **	See options below																				
	<table> <thead> <tr> <th>Option</th> <th>Set/Clear</th> </tr> </thead> <tbody> <tr> <td>0, audio keypress feature</td> <td>0=OFF, 1=ON</td> </tr> <tr> <td>1, visual keypress feature</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, standalone/front end operation</td> <td>0=standalone 1=front end</td> </tr> <tr> <td>9, wiegand red LED enable</td> <td>0=OFF, 1=ON</td> </tr> <tr> <td>10, wiegand red led active state</td> <td>0=LOW, 1=HIGH</td> </tr> <tr> <td>11, wiegand green led enable</td> <td>0=OFF, 1=ON</td> </tr> <tr> <td>12, wiegand green led active</td> <td>0=LOW, 1=HIGH</td> </tr> <tr> <td>15, front end mode select</td> <td>0=Wiegand, 1=Hub</td> </tr> </tbody> </table>	Option	Set/Clear	0, audio keypress feature	0=OFF, 1=ON	1, visual keypress feature	0=OFF, 1=ON	2, auto entry enable	0=OFF , 1-ON	3, standalone/front end operation	0=standalone 1=front end	9, wiegand red LED enable	0=OFF, 1=ON	10, wiegand red led active state	0=LOW , 1=HIGH	11, wiegand green led enable	0=OFF, 1=ON	12, wiegand green led active	0=LOW, 1=HIGH	15, front end mode select	0=Wiegand , 1=Hub	
Option	Set/Clear																					
0, audio keypress feature	0=OFF, 1=ON																					
1, visual keypress feature	0=OFF, 1=ON																					
2, auto entry enable	0=OFF , 1-ON																					
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11, wiegand green led enable	0=OFF, 1=ON																					
12, wiegand green led active	0=LOW, 1=HIGH																					
15, front end mode select	0=Wiegand , 1=Hub																					

Chapter 3: Wiegand Front End Mode 3.4 Wiegand Programming Commands

Action	Press	Details						
3. Change platform parameters	32 # parameter # value # **	See options 0-1 below						
	<table border="0"> <tr> <td data-bbox="526 569 841 596">Parameter</td> <td data-bbox="857 569 971 596">Value</td> </tr> <tr> <td data-bbox="526 600 841 653">0, wiegand pulse count</td> <td data-bbox="857 600 971 653">1-255 (8-160µs)</td> </tr> <tr> <td data-bbox="526 657 841 709">1, wiegand interpulse</td> <td data-bbox="857 657 971 709">1-255 (spacing 32-640µs)</td> </tr> </table>	Parameter	Value	0, wiegand pulse count	1-255 (8-160µs)	1, wiegand interpulse	1-255 (spacing 32-640µs)	
Parameter	Value							
0, wiegand pulse count	1-255 (8-160µs)							
1, wiegand interpulse	1-255 (spacing 32-640µs)							
4. Delete memory except user list and restore system defaults (also see command 46)	40 # 00000 # 00000 # **	(See section 2.7.1.D)						
5. Delete all memory and reset system defaults	46 # 00000 # 00000 # **	(See section 2.7.1.E)						
6. To exit Program mode	* (after final command)	Yellow stops flashing						

Chapter 4: Hub Front End Mode

Chapter 4 describes Hub Front End mode and supplies wiring diagrams and a programming chart specific to Hub Front End mode.

4.1 Hub Front End Mode Description

In “Hub Front End” mode (also known as “HFE” or “IM” mode), the prox.pad unit is used as a front end with an IEI Hub, Hub+ or Hub Max controller, as well as a front end to a 212 controller such as the one packaged in the 212XT package.

4.1.1 Allowable Card Types

Either standard 26-bit or Corporate 1000 prox cards can be employed during HFE mode. No other format cards can be used. The PIN data is extracted from these card types and sent to the Hub, Hub+, or Hub Max controller for verification.

Because Hub systems only support 6-digit card PINs, presenting a Corporate 1000 card with a PIN greater than 999,999 causes the system to ignore the card and generate a single long beep. Option 30#20# selects the type of HID prox card (either 26 bit or Corporate 1000) to be processed.

If the prox.pad unit is programmed for “Hub Front End” mode, the IEI Hub, Hub+, or HubMan controller makes the access decision and controls the lock relays; all relay outputs on the prox.pad unit are disabled.

In all operating modes, the prox.pad unit maintains programmability so that prox.pad system parameters can be set. The default factory setting during programming is for the unit to “time out” after 45 seconds of inactivity.

**4.1.2 Selecting
Between Modes**

Option 30#3# lets you select between “Standalone” mode and “Front End” mode. A second option bit, 30#15#, allows you to select between “Wiegand” mode and “Hub Front End” mode.

Consequently, to set up the prox.pad system for “Wiegand Front End” mode, set mode option 30#3# to 1 and option 30#15# to 0.

“Hub Front End” mode requires both option 30#3# and 30#15# to be set to 1.

4.2 Wiring the Hub Front End

The prox.pad unit can be attached to the IEI Hub controller by connecting prox.pad pin P3:4 to Hub Buffer Board pin P6:3 (Green to White/Black) and pin P3:3 to pin P6:4 (White to White/Yellow).

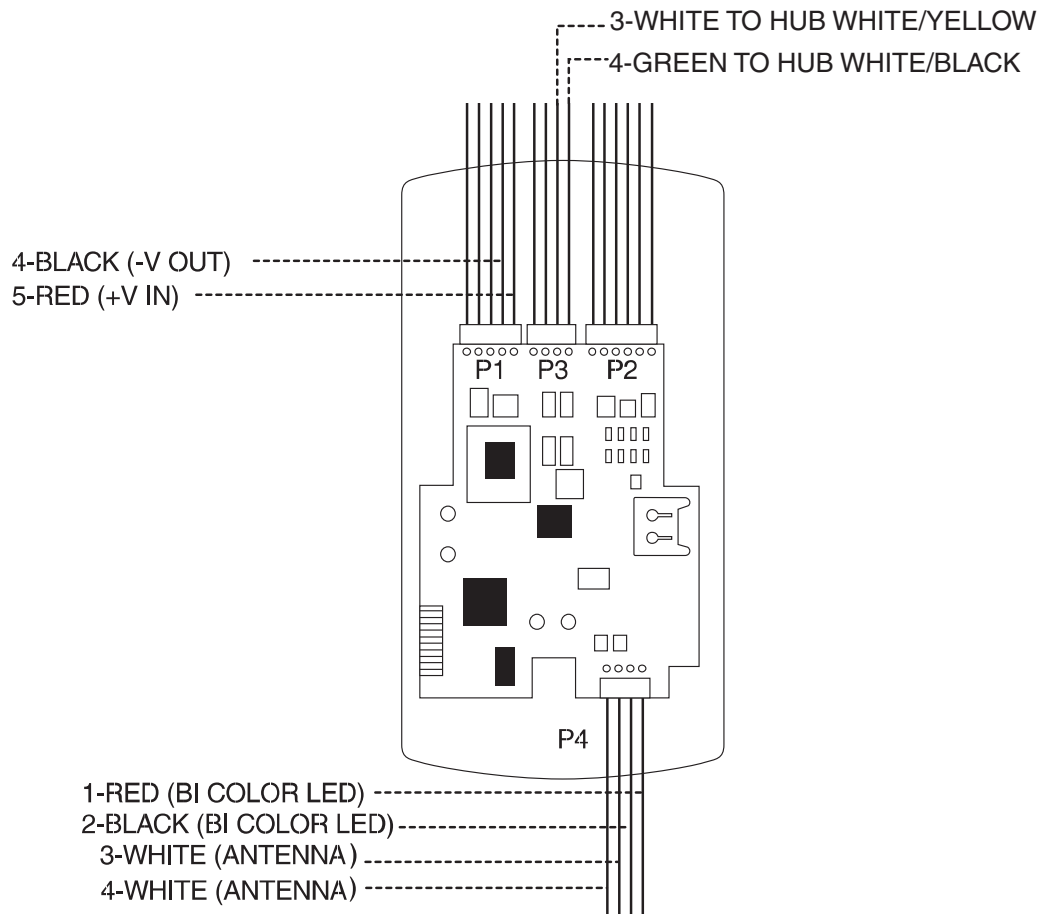


Figure 4-1 Attaching the prox.pad unit to the Hub

4.3 Performing a Self-Test

The self-test function operates slightly differently during Hub Front End mode. There are only three beeps instead of the 3+1 sequence used in Standalone mode. After the self-test, data is output through the IR LED. In Hub Front End mode, the yellow LED flickers to show the activity of the Hub Front End bus. Pressing any key immediately exits the self-test. If no key is pressed, the self-test times out automatically after 30 seconds.

NOTE: For more information on testing the prox.pad unit, refer to section 2.6.

Attempting to program any user besides the master user while in either Hub or Wiegand Front End mode will generate a programming error.

Table 4-1. prox.pad LED Indicators/Sounder Operations, Hub Front End Mode

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
	Very rapid blink	Memory (eeprom) erase is in progress (command 46)
	“Pulsing” rapid blink	Batch program of cards in progress (command 56); block delete of users (command 58)

LED or Sounder	Visual/Audible Condition	Description
Bi-color LED	Steady red	Lock is locked
	Rapid red, yellow, green sequencing	Power on, multiple sequences spaced seconds apart
Sounder	Very quick beep (10 ms) with yellow LED blink every second	Eeprom read error during get system parameters; can be turned off by running self-test
	Pair of double beeps during production test	Indicates kernel has reset system parameters, a third beep indicates that text strings have been loaded
	3 slow beeps (250 ms)	Indicates self-test; a fourth beep indicates system in standalone mode
	3 rapid beeps after PIN entered	PIN not found
	3 very rapid beeps after card presented (standalone mode)	PIN not found, facility code/company ID mismatch and access by facility mode enabled; incorrect start sentinel for selected card type (option #20)
	Single long beep after card presented in Hub Front End mode	Invalid card type (incorrect start sentinel for selected card type, option #20); PIN data of corporate 1000 card exceeds 999,999; facility code/company ID mismatch and option #21 enabled
	1 short beep	Valid card access

4.4 Hub Front End Commands

4.4.1 In/Out Select

In Hub Front End mode, you can change the IN/OUT setting for the Keypad and Antenna sections independently. This allows the installer to mount the antenna remotely up to 10 feet away on the outside of the door and place the keypad on the inside of the door.

Using command 30#16# the installer can now set the antenna to record as "IN" in the Hub transaction log. Using command 30#17# similarly causes the keypad to record as "OUT." **Each one must be assigned separately.**

4.4.2 Facility Match Required

The "facility match required" option (30#21#) provides an extra level of security for Hub Front End card operations. This option ensures that only cards with a facility code matching the value programmed into the prox.pad unit are processed.

Cards containing different facility codes or of the wrong type cause the unit to generate a single long beep when presented.

Note that 26-bit cards contain a 3-digit facility code that is programmed into the prox.pad unit using command 32#2#. Corporate 1000 cards use a 4-digit "company id" that is set using command 35#0#. Here are some examples of this command:

Command	Action
Command 30#21# set/clear#** ON/OFF	Facility Match
Command 30#20# set/clear#**	Card Type Select
Command 32#2# Facility Code#**	Store the 26 bit Facility Code
Command 35#0# Facility Code#**	Store the Corporate 1000 Facility Code

This option creates a more secure system by ensuring that the facility code of the card being presented matches the facility code stored in the prox.pad unit before data is sent to the Hub controller. Once this feature is turned ON, you CANNOT mix and match different types of cards, and you can use only 26-bit or Corporate 1000 cards, not both.

This feature is turned OFF by default, and the default site code is set to "1."

NOTE: If you are using IEI brand (HID) prox cards where the site code is 011, you **must** set the 26-bit site code to 011 using the following command sequence:

```
32# 2# 011# **
```

Failure to enter that sequence causes the prox.pad unit to emit a single long beep after a 26-bit IEI prox card is presented; this signals that the site code on the card did not match the site code stored in the prox.pad unit.

Here is a detailed description of the operation:

1. Select one of the two supported cards, either 26-bit or the Corporate 1000 using command 30#20#. This instructs the prox.pad unit where to look in the data stream for the facility code.
2. **Remember, either 26-bit or Corporate 100 cards are the only cards that work with the prox.pad unit when it is in Hub Front End mode.**
3. You **must** also store the facility code in the prox.pad memory using either command 32#2# for 26-bit cards or command 35#0# for Corporate 1000 cards.

4. After storing the facility code correctly, whenever a 26-bit card or a Corporate 1000 card is presented to the prox.pad in Hub Front End mode, the facility code is stripped out of the data stream and compared to the stored facility code in the prox.pad memory. If it matches, the prox.pad unit sends the card number to the Hub controller. If the site codes do not match, the prox.pad unit emits a single long beep.

4.4.3 Prox Card Type Select

This option is needed if you change the type of card you wish to use. The default is 26-bit cards. You can also choose to use the Corporate 1000 cards, but only one type can be selected and used to gain access at any given time. For more information, see section 4.4.2.

4.4.4 Corporate 1000 Company ID

This option is needed only if you choose to turn ON Facility Match (section 4.4.2).

4.4.5 Anti-Passback/Process Card Timer

This feature is also available in Hub Front End mode, and works exactly as it does in Standalone mode. For more information, refer to section 2.7.7.

4.5 Hub Front End Program 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.

Table 4-2. Hub Front End Programming Commands

Action Desired	Press	Details																						
To enter program mode	99 # (Master Code)	Yellow LED blinks slowly																						
1. Change master code Code-only operation (example, 4321 master code)	1 # (new code) * (repeat code) * 1 # 4321 * 4321 *																							
2. Set/clear standard option	30 # option # s/c # **	See options below																						
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Option	Set/Clear																							
0, audio keypress feature	0=OFF, 1=ON																							
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17, HFE keypad In/Out	0=IN , 1=OUT																							
20, prox card type select	0=26-bit , 1=Corporate 1000																							
21, facility match required	0=OFF , 1=ON																							

Action Desired	Press	Details				
3. Change platform parameters	32 # parameter # value # **	See options 2-3 below				
	<table border="0"> <tr> <td>Parameter</td> <td>Value</td> </tr> <tr> <td>2, 26-bit facility code</td> <td>0-255 (defaults to 1)</td> </tr> </table>	Parameter	Value	2, 26-bit facility code	0-255 (defaults to 1)	
Parameter	Value					
2, 26-bit facility code	0-255 (defaults to 1)					
4. Enter Corporate 1000 Company ID	35 # parameter # value # **	See option below				
	<table border="0"> <tr> <td>Parameter</td> <td>Value</td> </tr> <tr> <td>0, corporate 1000 company ID</td> <td>0-4095 (default=4095)</td> </tr> </table>	Parameter	Value	0, corporate 1000 company ID	0-4095 (default=4095)	
Parameter	Value					
0, corporate 1000 company ID	0-4095 (default=4095)					
5. Delete memory except user list and restore system defaults (also see command 46)	40 # 00000 # 00000 # **	(See section 2.7.1.D)				
6. Delete all memory and reset system defaults	46 # 00000 # 00000 # **	(See section 2.7.1.E)				
7. 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 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 to the optional IR printer, separate Wiegand panel or central access control panel, or Hub, Hub+, HubMan controller.
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 rem-

edy the problem) before calling for help. **Write down the version number of your prox.pad unit before calling IEI for help.**

Table 5-1. Troubleshooting Chart

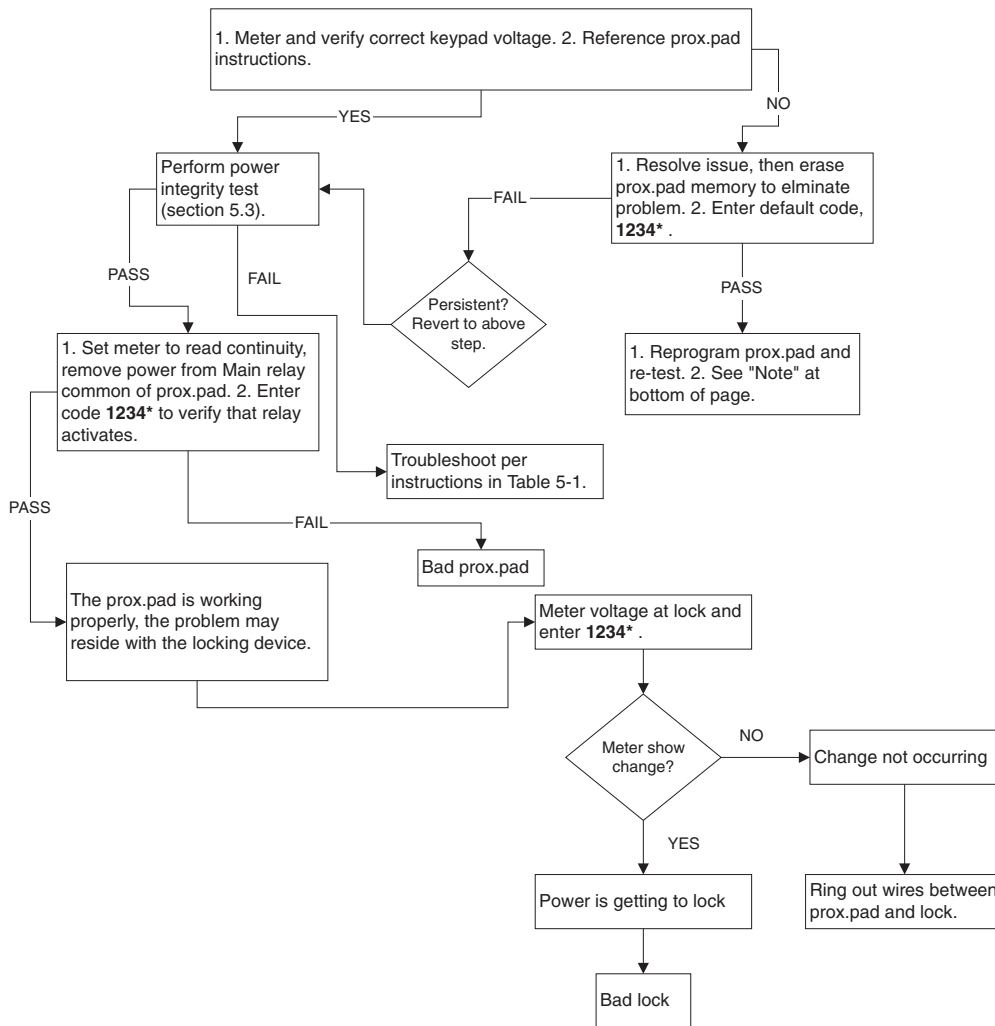
Problem	Probable Cause	Solution
Red LED turns green when access accepted, but door does not open	Various: power supply voltage problems, locking device power supply not set correctly	1. Check power supply voltage. 2. Monitor voltage at unit's V+ and V- terminals (on P1) with meter, enter a valid code, 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 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 1.13.3; for RF interference problems, see section 1.13.4.

Table 5-1. Troubleshooting Chart (continued)

Problem	Probable Cause	Solution
<p>prox.pad unit not entering program mode when 99 # Master code * is pressed on the prox.pad 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 unit turned ON, remove the main circuit board from the unit as described in section 1.16. 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 1-7 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 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 2, 3, or 4.

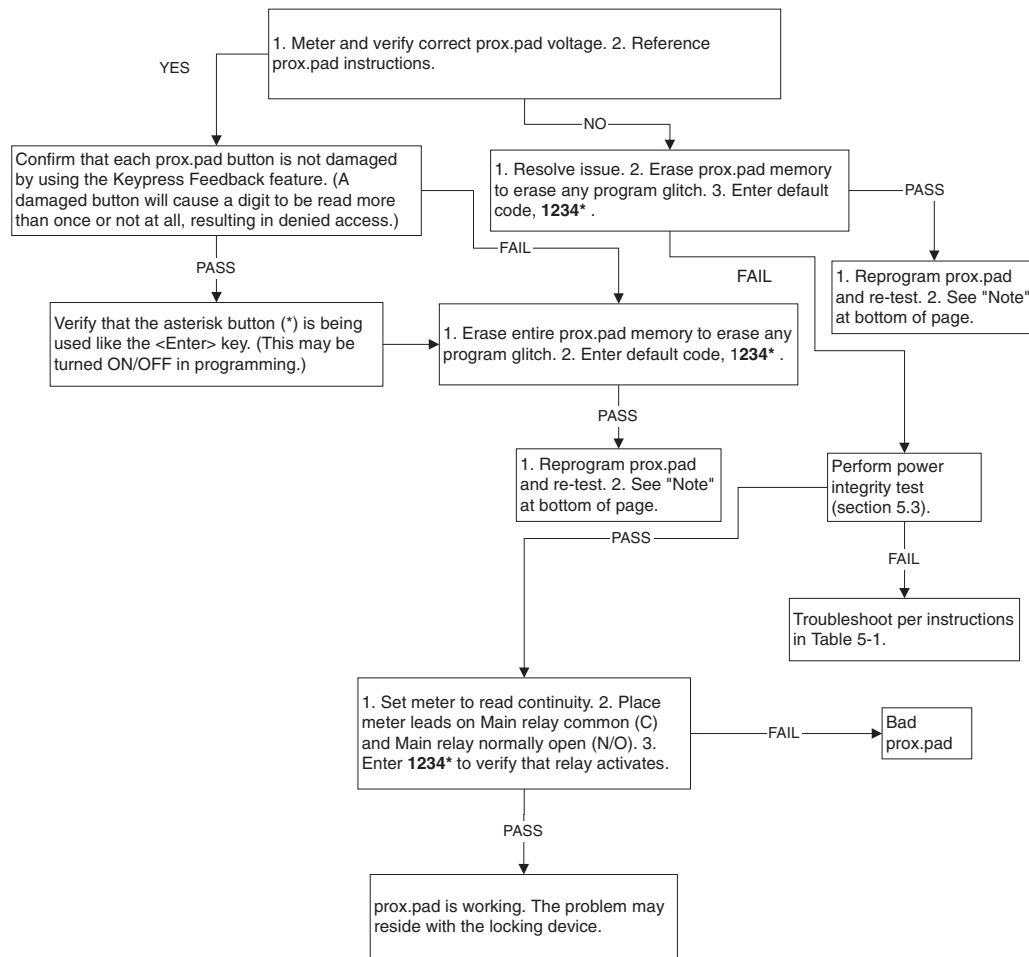
5.2 Flow Charts

prox.pad Indicates "Acceptance," But No Main Relay Action Occurs



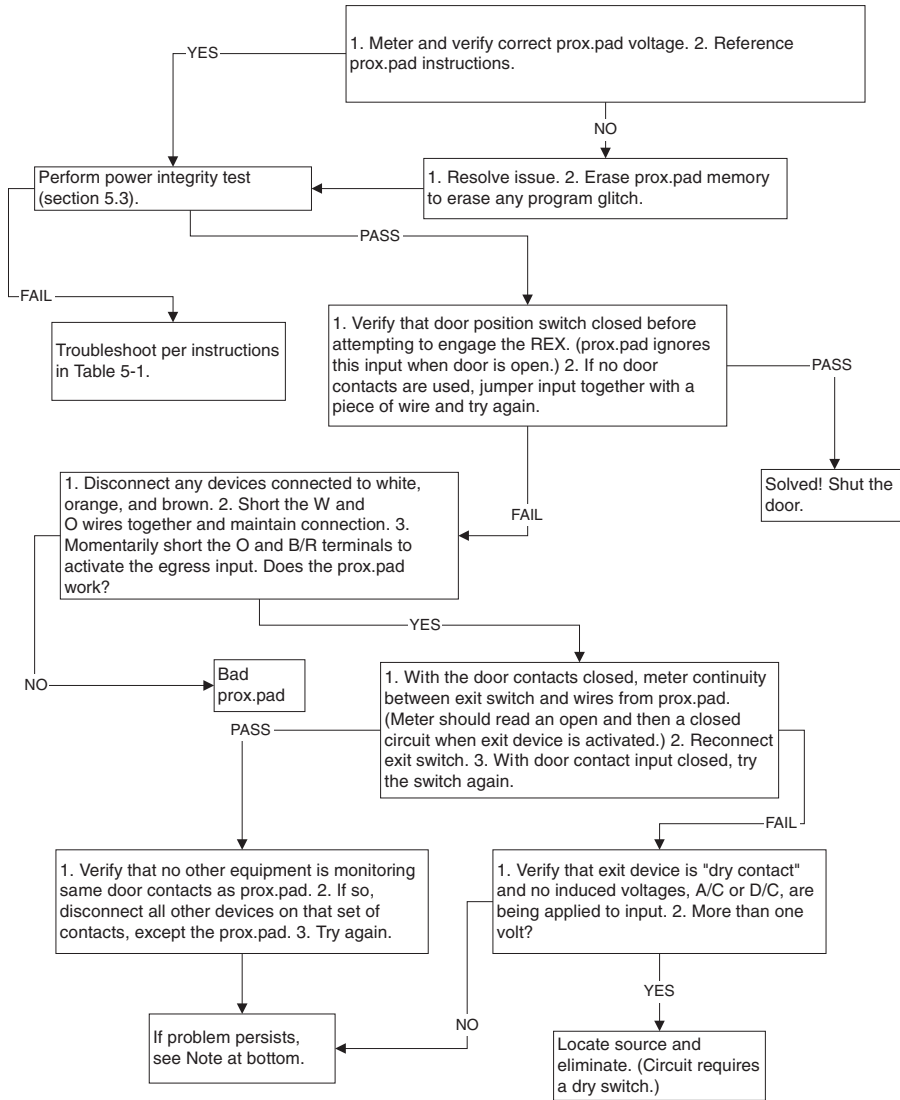
NOTE: A glitch in the prox.pad program might result from using a power supply that is not filtered and regulated properly. For extra filtering suggestions, call IEI technical support.

**Programmed Codes Stop Working;
prox.pad Buttons Not Working**



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

External Request to Exit Input Not Activating prox.pad



NOTE: A glitch in the prox.pad 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 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.

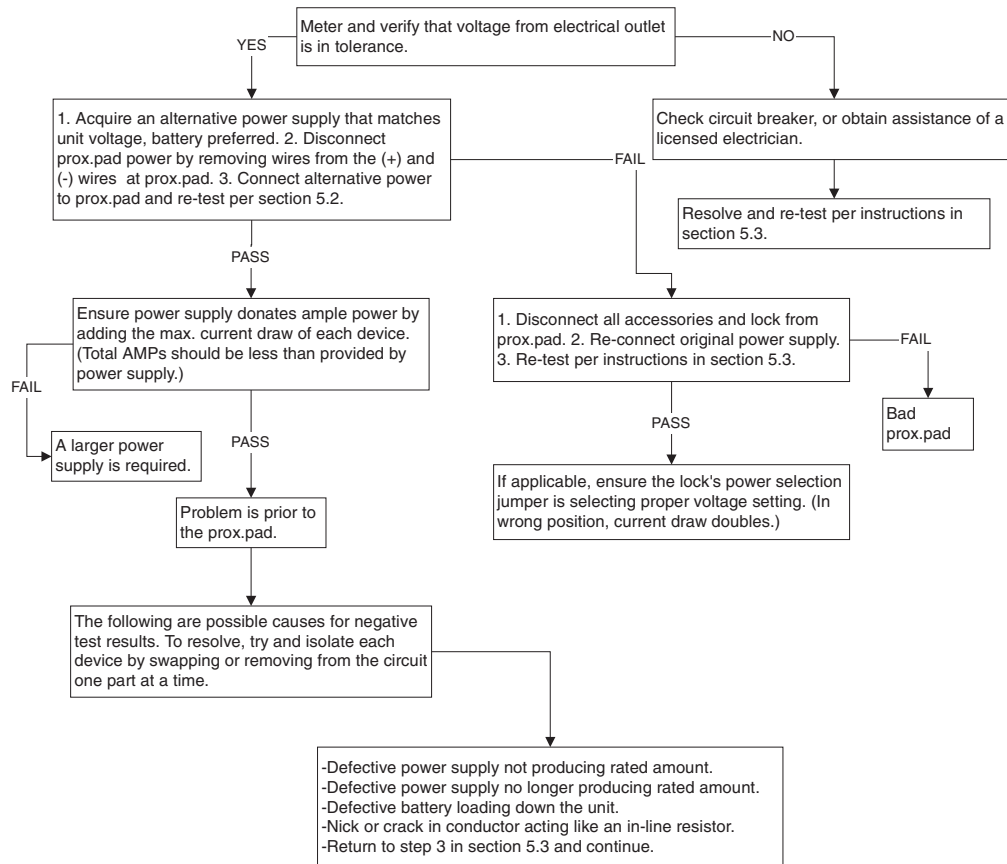
1. Set the meter to read voltage and place meter probes on the red and black wires of P1, located on the prox.pad unit. You may have to reference Figure 1-2 for details. If the prox.pad unit consists of two parts, a reader and a controller, the terminals are located on the controller.
The voltage reading is monitored throughout the entire test.
2. With power being applied to the entire prox.pad unit, enter a valid code on the prox.pad 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" 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, one electric lock, and any accessories (for example, motion egress detector).



NOTE: A glitch in the prox.pad 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 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

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

6.1 Customer Service Policy

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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