



## ***Owner's Manual***

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***Models 1506 and 1504  
Programmable Stand Alone Digital Keypad Entry Devices***

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## **Use this manual with the following models**

1506-080, 1506-081, 1506-082, 1506-083, 1506-084, 1506-085, 1506-086, 1506-090, 1506-091, 1506-092, 1506-093, 1506-094, 1506-095, 1506-096, 1504-080, 1504-082, 1504-083, 1504-084, 1504-085 and 1504-086 Digital Keypad Entry Devices with circuit board 1506-010, Rev G and Higher.

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## IMPORTANT NOTICES

- Prior to starting the installation, become familiar with the instructions, illustrations and wiring diagrams in this manual.
- Never mount this device to a moving gate or gate panel, or next to a gate that causes vibration to the fence, such as a spring-loaded pedestrian gate. Continuous vibration from moving or slamming gates can cause damage to the unit in time.

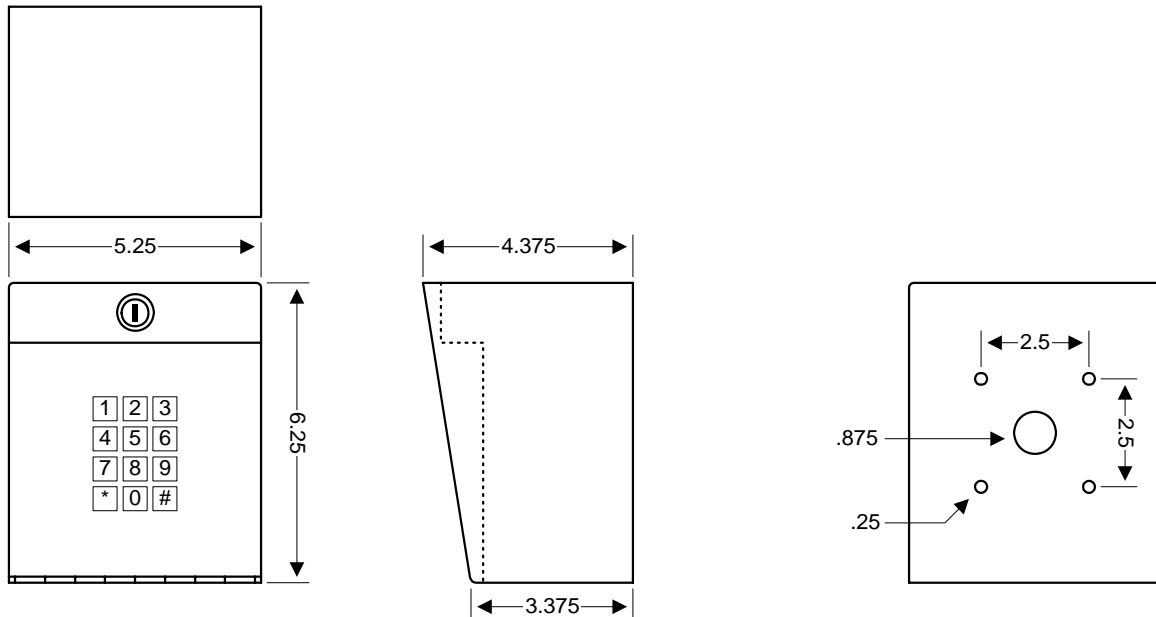


- **WARNING!** If this entry system is used to control a vehicular gate with an automatic gate operator, the entry system must be mounted a minimum of ten (10) feet away from the gate and gate operator, or in such a way that a person cannot operate the entry system and touch the gate or gate operator at the same time.
- Always disconnect power when performing service on the system.
- If the unit is mounted outdoors, be sure that the wiring to the unit is designed for direct underground burial, even if the wire is run inside a conduit.
- Surge suppression is recommended on the low voltage input power line.
- Instruct the end user on the safe and proper operation of this device.
- **Instruct the end user to read and follow these instructions. Instruct the end user to never let children play with or operate any access control device. This Owner's Manual is the property of the end user and must be left with them when installation is complete.**

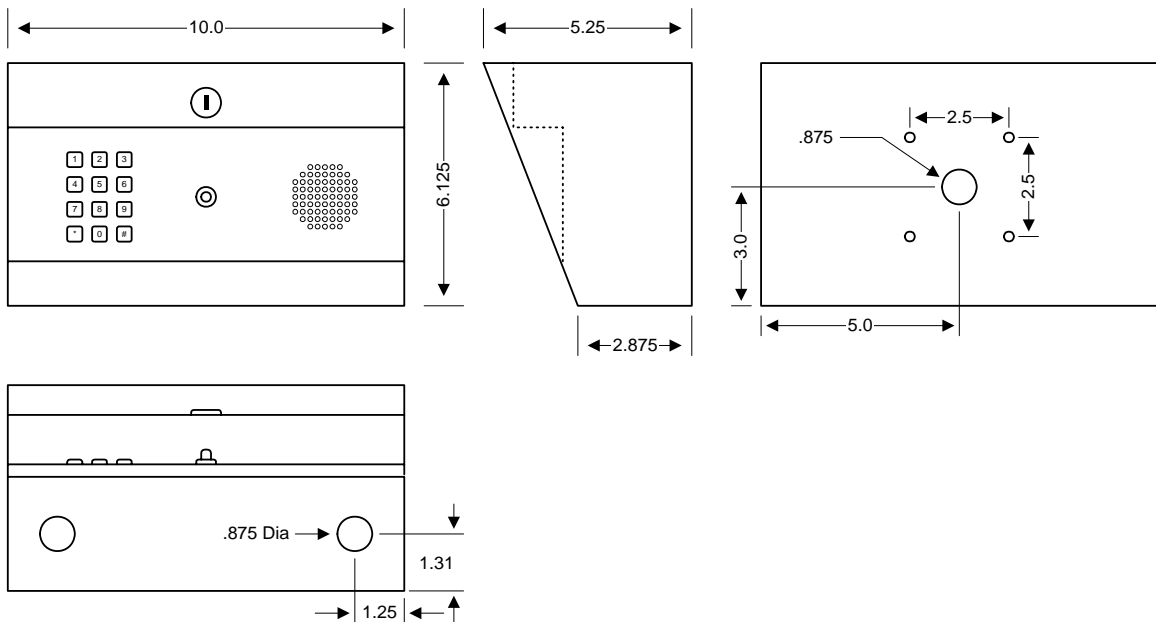
# SECTION 1 - INSTALLATION

## 1.1 Mounting

Surface mount units can be mounted directly to a wall or pilaster, or they can be mounted using a gooseneck mounting post (p/n 1200-045 or 1200-046).

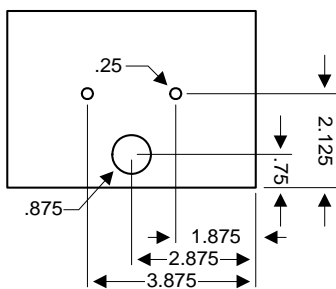
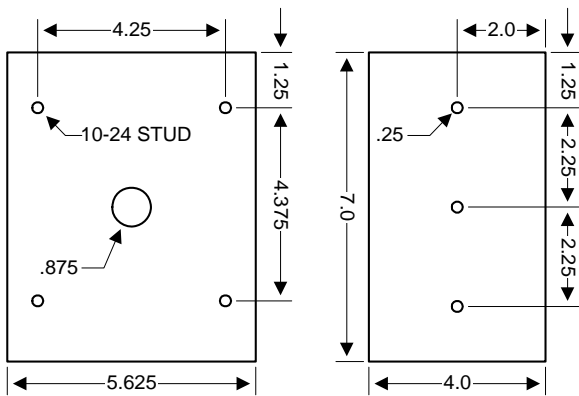
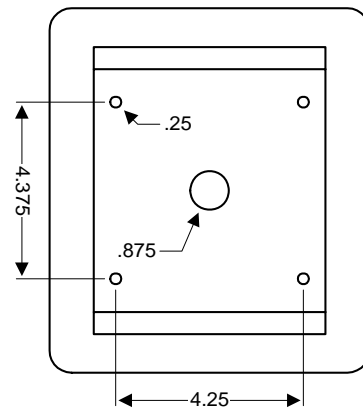
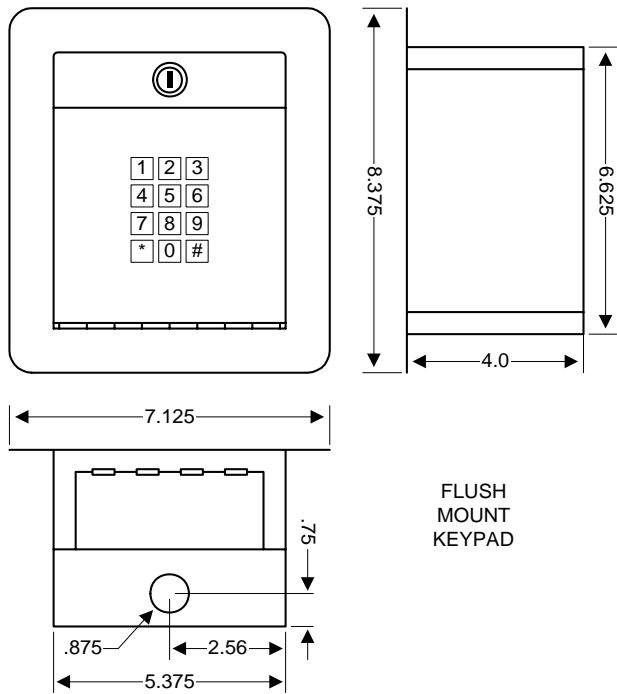


1506 Surface Mount

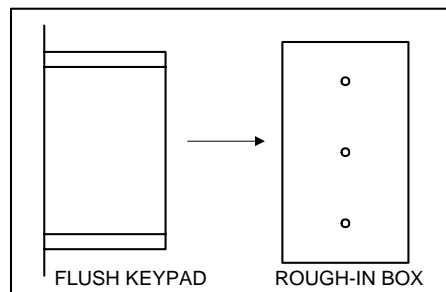


Model 1504 Surface Mount

The flush mount keypad consist of two parts, the keypad and the rough-in box. Mount the rough-in box and wiring first, and then install the keypad into the rough-in box.



ROUGH IN BOX





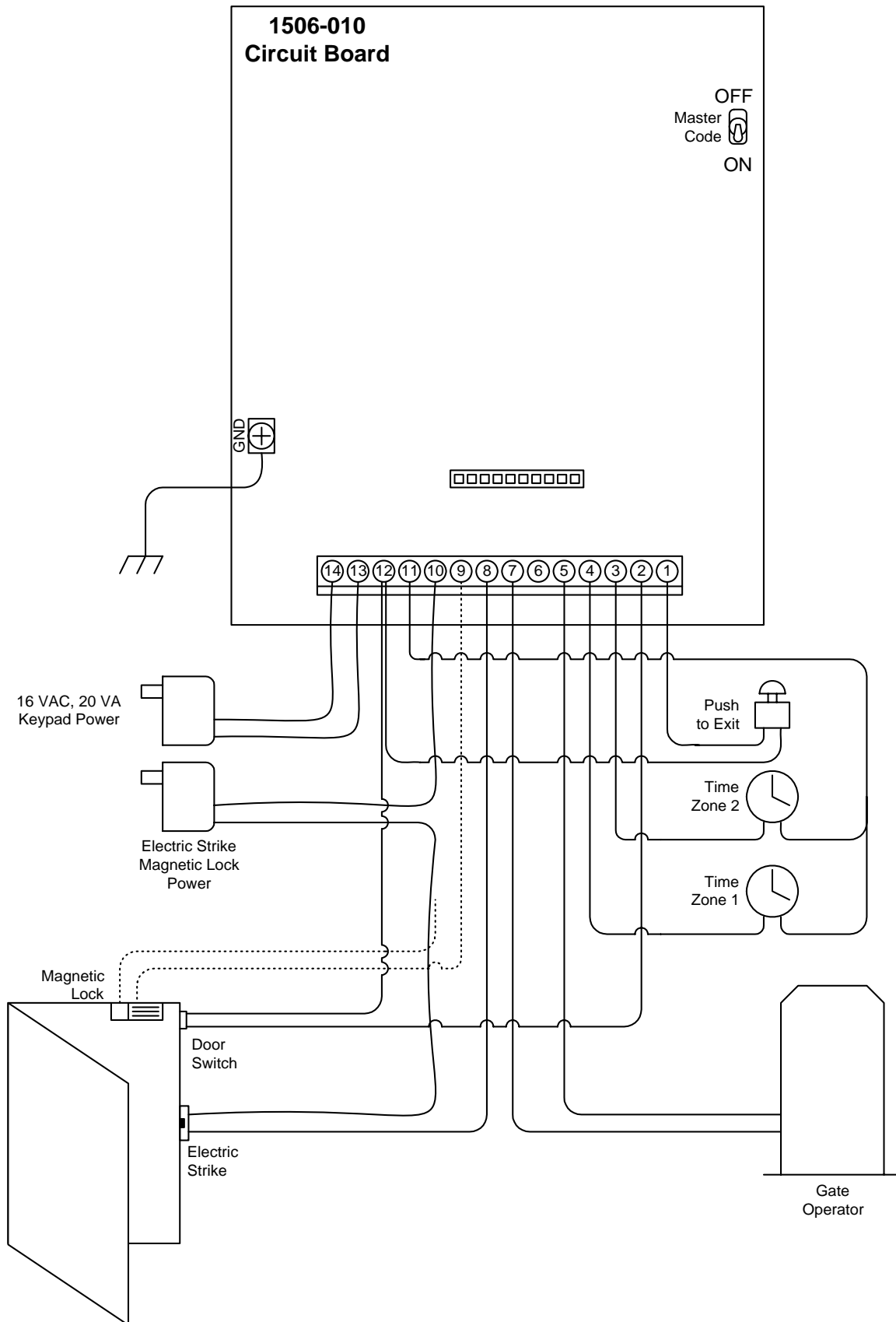
## 1.2 Wiring

The wiring of this device is an extremely important and integral part of the access control system. It is very important that proper wire is used for power and control lines, and that the system is properly grounded.

- The digital keypad can operate on 10-16.5 volt AC power, or 12-24 DC power.
- The light is set to operate at 16.5 VAC power. If the keypad is to be powered from a solar/battery system (12 VDC), we suggest that you remove the light bulb to conserve battery power.
- Do not run power wiring greater than 200 feet.
- Do not power electric strikes or magnetic locks from the power supply. Strikes, locks and other devices must be powered from their own power source.
- It is preferable to keep power wiring as short as possible. A low voltage surge suppresser (P/N 1878-010) is recommended.
- Be sure to properly ground the digital keypad. Attach a separate 12 AWG wire to the ground lug on the circuit board. Attach the other end of this wire to a good earth ground. This can be a properly grounded metal conduit, a cold water pipe, or a grounding rod driven at least 10 feet into the soil. A gooseneck post anchored or mounted on concrete does not make a good ground.
- Avoid any splices in wiring. If a splice is made, it must be soldered and sealed in a watertight junction box.
- Relay contacts are rated for 30 Volt, 1 Amp.
- A switch closure across terminals 1 and 12 will activate relay 1 for its programmed strike time.
- Use U.L. listed wire with an insulation rating of 600 volts.
- If a slave keypad (p/n 1506-081) is connected, refer to the instruction sheet included with the slave keypad assembly.
- Maximum distance for slave keypad wiring is 200 feet using an 8 conductor 22 AWG shielded cable. An additional 2 wires are needed to power the slave keypad light.
- The slave keypad does not have any relays. It only provides a method to access the entry codes from a second location. Typically, the slave keypad is used when both entry and exit control are required through a common door or gate.

POWER WIRING	
Wire Size	Maximum Distance
18 AWG	100 Ft.
16 AWG	200 Ft.

### 1.3 Wiring Diagram



## **1.4 Circuit Board Terminal Identification**

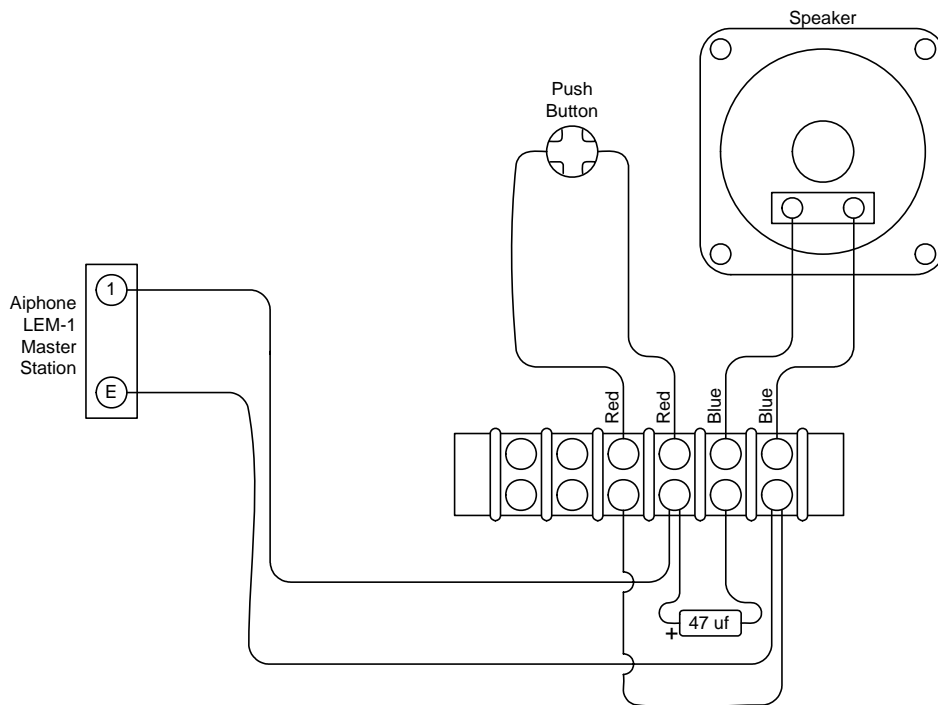
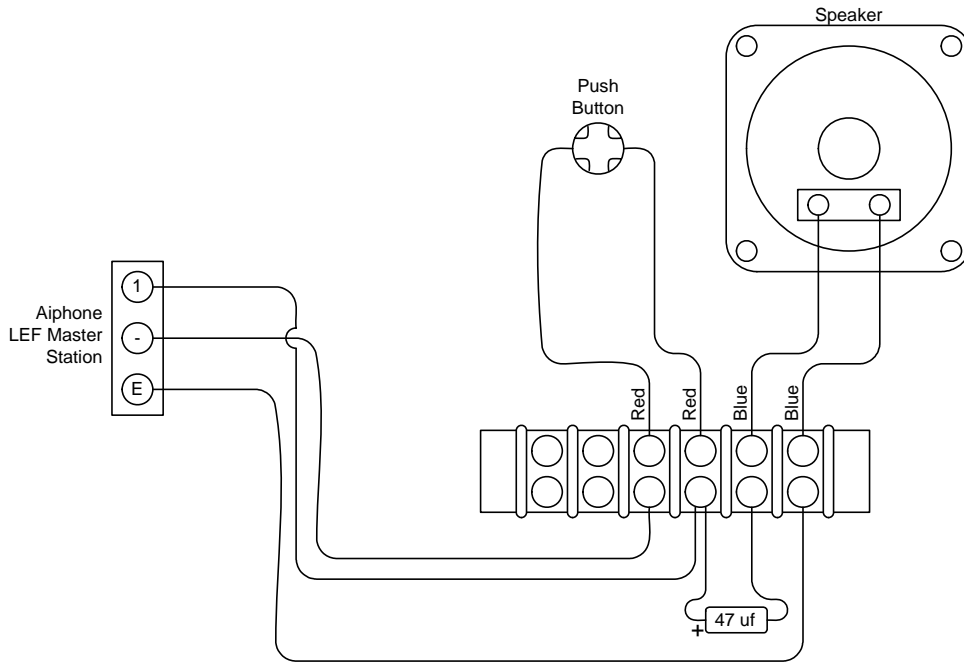
1. REQUEST TO EXIT – A switch closure to terminal 12 will activate relay 1 for its programmed strike time.
2. DOOR OPEN – A switch closure to terminal 12 will cause the relay that is activated to deactivate 1 second after this input is activated. Can also be used for alarm bypass.
3. TIME ZONE 2 – A switch closure to terminal 11 will lock out all entry codes within the time zone 2 lower and upper boundary.
4. TIME ZONE 1 – A switch closure to terminal 11 will lock out all entry codes within the time zone 1 lower and upper boundary.
5. RELAY 1 COMMON
6. RELAY 1 NORMALLY CLOSED (N.C.)
7. RELAY 1 NORMALLY OPEN (N.O.)
8. RELAY 2 COMMON
9. RELAY 2 NORMALLY CLOSED (N.C.)
10. RELAY 2 NORMALLY OPEN (N.O.)
11. LOW VOLTAGE COMMON
12. LOW VOLTAGE COMMON
13. INPUT POWER: 10-16.5 VAC or 12-24 VDC
14. INPUT POWER: 10-16.5 VAC or 12-24 VDC

### **NOTES:**

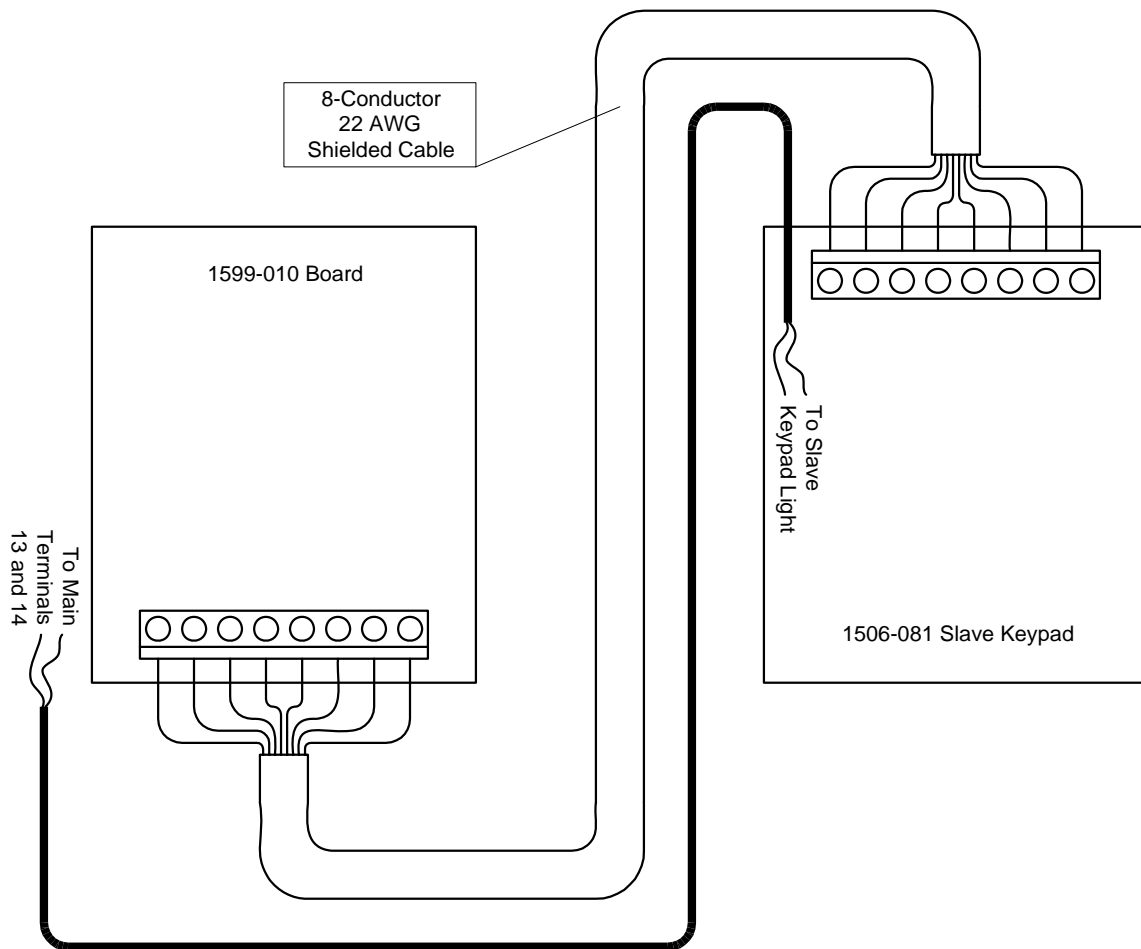
- A switch closure across terminals 1 and 12 will activate relay 1 for its programmed strike time.
- Relay contacts are rated for 30 Volt, 1 amp maximum power.
- The keypad unit will draw approximately 15 ma of current under stand-by condition, and approximately 100 ma of current when the relay is activated.
- Electric strikes and magnetic locks must be powered from their own power supply as shown on the wiring diagram (page 10). Do not power the keypad and the locking device from the same source.

## 1.5 Model 1504 Aiphone Intercom Station Connections

These wire diagrams are provided for convenience only. For detailed wiring information on Aiphone products, visit their website at [www.aiphone.com](http://www.aiphone.com).



## 1.6 Slave Keypad Wiring



- Refer to Slave Keypad Instruction Sheet (p/n 1506-066) for instructions on mounting the 1599-010 board onto the 1506-010 circuit board.
- Wire terminals 1-8 on the 1599 board to terminals 1-8 on the 1506-081 slave keypad. Pay careful attention to the terminal numbers as they can appear backwards (numbered right to left) when the faceplate is opened.
- Use 22 AWG shielded cable, maximum length 200 feet.
- An additional 2 wires are needed to power the light in the slave keypad. Connect these wires to terminals 13 and 14 on the 1506 main terminal strip, and to the light wires in the slave keypad. If DC power is used to power the 1506, you may consider not connecting the slave light to conserve battery power.
- The slave keypad has no relays! Valid entry codes entered on the slave keypad will activate the relays in the 1506 keypad.



## SECTION 2 - PROGRAMMING

Keep a record of the programmed codes by completing the tables on pages 24 and 25.

### 2.1 *Master Code*

The Master Code is a four-digit number that is used to access all programming functions of the digital keypad. The default factory master code is set to 9999. We suggest that you program a new master code once the system is installed. After programming the master code, write it down and keep it in a safe place. If you forget your master code, you will need to program a new one before you can access any of the programming functions of the digital keypad.

1. Open the cabinet and locate the Master Code switch on the circuit board.
2. Turn the Master Code switch ON.
3. Enter a four-digit code \_\_\_\_ on the keypad and then press \* (short beep).
4. Turn the Master Code switch OFF and close the cabinet.

### 2.2 *Relay Strike Time*

The relay strike time sets the amount of time that the relay(s) will be activated when a valid entry code is entered on the keypad. The unit has two relays, both of which can be programmed with individual strike times. Setting the strike time to 00 will activate the relay for ½ second. The factory setting is 1-second.

1. Press \*03 and enter the four-digit master code \_\_\_\_ (short beep).
2. Enter the relay time in seconds \_\_ (00 – 99) for relay 1, then press \* (short beep).
3. Enter the relay time in seconds \_\_ (00 – 99) for relay 2, then press \* (short beep).
4. Press 0# together to end the programming step (long beep).

### 2.3 *X-Strikes Programming*

This keypad has a 3-minute lockout feature that is activated when “X” number of invalid entry codes are entered on the keypad. The “X” strikes can be programmed from 1 to 9 invalid tries before the lockout feature is activated.

1. Press \*04 and enter the four-digit master code \_\_\_\_ (short beep).
2. Enter the number of invalid tries before the lockout feature is activated \_ (1 – 9), then press \* (short beep).
3. Press 0# together to end the programming step (long beep).

## **2.4 Programming Four-digit Entry Codes**

1. Press \*02 and enter the four-digit master code \_ \_ \_ \_ (short beep).
2. Enter the four-digit code \_ \_ \_ \_ then press \* (beep).
3. Repeat step 2 to enter additional entry codes. Note: the number of codes that can be entered is dependant on the memory size ordered.
4. Press 0# together to end the programming step (long beep).

## **2.5 Erasing Individual Four-digit Entry Codes**

1. Press \*08 and enter the four-digit master code \_ \_ \_ \_ (short beep).
2. Enter the four-digit code to be erased \_ \_ \_ \_ then press \* (beep).
3. Repeat step 2 to erase additional entry codes.
4. Press 0# together to end the programming step (long beep).

## **2.6 Erasing ALL Four-digit Entry Codes**

**CAUTION: This sequence will erase ALL four-digit entry codes that have been previously programmed into the keypad and is irreversible.**

1. Press \*00 and enter the four-digit master code \_ \_ \_ \_ (short beep).
2. Press 9 9 9 9 \* (short beep).
3. After approximately 10-seconds, a long beep will be heard indicating that all four-digit entry codes have been erased.

## **2.7 Four-digit Entry Code Divide Number**

The four-digit entry codes can be made to activate either relay 1 or relay 2 by programming a four-digit "divide" number. Four-digit entry codes equal to or less than the divide number will activate relay 1, while four-digit entry codes greater than the divide number will activate relay 2. If no divide number is programmed (enter # # # # in step 2), then relay 2 acts as an alarm by-pass relay, activating .1 second prior to relay 1, and deactivating .1 second after relay 1.

Important: Both four-digit and five-digit entry codes must be programmed to operate in the same mode. If a divide number is programmed for the four-digit codes, then a divide number must also be programmed for the five-digit entry codes (see page 17). The system is preset at the factory with no divide numbers programmed.

1. Press \*12 and enter the four-digit master code \_ \_ \_ \_ (short beep).
2. Enter a four-digit divide number \_ \_ \_ \_ then press \* (short beep).
3. Press 0# together to end the programming step (long beep).

Note: To delete the four-digit entry code divide number, enter # # # # in step 2. This will cause relay 2 to act as an alarm by-pass relay provided that the five-digit divide number has also been deleted (see page 17).



## **2.8 Programming Five-digit Entry Codes**

1. Press \*09 and enter the four-digit master code \_\_\_\_ (short beep).
2. Enter the five-digit code \_\_\_\_\_ then press \* (beep).
3. Repeat step 2 to enter additional entry codes. Note: a maximum of 6 five-digit entry codes can be programmed.
4. Press 0# together to end the programming step (long beep).

## **2.9 Erasing Individual Five-digit Entry Codes**

1. Press \*10 and enter the four-digit master code \_\_\_\_ (short beep).
2. Enter the five-digit code to be erased \_\_\_\_\_ then press \* (beep).
3. Repeat step 2 to erase additional entry codes.
4. Press 0# together to end the programming step (long beep).

## **2.10 Erasing ALL Five-digit Entry Codes**

**CAUTION: This sequence will erase ALL five-digit entry codes that have been previously programmed into the keypad and is irreversible.**

1. Press \*11 and enter the four-digit master code \_\_\_\_ (short beep).
2. Press 9 9 9 9 \* (short beep).
3. After approximately 10-seconds, a long beep will be heard indicating that all five-digit entry codes have been erased.

## **2.11 Five-digit Entry Code Divide Number**

The five-digit entry codes can be made to activate either relay 1 or relay 2 by programming a five-digit "divide" number. Five-digit entry codes equal to or less than the divide number will activate relay 1, while five-digit entry codes greater than the divide number will activate relay 2. If no divide number is programmed (enter # # # # # in step 2), then relay 2 acts as an alarm by-pass relay, activating .1 second prior to relay 1, and deactivating .1 second after relay 1.

Important: Both four-digit and five-digit entry codes must be programmed to operate in the same mode. If a divide number is programmed for the five-digit codes, then a divide number must also be programmed for the four-digit entry codes (see page 16). The system is preset at the factory with no divide numbers programmed.

1. Press \*13 and enter the four-digit master code \_\_\_\_ (short beep).
2. Enter a five-digit divide number \_\_\_\_\_ then press \* (short beep).
3. Press 0# together to end the programming step (long beep).

Note: To delete the five-digit entry code divide number, enter # # # # # in step 2. This will cause relay 2 to act as an alarm by-pass relay provided that the five-digit divide number has also been deleted (see page 16).

## **2.12 Hold Boundary Programming**

The entry system hold boundaries establish a set of four-digit entry codes that will latch relay 1 ON, relay 2 ON, or both relay 1 and relay 2 ON (depending on the divide number programmed and the hold boundaries that have been programmed) indefinitely. To un-latch the relay(s), an entry code within the hold boundary is entered on the keypad.

NOTE: Hold boundaries can only be established for the four-digit entry codes. Five-digit entry codes have no hold boundaries.

1. Press \*07 and enter the four-digit master code \_\_\_\_ (short beep).
2. Enter a four-digit code for the lower hold boundary \_\_\_\_ then press \* (short beep).
3. Enter a four-digit code for the upper hold boundary \_\_\_\_ then press \* (short beep).
4. Press 0# together to end the programming step (long beep).

NOTE: To delete hold boundaries, enter # # # # in steps 2 and 3.

## **2.13 Time Zone 1 Boundary Programming**

Programming the lower and upper boundaries for time zone 1 establishes a set of four-digit entry codes that will be denied access if the time zone 1 input (terminal 3) is activated. This time zone does not affect the five-digit entry codes.

1. Press \*05 and enter the four-digit master code \_\_\_\_ (short beep).
2. Enter a four-digit code for the lower boundary \_\_\_\_ then press \* (short beep).
3. Enter a four-digit code for the upper boundary \_\_\_\_ then press \* (short beep).
4. Press 0# together to end the programming step (long beep).

NOTE: To delete time zone 1 boundaries, enter # # # # in steps 2 and 3.

## **2.14 Time Zone 2 Boundary Programming**

Programming the lower and upper boundaries for time zone 2 establishes a set of four-digit entry codes that will be denied access if the time zone 2 input (terminal 4) is activated. This time zone does not affect the five-digit entry codes.

1. Press \*06 and enter the four-digit master code \_\_\_\_ (short beep).
2. Enter a four-digit code for the lower boundary \_\_\_\_ then press \* (short beep).
3. Enter a four-digit code for the upper boundary \_\_\_\_ then press \* (short beep).
4. Press 0# together to end the programming step (long beep).

NOTE: To delete time zone 2 boundaries, enter # # # # in steps 2 and 3.

## **SECTION 3 – OPERATING INSTRUCTIONS**

### **3.1 Four-digit Entry Codes**

To use a four-digit entry code, the # key must first be pressed then the four-digit code entered on the keypad. Four-digit entry codes can be programmed to operate either relay 1 or relay 2.

When a four-digit code is entered on the keypad (preceded by #), the system checks its memory to see if the code is stored. If the four-digit entry code is not stored in the system memory, the relay(s) will not activate. If the four-digit code is stored, the system will then check to see if any of the time zone inputs are activated, and if the four-digit code is within the boundaries of the time zone that is activated. If the four-digit code falls within one or both of the time zone boundaries, the relay will not activate. If the time zones are not activated, or if the four-digit code is outside of the activated time zone(s), then the system will check the four-digit divide number. If the entered code is equal to or less than the divide number, relay 1 will activate for its programmed strike time. If the entered code is greater than the divide number, relay 2 will activate for its programmed strike time. If the door input is activated, the relay will deactivate one second after this input is activated, regardless of the programmed strike time. If no divide number is programmed, relay 2 will activate .1 second prior to relay 1 activation. Relay 1 will then activate for its programmed strike time. Relay 2 will deactivate .1 second after relay 1 deactivates. If the door input (terminal 2) is activated, relay 1 will deactivate one second after this input is activated, regardless of the relay strike time remaining. Relay 2 will stay activated for the duration of the relay 1 strike time program.

### **3.2 Five-digit Entry Codes**

To use a five-digit entry code, enter the five-digit code on the system keypad. Do not press # first when using five-digit entry codes. Five-digit entry codes can be programmed to operate either relay 1 or relay 2.

When a five-digit code is entered on the keypad, the system checks its memory to see if the code is stored. If the five-digit entry code is not stored in the system memory, the relay(s) will not activate. If the five-digit code is stored, then the system will check the five-digit divide number. If the entered code is equal to or less than the divide number, relay 1 will activate for its programmed strike time. If the entered code is greater than the divide number, relay 2 will activate for its programmed strike time. If the door input is activated, the relay will deactivate one second after this input is activated, regardless of the programmed strike time. Five-digit entry codes are not affected by the time zone inputs or hold boundaries.

### **3.3 Request to Exit Input**

A switch closure across terminals 1 and 12 will cause relay 1 to activate for its programmed strike time. This input is not affected by the time zone inputs.

### **3.4 Door Open Input**

A switch closure across terminals 2 and 12 will cause the relay that is activated to deactivate one second after this input is activated. A useful application of this input would be to wire it to a normally closed door-switch that is held open when the door is closed. When the door is opened, the switch will close, cutting off the door strike one second later. This will stop a door strike from buzzing for prolonged periods of time if the relay strike time is set high. For example, if the relay strike time was set for 10 seconds and the door was opened after 2 seconds, the door switch input will stop the strike from buzzing after three seconds, even though the strike time was set to 10 seconds.

If no entry code divide number is programmed, and the second relay is being used as an alarm bypass relay, the door input switch does not prematurely deactivate the second relay. For example, if the strike time for relay 1 is set to 10 seconds, relay 2 will activate .1 seconds prior to relay 1. If the door input deactivates relay 1 after three seconds, relay 2 will remain activated for the full strike time.

### 3.5 Hold Feature Operation

The relay hold feature allows a set of four-digit entry codes to latch (or hold) a relay indefinitely. Any four-digit entry code that falls numerically within the hold boundaries will cause relay 1 to activate indefinitely if no four-digit divide number is programmed. If a four-digit divide number is programmed, and the divide number is less than the lower hold boundary, then the four-digit codes within the hold boundary will activate relay 2. If a four-digit divide number is programmed, and the divide number is greater than the upper hold boundary, then the four-digit codes within the hold boundary will activate relay 1. If a four-digit divide number is programmed, and it falls between the hold boundaries, then four-digit entry codes equal to or less than the divide number, but greater than the lower hold boundary, will activate relay 1 indefinitely. Four-digit entry codes that are greater than the divide number, but less than the upper hold boundary, will activate relay 2 indefinitely. Five-digit entry codes are not affected by hold boundaries. To deactivate a relay that is latched, simply re-enter the number that was used to activate the relay. See sample charts below.

Relay 1		Relay 2				
Relay 1 momentarily activates with code 2000 or lower.	Divide Number 2000	Relay 2 momentarily activates with codes 2001 thru 2009.	Lower Hold Boundary 2010	Relay 2 latches when codes 2010 thru 2015 are entered on the keypad.	Upper Hold Boundary 2015	Relay 2 momentarily activates with codes 2016 and higher.

Relay 1					Divide Number 2025	Relay 2
Relay 1 momentarily activates with code 2009 or lower.	Lower Hold Boundary 2010	Relay 1 latches when codes 2010 thru 2015 are entered on the keypad.	Upper Hold Boundary 2015	Relay 1 momentarily activates with codes 2016 thru 2025		Relay 2 momentarily activates with code 2026 or higher.

Relay 1			Divide Number 2012	Relay 2		
Relay 1 momentarily activates with code 2009 and lower.	Lower Hold Boundary 2010	Relay 1 latches when codes 2010 thru 2012 are entered on keypad.		Relay 2 latches when codes 2013 thru 2015 are entered on keypad.	Upper Hold Boundary 2015	Relay 2 momentarily activates with code 2016 and higher.

### 3.6 Time Zone Operation

The entry system has two time zone inputs. By using an external timer or switch, access can be denied to a group of four-digit entry codes during desired lockout times. Four-digit entry codes that fall numerically within a time zone boundary will cause a check of the time zone input when the code is entered. If time zone 1 is activated (switch closure across terminals 3 and 11), four-digit entry codes that are within the time zone 1 boundaries will be denied access. If time zone 2 is activated (switch closure across terminals 4 and 11), four-digit entry codes that are within time zone 2 boundaries will be denied access. Time zone boundaries may overlap each other. Five-digit entry codes are not time zone restricted.

Entry codes 1999 and lower are not time zone restricted.	Time Zone 1		Entry codes 3001 thru 3999 are not time zone restricted.	Time Zone 2		Entry codes 5001 and higher are not time zone restricted.
	Lower Boundary 2000	Entry codes 2000 thru 3000 are restricted by time zone 1.		Upper Boundary 3000	Lower Boundary 4000	

Entry codes 1999 and lower are not affected by time zones.	Time Zone 1			Entry codes 3000 thru 3500 are restricted by TZ 2 only.	TZ 2 Upper Boundary 3500	Entry codes 3501 and higher are not time zone restricted.
	TZ 1 Lower Boundary 2000	Entry codes 2000 thru 2499 are restricted by TZ 1 only.	TZ 2 Lower Boundary 2500			
Time Zone 2						



## SECTION 4 - APPENDIX

### 4.1 Troubleshooting

- Have a good VOM meter to use when checking voltages and continuity.
- Check power wiring wire size and distance. Improper wire size and too long wire run distances can cause problems.
- Check that the power transformer is rated at 16.5 VAC, 20 VA minimum.

SYMPTON	POSSIBLE SOLUTION(S)
Cannot get into the programming mode.	Wrong master code entered. Start over. Waiting too long when entering data. Enter information quickly. Keypad may not be plugged in correctly. Unplug and reconnect.
Keypad emits a long tone and cancels the programming mode.	Waiting too long between pushing buttons while programming. Memory is filled. Delete some codes or erase entire memory. Forgetting to press * first.
System is dead.	Check for 16 VAC at terminals 13 and 14. Keypad may not be plugged in correctly. Unplug and reconnect. X strikes feature may be activated. Wait 3 minutes and try again.
Four-digit entry codes will not activate relay 1.	Be sure entry code is programmed into the keypad. Press # first, then enter four-digit number. Code may be time zone restricted. Reprogram time zone or disable time zone input. Be sure entry code is less than divide number or reprogram divide number.
Four-digit entry codes will not activate relay 2.	Be sure entry code is programmed into the keypad. Press # first, then enter four-digit number. Code may be time zone restricted. Reprogram time zone or disable time zone input. Be sure entry code is greater than divide number or reprogram divide number.
Five-digit entry codes will not activate relay 1.	Be sure entry code is programmed into the keypad. Enter five-digit code directly on keypad. Do not press # first. Be sure entry code is less than divide number or reprogram divide number.
Five-digit entry code will not activate relay 2.	Be sure entry code is programmed into the keypad. Enter five-digit code directly on keypad. Do not press # first. Be sure entry code is greater than divide number or reprogram divide number.
Relay(s) lock on for long periods of time.	Excessive voltage-drop on power wires. Check transformer and wire size. Transformer has too low VA rating. Relay hold feature may be activated. Reprogram hold boundaries. Relay strike time may be programmed too long. Reprogram.
Request to exit input will not operate relay.	Check wiring connected to terminals 1 and 12.

## 4.2 Data Tables

Use the tables below to record data entered into the keypad system.

MASTER CODE			

4-DIGIT HOLD BOUNDARIES				
LOWER				
UPPER				

4-DIGIT DIVIDE NUMBER			

5-DIGIT DIVIDE NUMBER				

TIME ZONE 1 BOUNDARIES				
LOWER				
UPPER				

TIME ZONE 2 BOUNDARIES				
LOWER				
UPPER				

5-DIGIT ENTRY CODES					
1					
2					
3					
4					
5					
6					



