prox.pad™ Proximity Reader/ Keypad Access Control Installer Guide

NOTE: This *Installer Guide* is designed as a reference document for experienced installers only. It is **not** intended for routine use, and **does not replace** the more comprehensive information supplied in the *prox.pad Installation/Programming Manual* (located on the enclosed CD-ROM.) You can also download the reference manual from our web site at www.ieib.com. **(A LIST OF IEI-SUPPLIED PARTS AND OPTIONAL ITEMS IS INCLUDED ON PAGE 2.)**

Installing the prox.pad Unit

Figure 1 below illustrates the Pin connectors on the prox.pad main circuit board; the table on page 3 describes the four Pin connectors (P1, P2, P3, and P4) in detail. **Specifications are listed on page 16.**

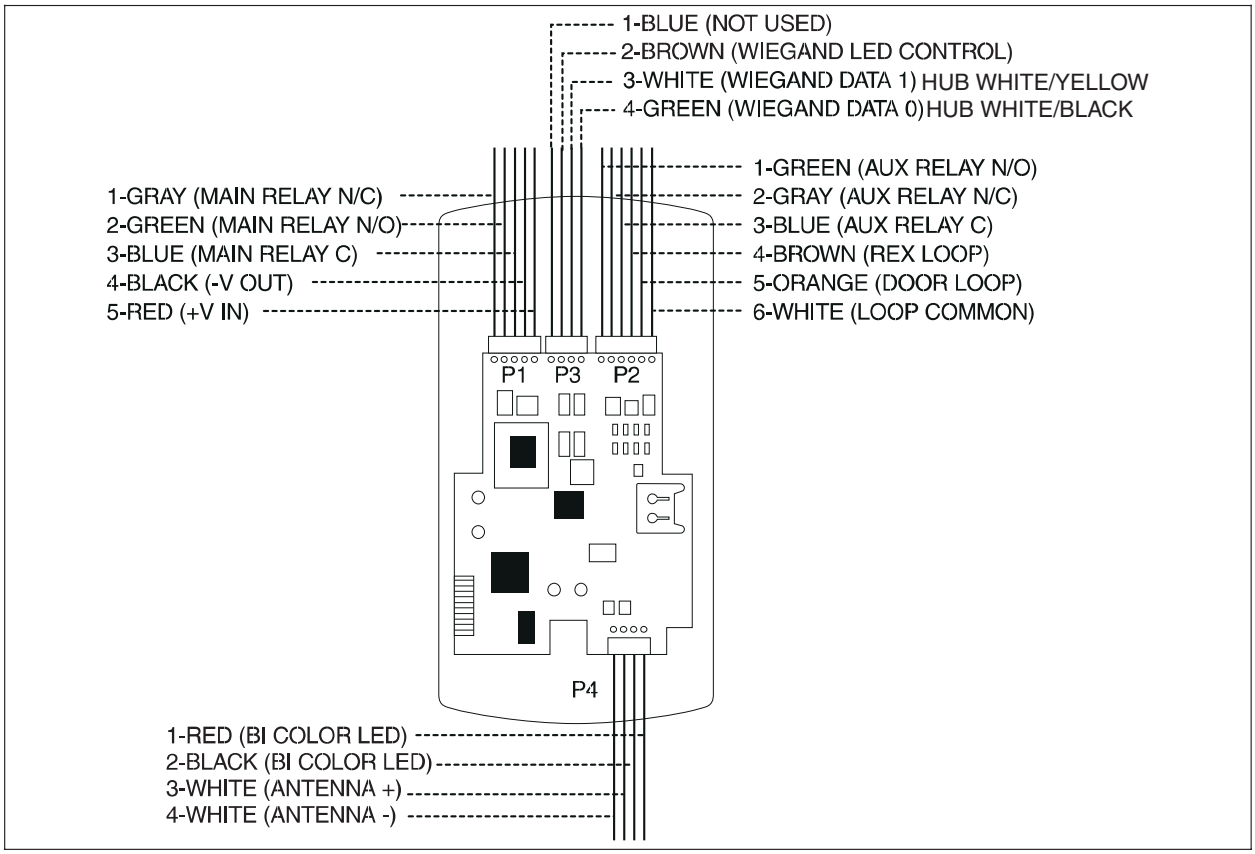

Figure 1 Identifying Pin Connectors

INTERNATIONAL ELECTRONICS, INC

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
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)

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

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
	5	RED	Power In, +12 VDC
P3 (4-pin connector, Wiegand operation, top middle location)	**Pin**	**Wire Color**	**Use**
	1	BLUE	Not used
	2	BROWN	Wiegand LED Control, user-assigned
	3	WHITE	Wiegand Data 1
	4	GREEN	Wiegand Data 0
P2 (6-pin connector, top right-most location)	**Pin**	**Wire Color**	**Use**
	1	GREEN	Aux Relay N.O.
	2	GRAY	Aux Relay N.C.
	3	BLUE	Aux Relay Common
	4	BROWN	REX Loop (if used) (NO contact)
	5	ORANGE	Door Loop Contact (NC contact)
	6	WHITE	Loop Common (shared by REX and door loop)
	NOTE: Pins 1, 2, 3 can be wired at the installer's option for one of the following alarm outputs, Alarm Shunt, Forced Door, or Propped Door. Mandatory: If you do not wish to install door contacts per Figure 7, twist the white and orange wires together. **If not done, REX input will not work.**		
P4 (4-pin connector, bottom location)	**Pin**	**Wire Color**	**Use**
	1	RED	Bi-Color LED (Red +)
	2	BLACK	Bi-Color LED (Green +)
	3	WHITE	Antenna (no polarity)
	4	WHITE	Antenna (no polarity)

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 3. Be careful with the wires.
   - Pull up 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 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.

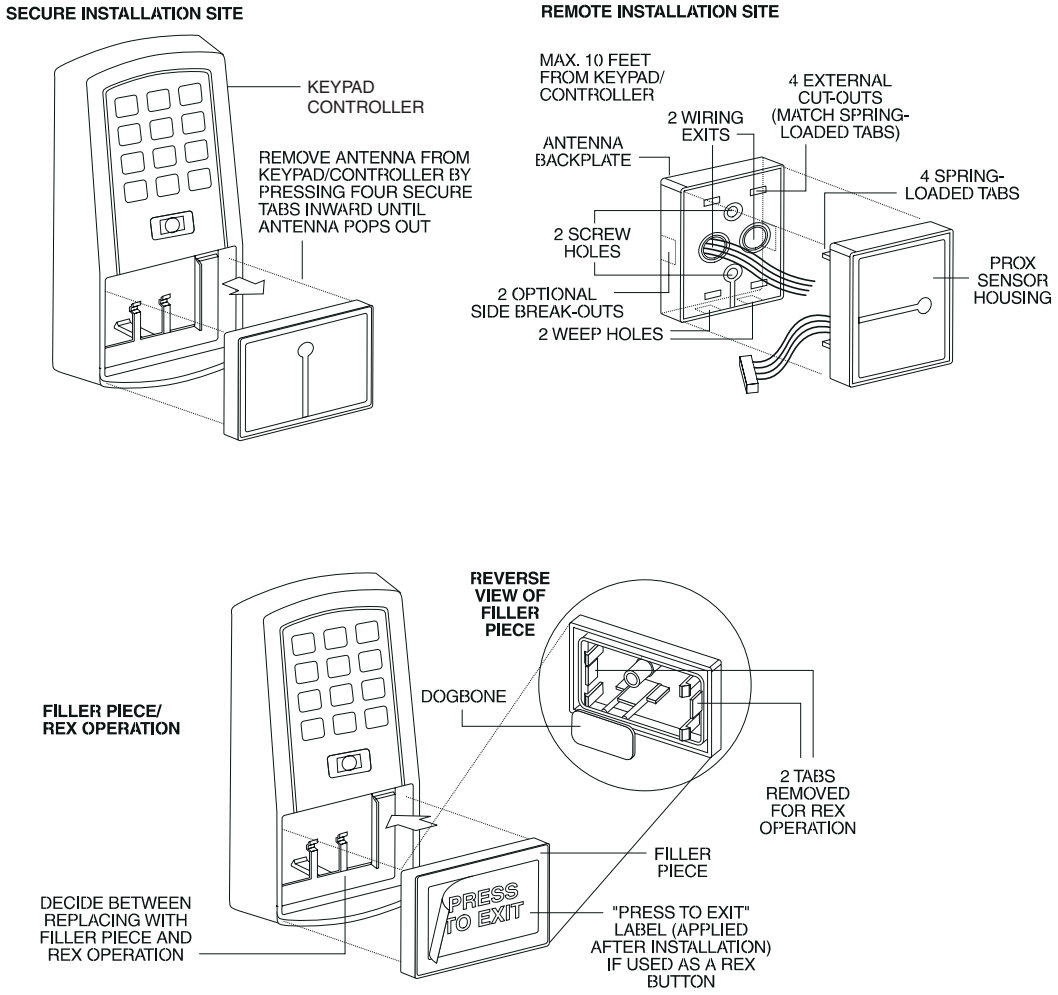

Figure 2 Performing a Secure Installation

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” (drainage holes), provided to remove possible moisture, are positioned on the bottom. Pull the antenna wire through the wiring exits in the antenna backplate as required. (Four external cut-outs on the antenna backplate match the four spring-loaded tabs on the antenna.)

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

   - Once the antenna backplate is mounted properly, align the antenna to the backplate and connect the antenna to the antenna backplate. The large tab in the center of the antenna assembly must be broken off before being attached to the antenna backplate.

4. Run the antenna wiring back to the secure keypad/controller and connect it to the main circuit board, using the 10-inch 4-wire harness (red, black, white, and white) that you plug into connector P4 on the controller board. Connect the red wire of the antenna to the red wire of the P4 harness, etc. Seal the wire holes with silicone.

5. Select “Filler” or “Request to Exit” (REX) operation as follows:

   - If you elect to use the filler piece as a REX switch, return to the keypad/controller and break off two tabs on the filler piece as illustrated in Figure 2. The filler piece replaces the antenna on the front of the keypad/controller for secure installations.
   - **If the filler piece is not be 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).

Removing/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, 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 3. Be careful with the wires.

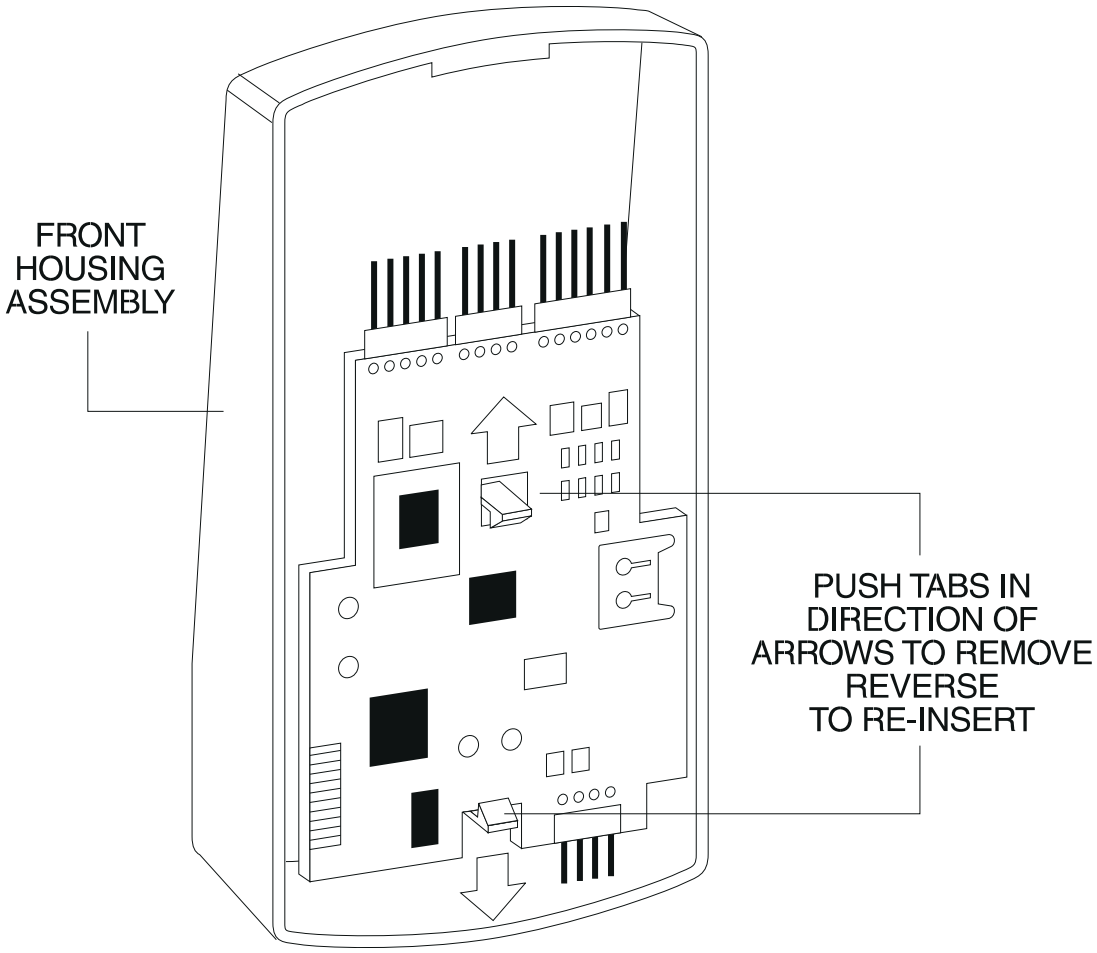

Figure 3 Removing/Inserting Printed Circuit Board

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.

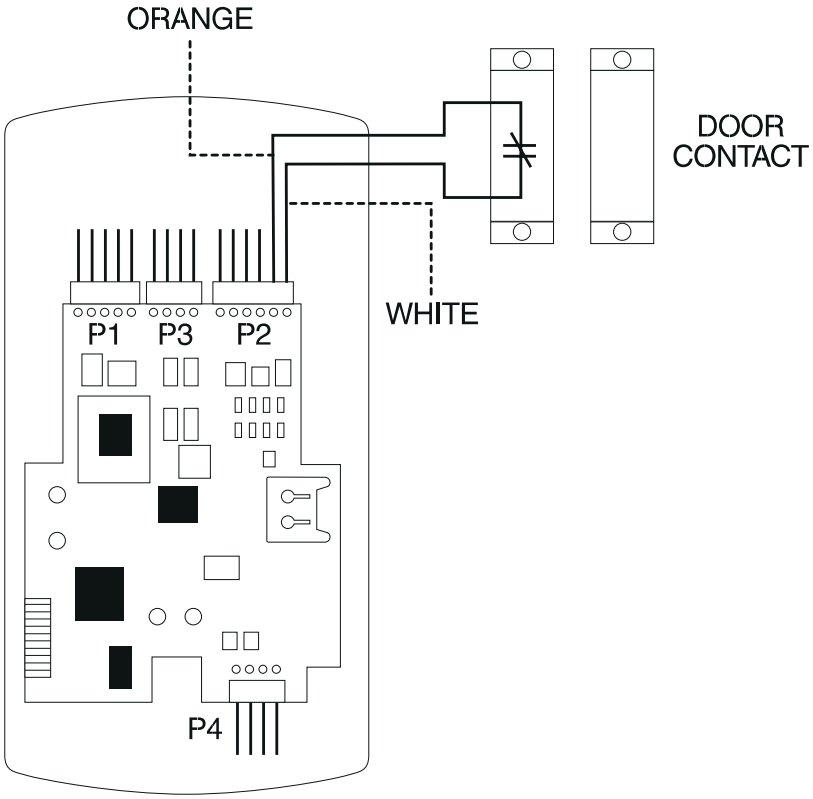

Figure 4 Wiring the Door Contact Input

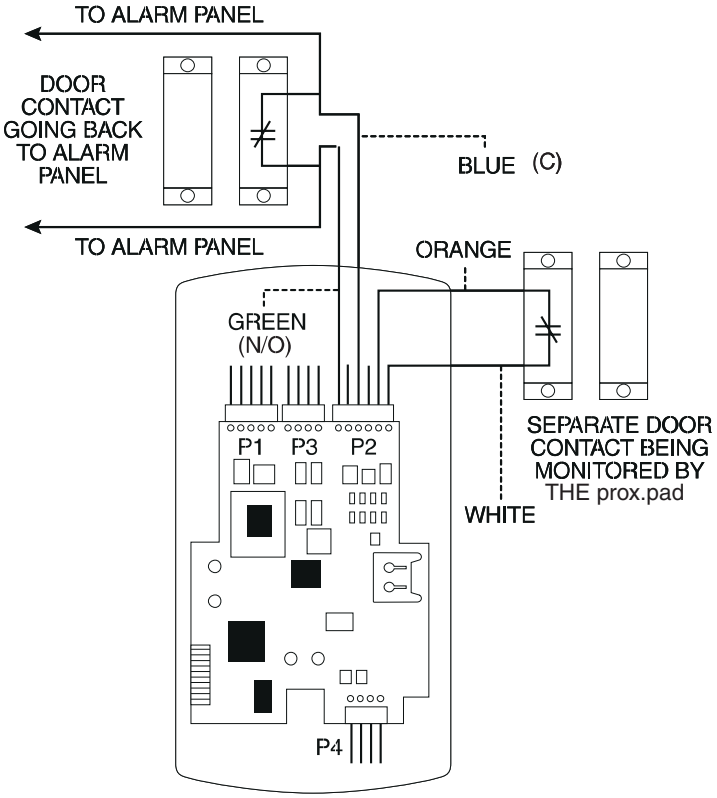

Figure 5 Wiring the Aux Relay for Alarm Shunt Relay

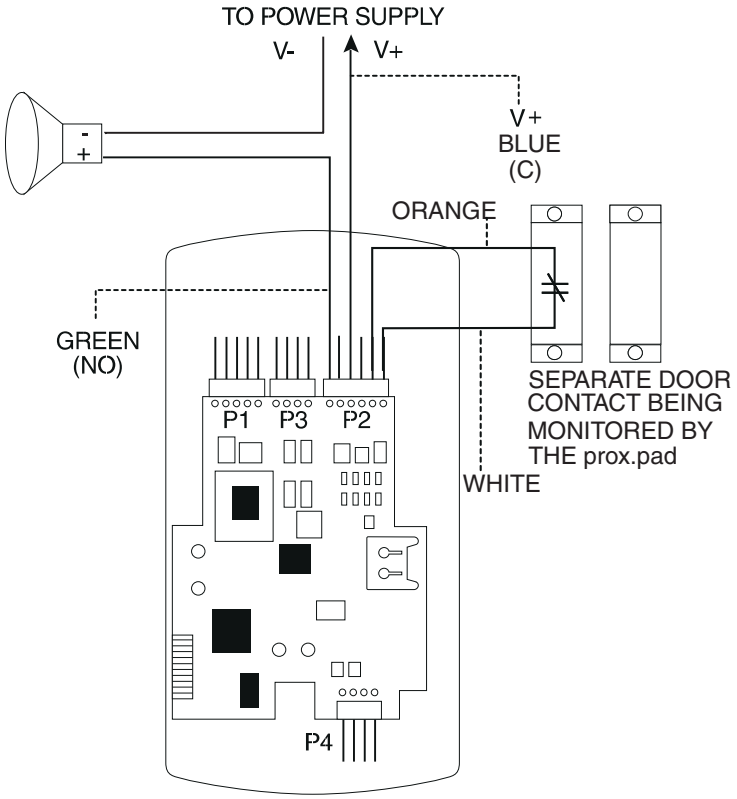

Figure 6 Wiring the Aux Relay for Forced Door Alarm

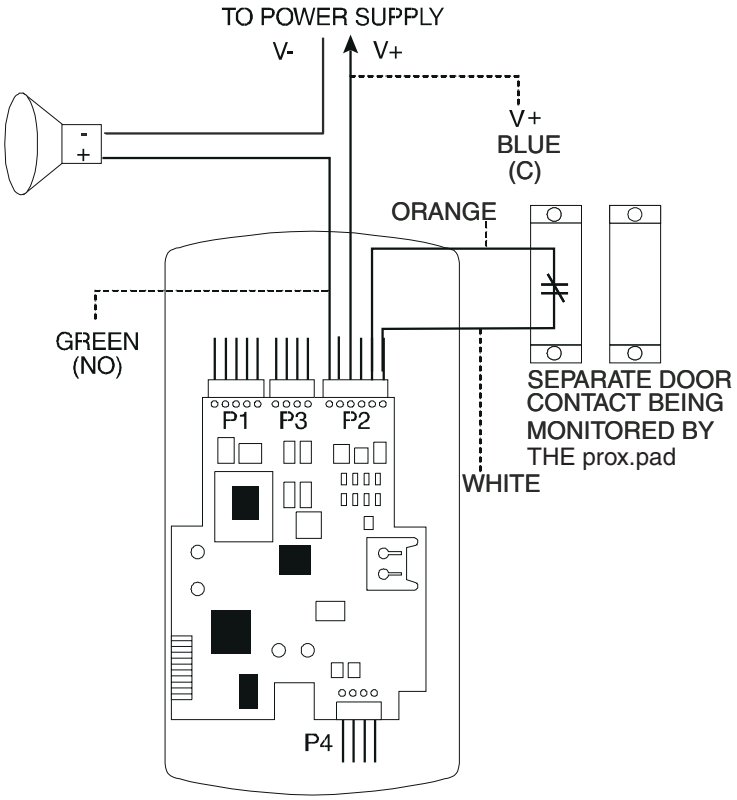

Figure 7 Wiring the Aux Relay for Propped Door Alarm

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.

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 8. To incorporate this feature, follow the steps below:

1. Turn OFF power to the prox.pad unit, and then remove the front keypad/controller from the backplate.
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 8, 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.

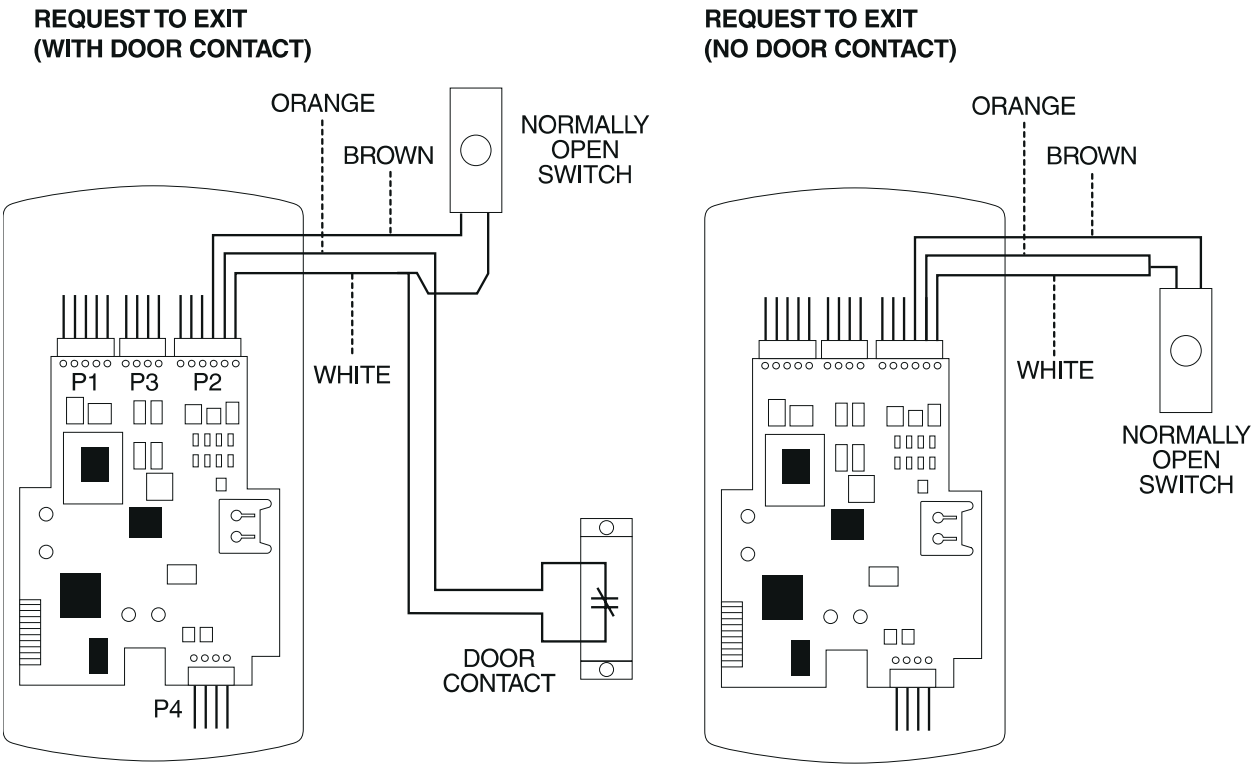

Figure 8 Wiring the REX Switch

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 the first table on page 3. Figure 9 provides an Electric Strike (Fail Secure) wiring diagram, Figure 10 a MagLock (Fail Safe) wiring diagram.

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.

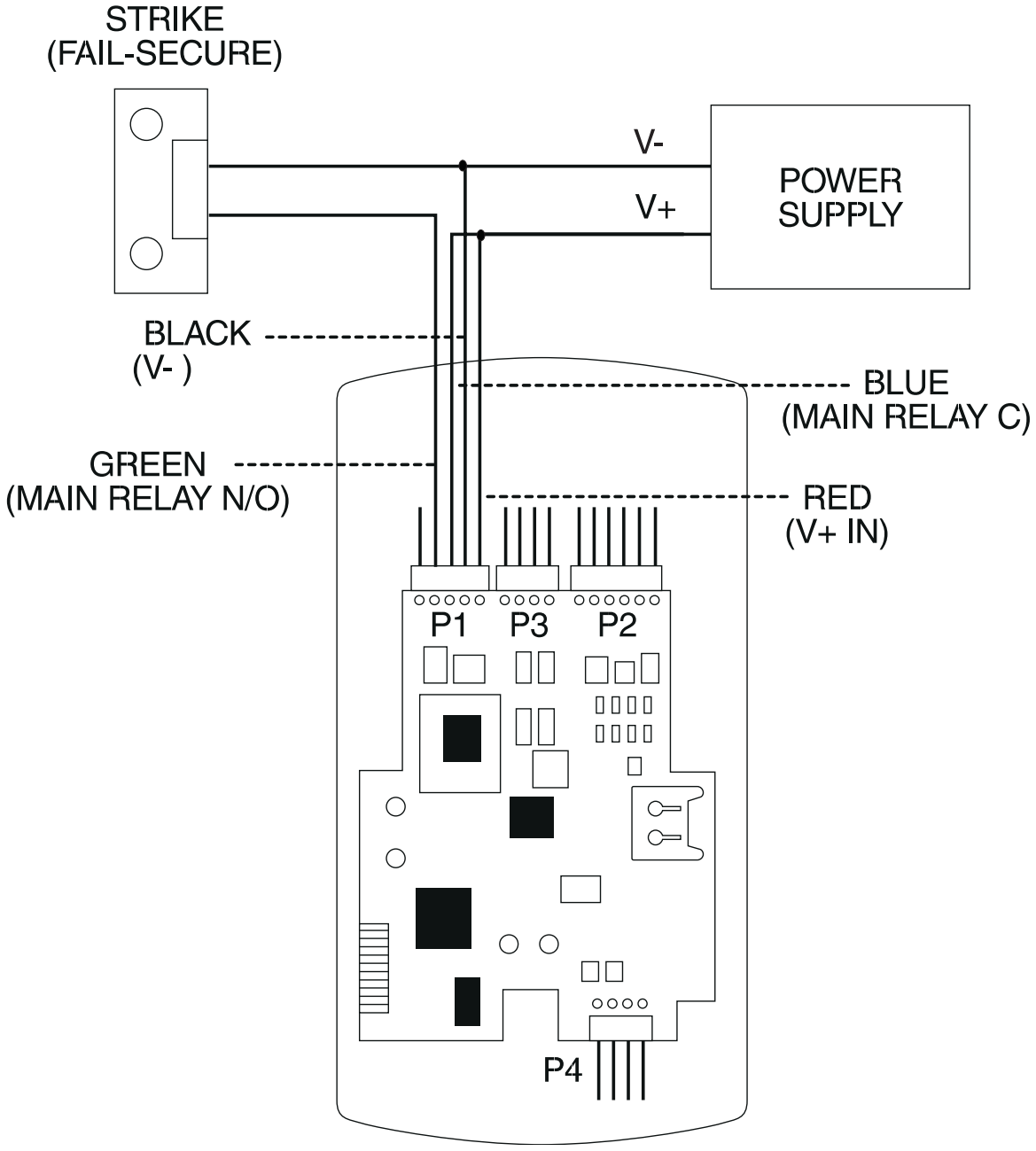

Figure 9 Electric Strike (Fail Secure Wiring Diagram)

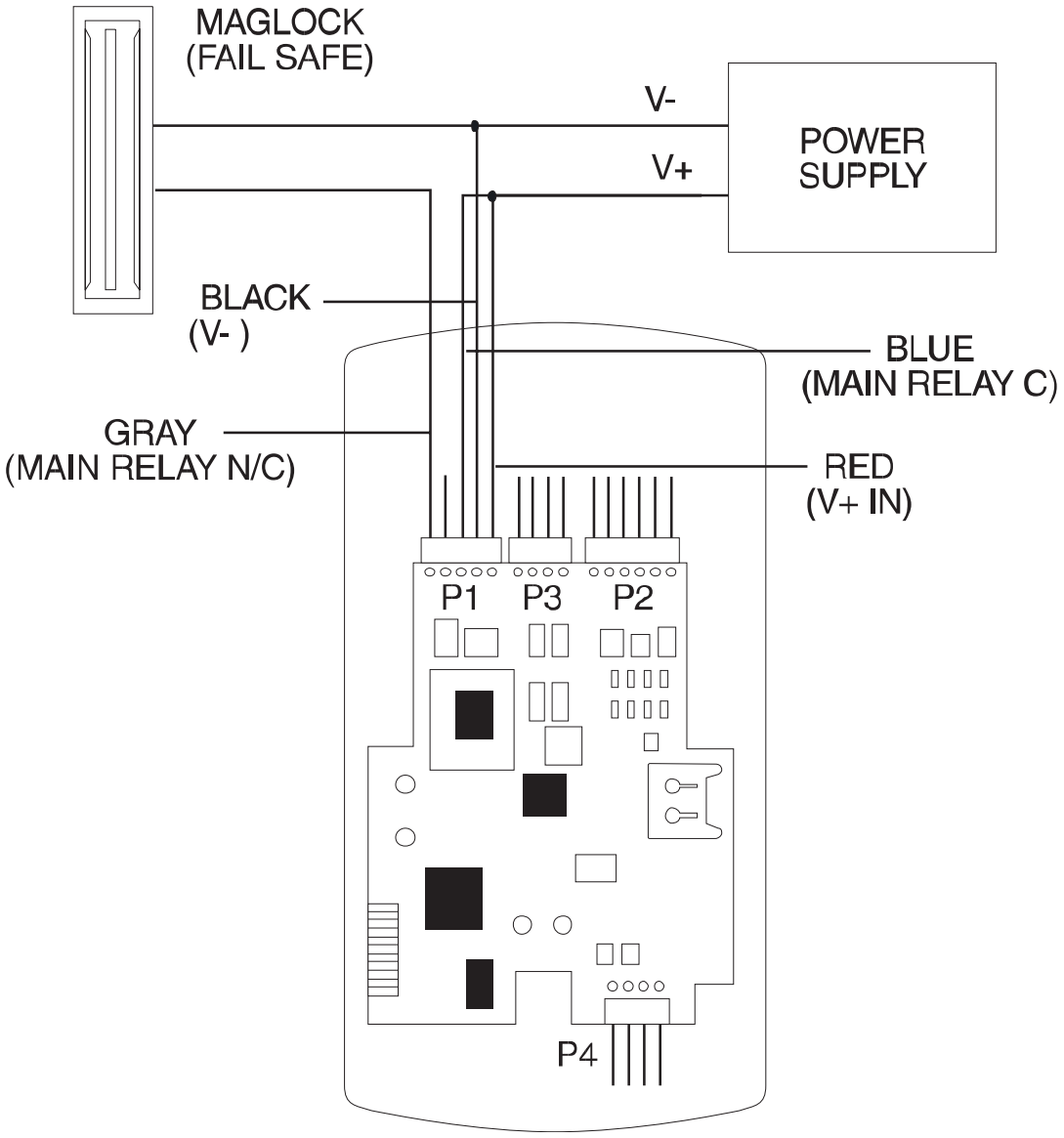

Figure 10 MagLock (Fail Safe) Wiring Diagram

Program Commands

Defaults are in bold. References in parenthesis are in the *Installation/Programming Manual* located on the supplied CD-ROM.

Standalone Program 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 below
	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/wiegand operation — **0=standalone** 1=wiegand 4, facility code access — **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** 8, US/EU date format — **0=US**, 1=European **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 # ****	

Program Commands (continued)

Action Desired	Press		Details
8. Change platform parameters	**32 # parameter # value # ****		See options below
	Parameter 2, facility code 3, process card timer 4, invalid PIN lockout threshold 5, invalid PIN lockout duration	**Value** 0-255 (**default=0**) 2-240 in ¼ second increments 1-50 attempts (default=5) 1-255 in 5-second increments	Facility code **must** be set to enter cards manually (IEI default = 1234) (defaults to 4 -1 second) (defaults to 60 secs, 5 minutes)
9. Enter Corporate 100 company ID	**35 # parameter # value # ****		See option below
	Parameter 0, corporate 1000 company ID	**Value** 0-4095 (default=4095)	
10. Set system time	**41 # hhmm # 0 # ****		hhmm=hour/minute, 24-hr format
11. Set system date	**42 # mmddyy # dow # ****		mmddyy=month, date, year; dow=day of week, 1=Sunday
12. Set door number	**43 # nnnn # 0 # ****		nnnn=door number in a four-digit format
13. Set propped door time (this sets time for both the Aux Relay and local sounder)	**44 # ttt # 0 # ****		ttt=propped door time, to nearest 10's seconds, entered as 10-990; default=30 secs
14. Set forced door time (this sets time for both the Aux Relay and local sounder)	**45 # ttt # 0 # ****		ttt=forced door time, to nearest 10's seconds, entered as 10-990; default=10 secs
15. Delete memory **except user list** and restore system defaults (also see command 46)	**40 # 00000 # 00000 # ****		(See section 2.7.1.D)
16. Delete **all** memory and reset system defaults	**46 # 00000 # 00000 # ****		(See section 2.7.1.E)
17. 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 strike, 1-Normal access, 2-log Dump, and 3-Lockout
18a. Program user: **Code AND Card**	**50 # user-type # user location # code * repeat code * <present card>**		
18b. Program user: **Card ONLY**	**50 # user-type # user location # ** <present card>**		

Program Commands (continued)

Action Desired	Press	Details
19. Program card 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 command 32, option #2)
20. Program user: **Code OR CARD**	**52 # user-type # user location # code* repeat code * <present card>**	
21. Program consecutive “card only” users	**53 # type # start user # ** <present card><present card> ...**	By presentation
22. 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)
23. Delete block of consecutive users	**58 # start user # start user # number of users * number of users ***	
24. Print Transaction Log via IR port	**70 # 0 # 0 # ****	(See section 2.8.2.B)
25. Set transaction log mask (set/clear event logging); set=1, clear=2	**73 # event # set/clear # ****	(See section 2.8.1); see options below; all are set to 1=ON
	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)	
26. Reset/erase transaction log	**76 # 00000 # 00000 # ****	(See section 2.8.2.C)
26. To exit Program mode	* (after final command)	Yellow stops flashing

Wiegand Program 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
	Option 0, audio keypress feature 1, visual keypress feature 2, auto entry enable 3, standalone/front end operation 9, wiegand red LED enable 10, wiegand red led active state 11, wiegand green led enable 12, wiegand green led active 15, front end mode select	**Set/Clear** 0=OFF, **1=ON** 0=OFF, **1=ON** **0=OFF**, 1-ON **0=standalone** 1=front end 0=OFF, **1=ON** **0=Low**, 1=High 0=OFF, **1=ON** 0=LOW, **1=High** **0=Wiegand**, 1=Hub	
3. Change platform parameters	**32 # parameter # value # ****		See options below
	Parameter 0, wiegand pulse count 1, wiegand interpulse	**Value** 1-255 (8-160µs) 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

Hub Front End Program 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
	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 14, prox card anti-passback select — 0=OFF, **1=ON** 15, front end mode select — **0=Wiegand**, 1=Hub 16, HFE reader In/Out select — **0=IN**, 1=OUT 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	
3. Change platform parameters	**32 # parameter # value # ****	See option below
	Parameter — **Value** 2, 26-bit facility code — 0-255 (defaults to 1)	
4. Enter Corporate 1000 Company ID	**35 # parameter # value # ****	
	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

Led Indicators/Sounder Operations

LED or Sounder	Visual/Audible Condition	Description
Yellow LED	Slow blink	Unit is in Program mode
	Rapid blink	Verify mode is active (checking that the last two values in sequence match)
	Steady	Program error; to clear, press *
	Very rapid blink	Memory (eeprom) erase is in progress (commands 40/46, loop-back)
Bi-color LED	Steady red	Strike is locked
	Steady green	Strike is energized (timed or latched)
	Solid green with red flicker	Strike toggle is unlocked and user lockout active
	Red/green alternating	Awaiting second PIN during “Card AND Code” access attempt
	Red blink	User lockout is active and strike locked; red LED drops out for 100 ms every second; normal users cannot change the state of the relay
Sounder	Short beep (100 ms) every 2 seconds	Propped door is active
	Sounder 1/2 sec on, 1/2 sec off	Forced door is active
	3 rapid beeps after code entered or card presented	Code or Card is not found
	3 slow beeps (250 ms), then single beep	Self-test is complete
	1 single beep	Valid card access

prox.pad Specifications

ELECTRICAL	
Power Supply/Current Requirements	10-15 VDC, linear filtered and regulated power supply 500 mA (not including locking device or peripherals)
WIRING	
Remote Antenna Cable	ALPHA 1174C (22AWG) 4-wire, stranded (this is required ONLY if you choose to remote the antenna 10 feet away from the keypad/controller)
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
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)
	Request to Exit (REX, Normally Open, 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 26-bit HID card, including the following: ProxCard II, IsoProx II, Duo Prox II, and Proxkey FOB; 26-bit cards are required for manual or batch programming

UNIT CAPACITY	
Users	2,000 users maximum; each user can have a card/tag, a PIN code, or a card/tag PLUS a PIN code
Transactions	1,000 transactions maximum; each transaction includes time, date, user “slot number,” and event
Strike Time	1-99 seconds
Strike Mode	Access Time or Toggle/Latch
ALARM OUTPUT	One of these three events can be programmed: Alarm Shunt Relay, Forced Door Relay, or Propped Door Relay
USER ACCESS CONFIGURATIONS	
	Code ONLY
	Code AND Card
	Card ONLY
	Code OR Card
OPERATING MODES	Standalone, Wiegand, or Hub Front End
PROGRAMMABLE USER TYPES	Each user is assigned one of the following user types:
	0-Toggle/latch strike
	1-Normal access
	2-log Dump
	3-Lockout
SYSTEM USES/ INSTALLATION CONFIGURATIONS	Suitable for small installations or remote locations, in conjunction with a separate Wiegand panel indoors or outdoors Wall mounted, glass mounted, or secure installation
ENVIRONMENTAL	
Operating Temperature	-20° to 130° F (-28° to 54° C)
Operating Humidity	5% to 95% relative humidity, non-condensing

Questions or Problems

If you have any questions about initial prox.pad programming or operation, or encounter any installation problems, contact your prox.pad dealer or distributor. The complete Installation/Programming Reference manual is contained on the supplied CD-ROM.

Warranty

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 han-dling, 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.

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