



SENTINEL

User Manual

314/1600/3200 Keypad



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Overview

The 314 series of keypads (Models 314, 1600, and 3200) provide access control for both central office direct as well as stand-alone operation for remote sites without continuous central office monitoring. Each model is capable of three different primary modes of operation: Unit/Passcode, Passcode Only, and Remote. Unit/Passcode and Passcode Only modes are used with constant central office monitoring (using Sentinel Systems Winsen Sentiel Property Management or Winsen Platinum Property Sentinel software). The Remote mode is used for installations that do not need or do not have constant central office monitoring. Remote mode can also be used in conjunction with the Remote Site Control Module software for setup and intermittent activity reports.

Quick Start

This section gives the minimum needed to configure your keypad for operation. The keypad should be mounted and wired (Communication/Power and Relays: see page 8 and 9 for wiring details). If you need settings different than the defaults, go to Programming Mode on 14 to change settings.

Hardware Setup

The first step to program the keypad is to uniquely address each keypad by setting the Address/Mode switch (see page 10). You must also select the keypad operating mode using this switch. If the keypad is powered when the address and/or mode is changed, either cycle the power or press and release the reset switch (see page 5) load the changed settings.

The security code is the one setting that needs to be changed for all operating mode.

1. Enter programming mode (see page 14). The default, factory-set security code is 0.
2. Select "Set Passcode" (see page 25).
3. Change the security code to one you can easily remember (note 1234 is NOT a good passcode).

If at any point you forget your passcode use this security code recovery method. At the keypad, press # then 1. The keypad will display a number. Subtract this number from 9999. The result is the current programming security code.

Remote Mode

The remote mode requires additional programming prior to entering operation. If you are using RSCM software, the programming will be done automatically. Otherwise, you'll need to set the following:

1. Set Time
2. Set Date
3. Keypad Type
4. Timezones
5. Users
6. Relay Time

See the Programming Command Reference on page 18 for details on programming these settings.

Connectors and Controls

This section deals with the connectors, controls, switches, and LEDs on both the front and back of the keypad PCB. The connectors provide the communication channel/power supply connections and the connection to the on-board relays. The switches set the address/mode of the keypad, allow the keypad to be reset, and select the connections for the relays suppression diodes. Figure 1 and Figure 2 below show the relative placement of the key elements of the PCB. Table 1 provides a description for each of the identified items.

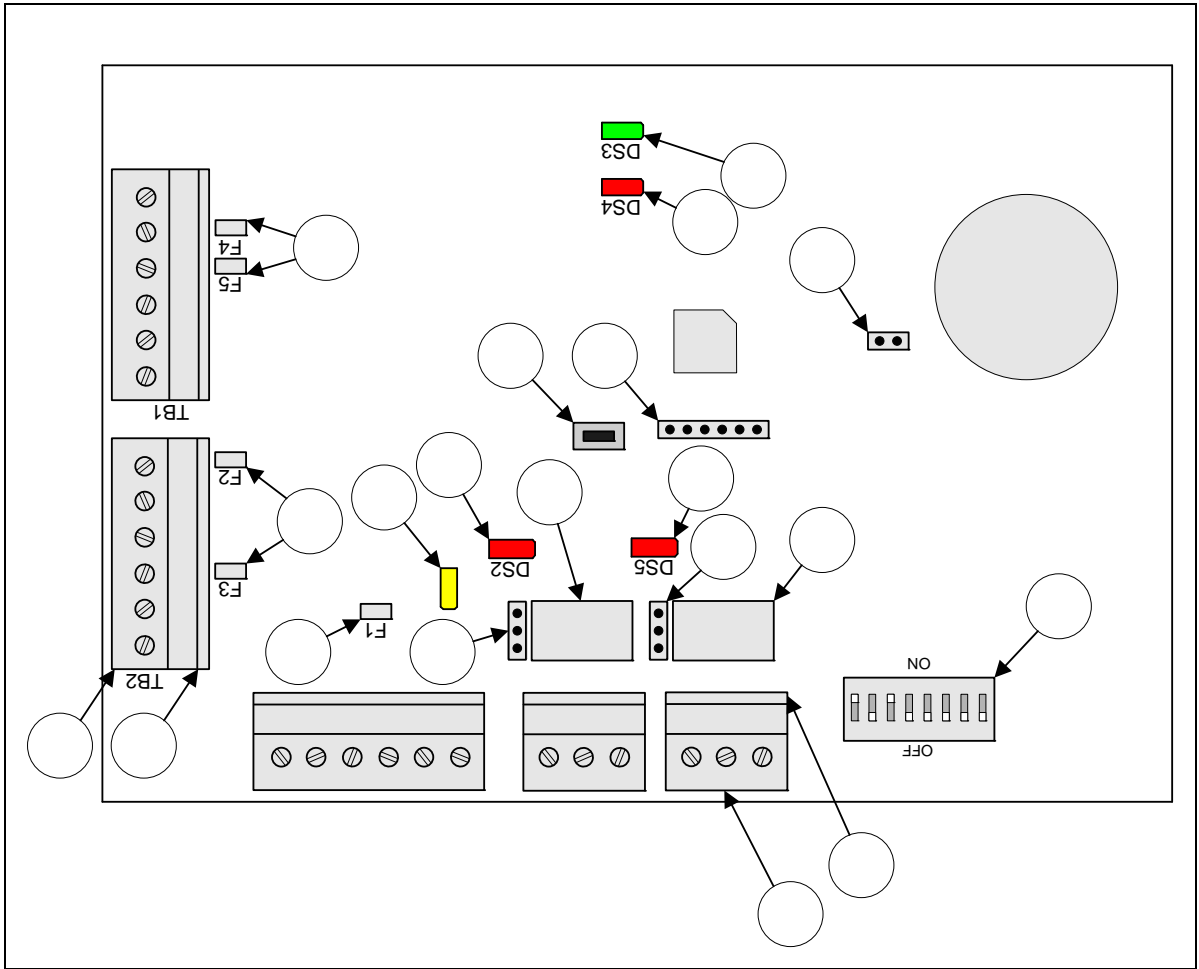


Figure 1 Keypad Internal PCB Connectors and Controls (Front)

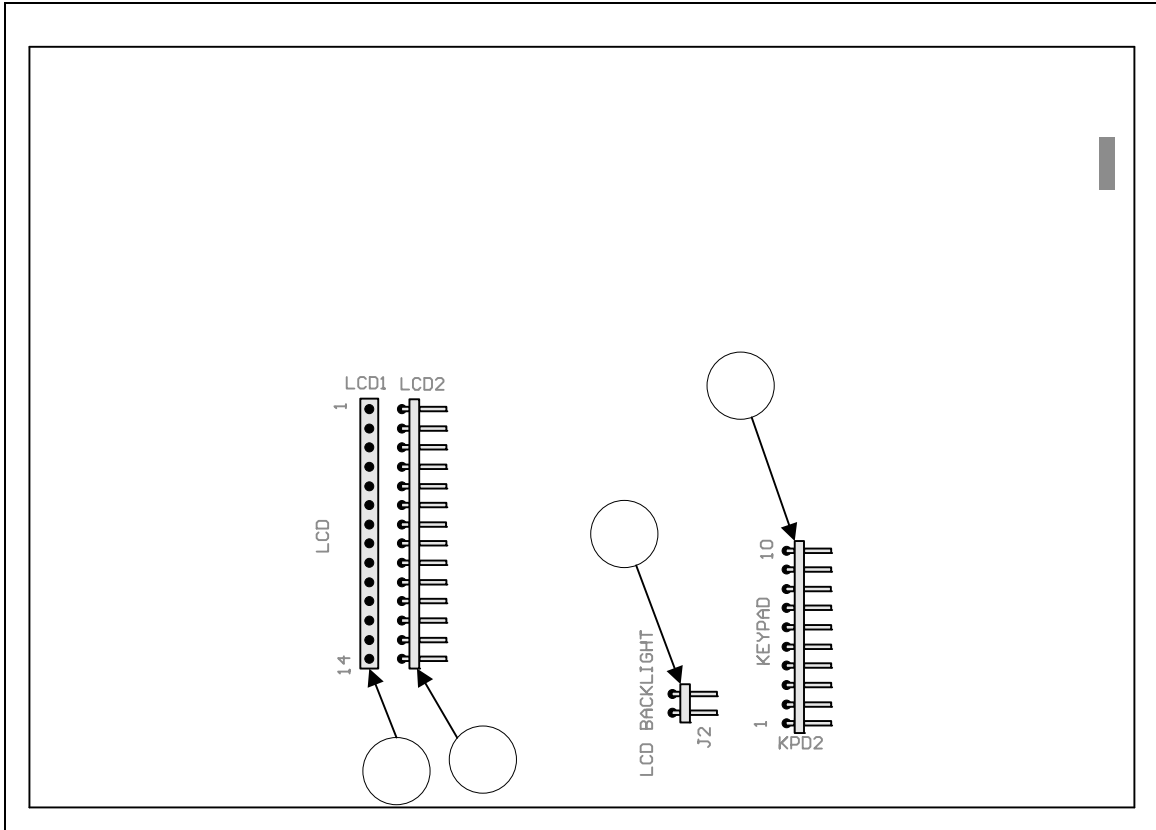


Figure 2 Internal PCB Connectors and Controls (Back)

Item #	Description
1	Communication/Power Removable Connectors (3X) – Provides the communication bus connections as well as the power supply connections. Removable to allow easy installation or repair. See page 8 for connections.
2	Communication/Power Fixed Connectors (3X) – Item 1 plugs into these.
3	Relay Removable Connectors (2X) – Provides the relay wiring connections. Removable to allow easy installation or repair. See page 9 for connections.
4	Relay Fixed Connectors (2X) – Item 3 plugs into these.
5	Internal +5V Power Fuse (PTC)
6	External 12V Power Input Fuses (PTC) – Supply feeding the internal +5V regulator.
7	Communication interface fuses.
8	Internal +5V Power Active LED.
9	Relay 0 LED. Indicates that relay 0 has been activated.

10	Relay 0 transient suppression diode contact selection header. See page 12 for settings.
11	Relay 0 component.
12	Relay 1 LED. Indicates that relay 1 has been activated.
13	Relay 1 transient suppression diode contact selection header. See page 12 for settings.
14	Relay 1 component.
15	Reset Switch – This momentary push button will reset the keypad to its power-up state.
16	Programming Header (Sentinel Systems use only).
17	Received Data LED – Indicates when the keypad is receiving a message from the system controller.
18	Transmitted Data LED – Indicates when the keypad is transmitting a message back to the system controller.
19	Address/Mode Switch – Sets the address of the board for received messages and the keypad operating mode (Unit/Passcode, Passcode Only, and Remote Mdoe). See page 10 for switch settings.
20	Real Time Clock Power Supply Backup Jumper. Connects the internal +5V supply to the RTC's power backup. This jumper is factory installed and should not be removed unless instructed to by Service personnel.
21	Models 314 and 3200 LCD Display Connector.
22	Model 1600 LCD Display Connector.
23	LCD Display backlight connector.
24	Keypad connector.

Table 1 Internal PCB Connectors and Controls Legend

Communication/Power Connectors

The communication/Power connectors provide the wiring connection for the communication channel to both the central office as well as the other Sentinel Systems devices. The connectors also provide the power input connections for the keypad. The figure below details all of the connections on the connectors along with a description of each signal. Note that the three (3) connectors are connected together internally on the board. Any combination of one (1) or more of the connectors can be used for wiring. The three (3) connectors are provided to ease wiring of a multiple device network.

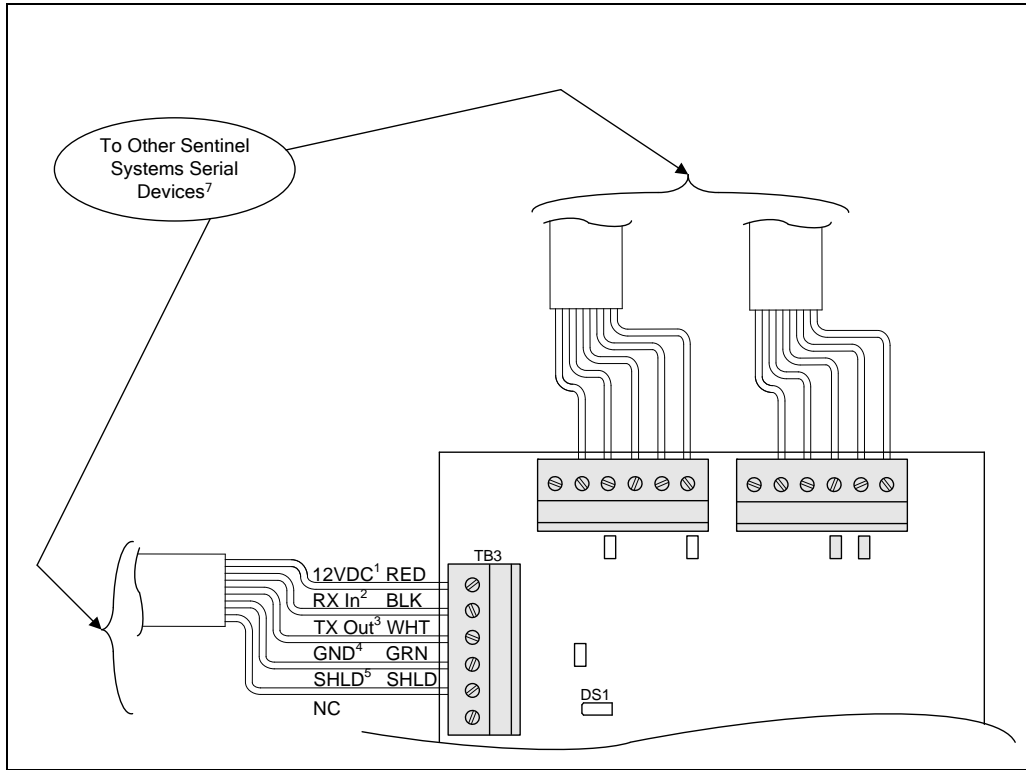


Figure 3 Communication/Power Connectors Wiring

Signal	Wire Color ¹	Description
12VDC	Red	12V DC Supply Positive.
RX In	Black	Received data in.
TX Out	White	Transmitted data out.
GND	Green	12V DC Supply Negative (Ground).
SHLD	NA	Communication cable shield.

Table 2 Communication/Power Connector Signal Reference

Relay Connectors

The Relay connectors provide the wiring connection to the on-board relays. The figure below details all of the connections on the connectors along with a description of each connection.

¹ The wire colors shown reflect Sentinel Systems standard wire color coding. Your cables may not contain identical colors.

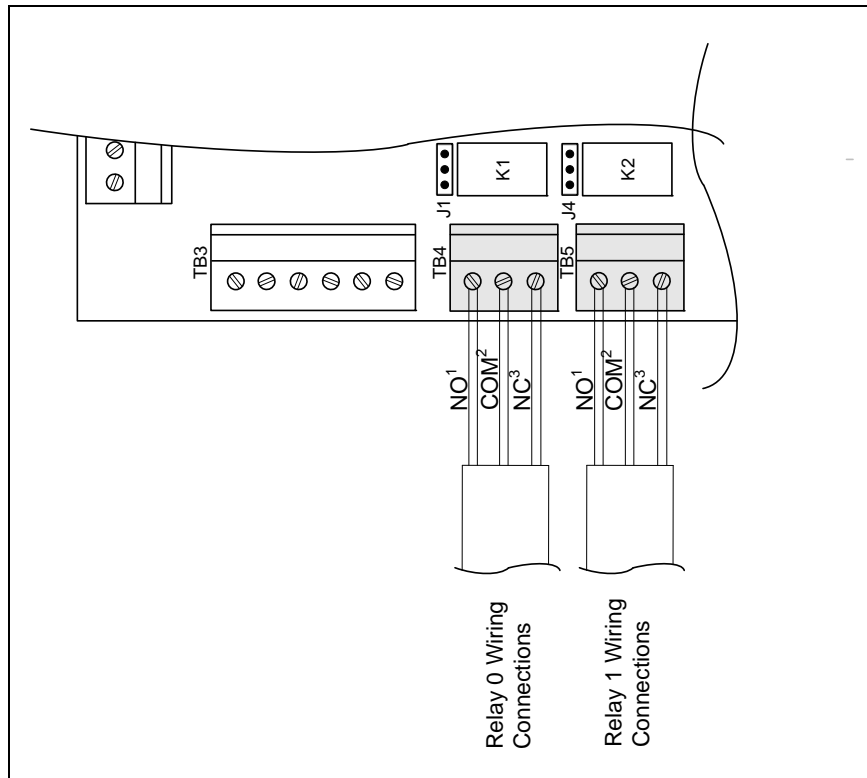


Figure 4 Relay Connectors Wiring²

Contact	Description
NO	Normally Open Relay Contact
COM	Common Relay Contact
NC	Normally Closed Relay Contact

Table 3 Relay Contacts

TB2

Switch Settings

The Address/Mode Switch shown in Figure 5 below is used to set the keypad address and operating mode for the keypad.

² The figure shows using all of the relay connections for reference only. The requirements of the connected equipment will define whether the NO or NC connections are used.

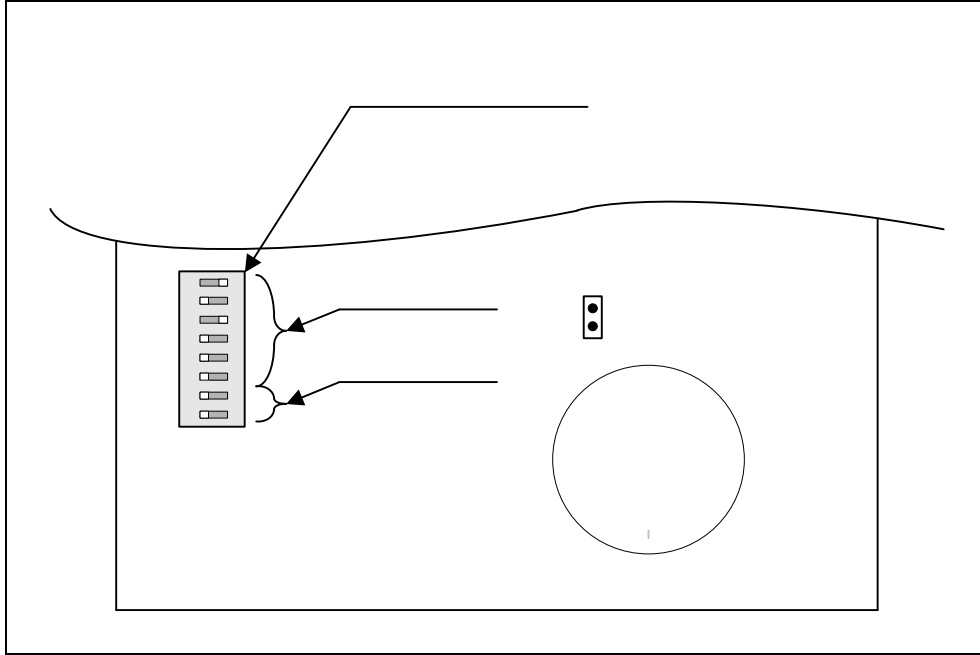


Figure 5 Address/Mode Switch

Address Bits

The Address Bits are used to set the communication address used by the Keypad. Each Keypad is required to have a unique address. Valid addresses for the keypad are 0 to 63. At each site, multiple keypads are addressed in consecutive order starting at 0. For example, for a four keypad site, the keypads would be addressed 0-3.

Set the Address Bits by referring to the chart below and your site layout plans. The values of each switch that is 'on' are added to make up the actual address. Switch settings for example addresses are given in the chart below to assist you.

Position	Value (ON)	Example 1 Address = 32	Example 2 Address = 36
1	1	OFF	OFF
2	2	OFF	OFF
3	4	OFF	ON
4	8	OFF	OFF
5	16	OFF	OFF
6	32	ON	ON

Table 4 Address Switch Bit Values

S2

OFF

Mode Bits

The Mode Bits determine the operating mode for the Keypad (see Table 5 below). The Address and Mode Bits will both be read during power-up or when the reset switch is pressed (see Figure 1 on page 6 for switch location).

Switch Position		Operating Mode
8	7	
OFF	OFF	Unit/Passcode
OFF	ON	Passcode Only
ON	OFF	Remote
ON	ON	Illegal Value (Defaults to Unit/Passcode)

Table 5 Mode Switches Bit Value

Transient Suppression Diodes

The Relay Transient Suppression Diodes are intended for use with external relays attached to the keypad. The diodes will provide a mechanism to suppress the transient voltage generated when the coil of the external relay is de-energized. When used, a suppression diode should be placed as close to the coil as possible. When the relay is physically close to keypad or other methods are unavailable, the keypad's built in diode can be used.

Figure 6 Suppression Diode Wiring

below shows the relay contact wiring and the placement of the 2-pin shunt for the two jumper configurations. The Relay 1 header and relay contacts were used as an example. Relay 0 is identical in operation.

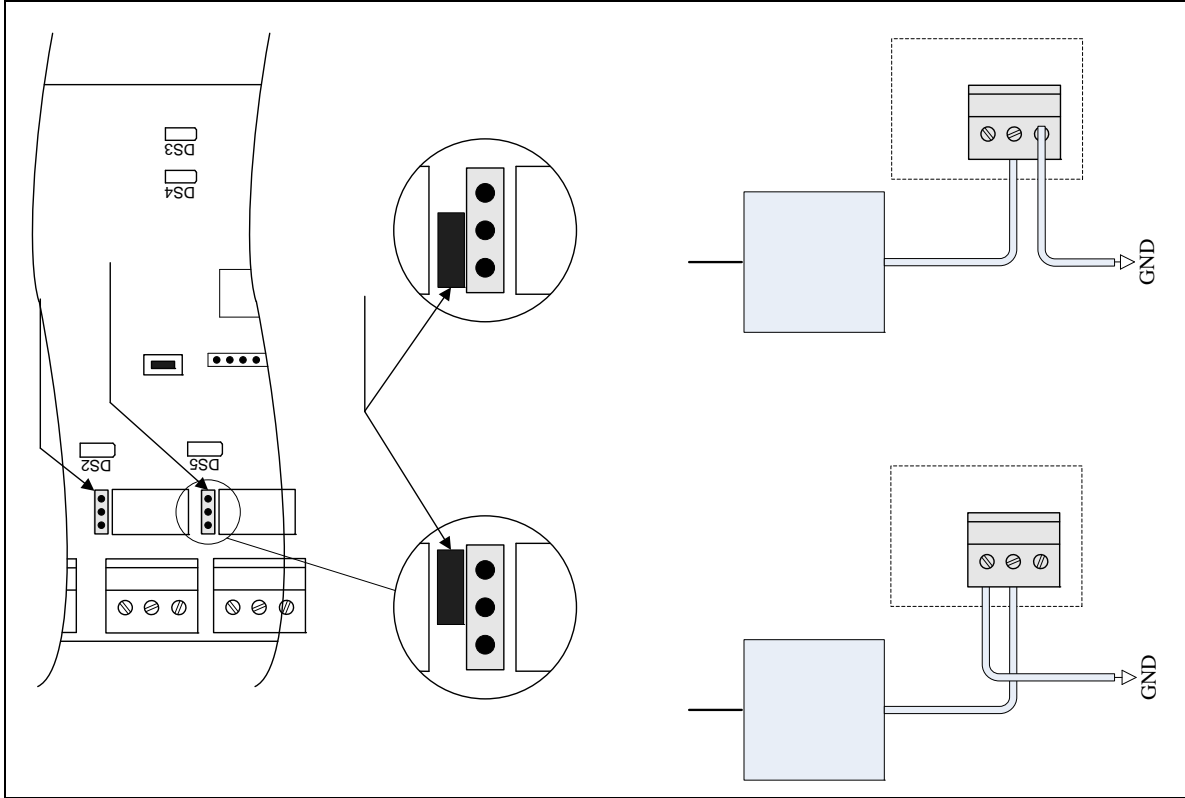


Figure 6 Suppression Diode Wiring

Relay 0 Header

Relay 1 Header

S1

U1

Programming Mode

Programming mode is used to set any one or all of the optional settings used by the keypad. Table 6 and Table 7 below list the available function codes for each mode.

Accessing Programming Mode

To enter the programming mode, perform the following steps. Note that power must be applied to the keypad in order to program it. Hence, it is suggested that the keypad installation be complete before performing these steps.

1. At the idle prompt, press the following keys in sequence "147*".

Idle Prompts

User/Passcode: **Enter Unit No.**
 00000 and #

Passcode Only: **Enter Passcode**
 000000000 and #

Remote Mode: **XX:XX:XX XM**
 Code: 000000000

2. The display will show "**Programming Mode**" followed by:

Enter Sec. Code:
0000

3. Enter your previously programmed security code. Note that the default, factory-set security code is 0
4. If the security code was valid the display will show the following:

Select Function:
(Exit=0) 00

At this point you are now ready to enter a programming function code. The following sections provide detailed descriptions of how to perform all the various programming functions. To exit the programming mode, enter a 0 at the select function screen.

Function Code	Function	Description	Value	
			Range	Default
1	Display Function Codes	Scrolls a listing of all command codes.		NA
2	Display Keypad Address	Uniquely identifies each keypad for communication.	NA - Set by the address/mode switch.	
3	Set Relay Time	Set the relay on-time..	0-30 seconds A value of 0 will cause the relay to not activate	Relay 0 – 1 seconds Relay 1 – 0 seconds
4	Set Passcode	Sets the operator access code to programming functions.	0001 – 9999	0000
5	Set Language	Sets the language used during normal use. All programming is done using English.	0 – 6 0 – English 1 – Spanish 2 – French 3 – German 4 – Portuguese 5 – Italian	0 – English
6	Set Defaults	All settings are returned to default values. (Relay 0, Relay 1, Security Code, Language)		NA

Table 6 User/Passcode and Passcode Only Mode Programming Function Codes

Function Code	Function	Description	Value	
			Range	Default
1	Display Function Codes	Scrolls a listing of all command codes.		NA
2	Display Keypad Address	Uniquely identifies each keypad for communication.	NA - Set by the address/mode switch.	
3	Set Keypad Type	Sets the keypad type as either Enter or Exit.	1 – Enter Keypad 2 – Exit Keypad	1 – Enter Keypad
4	Set Time	Sets current hours, minutes, and seconds.	00:00:00 – 24:00:00 (24 hour format)	00:00:00
5	Set Date	Sets current month, day, and year.	01/01/(20)00 – 12/31/(20)99	1/1/15
6	Define Time Zones	Sets start/stop times for time zones.	0000 – 2400 for each start and stop time	All Start times set to 0000 All Stop times set to 2400
7	Add/Edit User Codes	Adds user codes or change time zone assignments. Editing an existing user code will clear the lockout if set upon command exit.	User Code: 1-999999999 Timezone: 0-3	NA
8	Delete User Codes	Removes user from memory.	User Code: 1-999999999	NA
9	Display User Codes	Scrolls user code and time zone assignments.		NA
10	Lockout User	Temporarily disables user access.	User Code: 1-999999999	NA
11	Re-admit User	Restores access privileges.	User Code: 1-999999999	NA
12	Set Relay Time	Set the relay on-time..	0-30 seconds A value of 0 will cause the relay to not activate	Relay 0 – 1 seconds Relay 1 – 0 seconds
13	Set Passcode	Sets the operator access code to programming functions.	0001 – 9999	0000

14	Set Defaults	All settings are returned to default values. (Relay 0, Relay 1, Security Code, Language, Keypad Type, Time Zones, Date, Time)		NA
15	Copy Data	All Users and Events cleared Copies the following data to a second keypad: Users, Time Zones, Relay Times, Security Code, Date, and Time.	Target Keypad Address: 0 – 63	NA
16	Set Language	Sets the language used during normal use. All programming is done using English.	0 – 6 0 – English 1 – Spanish 2 – French 3 – German 4 – Portuguese 5 – Italian	0 – English

Table 7 Remote Mode Programming Function Codes

Programming Command Reference

The following sections deal with the command codes in detail. All of the function codes are entered AFTER entering programming mode (see Accessing Programming Mode above). The Function code(s) listed with each description indicates whether the function code is the same for all modes or different. If a function lists only remote function then that function is ONLY applicable to the remote mode. If there are two entries, then the User/Passcode and Passcode Only modes have a different function code versus the Remote mode.

In the function descriptions, a function code is executed by entering the value followed by a '#' key.

Display Function Codes

Function Code: 1

This function displays all of the function available two at a time. Each set will remain on-screen for ~ 2 seconds. This function can be exited at any time by pressing the '*' key.

Sample:

1. Dspl. Funcs.
2. Dspl. Address

Display³ Keypad Address

Function Code: 2

This function displays the address currently selected for the keypad:

Sample:

Keypad Address:
00

Set Keypad Type

Remote Function Code: 3

The Set Keypad Type sets the keypad to either Enter or Exit.

³ In the previous versions, this command set the keypad's address. The keypad address is now set using the address/mode switch (see Switch S on page 10).

1. After entering the function code and '#', the entry screen will be displayed as shown below:

Set Keypad Type
01/00

2. The number to the left of the slash is the current keypad type. Pressing '#' with no numerical key pressed will exit the function and retain the current keypad type value.
3. Enter the new type in the two digit field to the right of the slash. Valid types are listed below. Press the '#' key to accept the entry.

Type	Description
1	Enter
2	Exit

Set Time

Remote Function Code: 4

1. After entering the function code and '#', the following will be displayed for 2 seconds.

Set Time

2. Following step 1, the date entry screen will appear.

11:15:17
00:15:17

3. The top line shows the current time. Below are three, two-digit, data entry fields for the new time. Both the time display and entry lines use a 24-hour value
4. The field currently being edited will be indicated by the field being '00'. Enter the new value in the current two digit field. Press '#' to accept the new value. If only the '#' is pressed without any digits being entered, the old value is retained and the function moves to the next value.
5. Repeat step 1.a.i.4 for each of the time values.

Entering '*' at any time will abort the time entry. Any values completed (ie, the '#' key was entered) will be retained.

Set Date Function

Remote Function Code: 5

1. After entering the function code and '#', the following will be displayed for 2 seconds.

Set Date

2. Following step 1, the date entry screen will appear.

Wed. 01/01/15
01/01/15

3. The top line shows the current date and day of the week. Below are three, two-digit, data entry fields for the new date..
4. The entry field currently being edited will be indicated by the field being '00'. Enter the new value in the current two digit field. Press '#' to accept the new value. If only the '#' is pressed without any digits being entered, the old value is retained and the function moves to the next value.
5. Repeat step 4 for each of the date values.

Entering '*' at any time will abort the date entry. Any values completed (ie, the '#' key was entered) will be retained.

The day of the week does not need to be entered. The value is calculated internally.

Define Time Zones

Remote Function Code: 6

1. After entering the function code and '#', the following will be displayed for 2 seconds.

Define Time Zones

2. Following step 1, the TZ selection screen will appear.

Enter TZ 0
(* = Exit)

3. Enter the time zone desired (0-3) followed by '#'.

4. The selected timezone's start-stop time for Sunday appears on the top line. A four digit entry field for the new start time appears on the second line.

**Sun. 0800-1800
0000**

5. To retain the old start time simply press '#'. Otherwise, enter the new starting time for Sunday. Accept the entry by pressing '#'.
6. The display now shows a four digit entry field for the new stop time.

**Sun. 0800-1800
0700-0000**

7. To retain the old stop time simply press '#'. Otherwise, enter the new starting time for Sunday. Accept the entry by pressing '#'.
8. Repeat steps 4-7 for Monday through Saturday, if desired. To exit, press '*'. You will then be returned to the "Enter TZ" prompt in step 2.
9. Program other Timezones as necessary.

Add/Edit User Codes

Remote Function Code: 7

The Add/Edit User Codes is used to either add a new user with a timezone or changes the timezone of existing user(s).

1. After entering the function code and '#', the following will be displayed for 2 seconds.

**Add/Edit
User Codes**

2. Following step 1, the user entry screen will appear.

**Code 00000000
TZ (Exit=0)**

3. Enter the user code desired (1-999999999). Possible code choices might be the user's social security no., telephone no., or birthday. Press '#' to accept the code. To exit, enter a zero code.

4. Next enter the time zone assignment for the user. The current time zone appears to the left of the slash. Enter the new time zone (0-3) in the one digit field to the right of the slash. Press '#' to accept the entry. Pressing '#' before entering any digits retains the old value.

Code 325868158
TZ 0/0 (Exit=0)

5. The display will show an "Ok" to indicate the user data has been saved.

Code 325868158
TZ 0/0 Ok

6. Repeat steps 2-5 for other user additions or time zone reassignments.

Delete User Codes

Remote Function Code: 8

1. After entering the function code and '#', the following will be displayed for 2 seconds.

Delete User
Codes

2. Following step 1, the user entry screen will appear.

Code: 00000000
(Exit=0)

3. Enter the code you wish to delete. Press '#' to accept the entry.
4. The display will show an "Ok" to indicate the code has been deleted.

Code: 059283012
(Exit=0) Ok

5. Repeat steps 2-4 to re-enable more codes. In step 2, enter a zero code to exit.

Display User Codes

Remote Function Code: 9

1. After entering the function code and '#', the following will be displayed for 2 seconds.

Display Codes

2. A listing of all user codes and time zone assignments will be shown two at a time. The format for each entry is UUUUUUUUUU-T where UUUUUUUUUU is the user code and T is the time zone assignment. For example, the first "frame" might be.

590533913-0
652129429-1

3. Press keys '1' - '4' to slow down or '6'-'0' to speed up the display scrolling. '5' is the default setting (3 sec. per frame).
4. Press '#' to freeze the display. Press the appropriate numerical key to restart scrolling.
5. Press '*' to exit the function.

Lockout User

Remote Function Code: 10

This function allows you to disable access for a specific user(s) without deleting the user code from the database.

1. After entering the function code and '#', the following will be displayed for 2 seconds.

Lockout User

2. Following step 1, the user entry screen will appear.

Code: 00000000
(Exit=0)

3. Enter the code you wish to have temporarily disabled. Press '#' to accept the entry.
4. The display will show an "Ok" to indicate the code has been disabled.

Code: 059283012
(Exit=0) Ok

5. Repeat steps 2-4 to re-enable more codes. In step 2, enter a zero code to exit.

Re-admit User

Remote Function Code: 11

1. After entering the function code and '#', the following will be displayed for 2 seconds.

Readmit User

2. Following step 1, the user entry screen will appear.

Code: 00000000
(Exit=0)

3. Enter the code you wish to re-enable. Press '#' to accept the entry.
4. The display will show an "Ok" to indicate the code has been enabled.

Code: 059283012
(Exit=0) Ok

5. Repeat steps 2-4 to re-enable more codes. In step 2, enter a zero code to exit.

Set Relay Timeouts

Function Code: 3

Remote Function Code: 12

1. After entering the function code and '#', the following will be displayed for 2 seconds.

Set Relay Times

2. Following step 1, the date entry screen will appear.

Relay #0 On-Time
01/00

3. The current relay on-time is shown to the left of the slash. Press '#' to retain this value. Enter a new on-time (0-30 sec.) in the two digit field to the right of the slash. Press '#' to accept the entry.
4. Repeat step 3 for Relay #1.

Set Passcode

Function Code: 4

Remote Function Code: 13

1. After entering the function code and '#', the entry screen will be displayed as shown below:

Set Passcode:

4321/0000

2. The number to the left of the slash is the current passcode. Pressing '#' with no numerical key pressed will exit the function and retain the current passcode value.
3. Enter the new type in the two digit field to the right of the slash. Valid types are listed below. Press the '#' key to accept the entry.

WARNING: It's highly recommended that the passcode be set to a non-zero value to prevent unauthorized entry into the programming mode.

Set Defaults⁴

Function Code: 4

Remote Function Code: 14

The set defaults function returns the following settings to their default value:

Relay 0 Time

Relay 1 Time

Security Code,

Language

Keypad Type

Time Zones

Date

Time

All Users and Events cleared

1. After entering the function code and '#', the following will be displayed for seconds.

Set Defaults

2. After the default values are set the following will be displayed.

⁴ Use this function with extreme care. All current user data will be lost when this function is executed.

Defaults Set

Copy Database (Mode 1 Operation Only)

Remote Function Code: 15

The Copy Database function copies the following settings/data to a second keypad:

Users
Time Zones
Relay Times
Security Code
Date
Time

1. After entering the function code and '#', the following will be displayed for 2 seconds.

Copy Database

2. Following step 1, the target address entry screen will appear.

Target Addr.:00

3. Enter the keypad address you want to copy to and press '#'.
4. The following sequence of messages will appear as the function copies different data:

**Copying
Users**

**Copying
Timezones**

**Copying
Relay Times**

**Copying
Security Code**

**Copying
Date**

**Copying
Time**

5. If for any reason communications cannot be established or maintained, the following message appear and the process will be aborted:

**Communication
Failure**

Set Language Function Code

Function Code: 5

Function Code Remote Mode: 16

1. After entering the function code and '#', the entry screen will be displayed as shown below:

**Set Language
0/0**

2. The number to the left of the slash is the current language selection. Pressing '#' with no numerical key pressed will exit the function and retain the current language value.
3. Enter the new language value in the two digit field to the right of the slash. Valid values are listed below. Press the '#' key to accept the entry.

Language Value	Description
0	English
1	Spanish
2	French
3	German
4	Portuguese
5	Italian

SPECIFICATIONS

Communication	
Type	Serial – Bussed
Baud Rate	
Unit/Passcode & Passcode Only	1200 even parity
Remote	2400 no parity

Relays	
Configuration	1 form C
Contacts (Resistive Load)	
Rated Load	1A@24VDC 0.5A@125VAC
Max Switching Capacity	62.5 VA, 30W
Max Voltage	125VAC, 60VDC

Power			
	Min	Typical	Max
Input Voltage	9	12VDC	
Input Current			160 mA

Remote Mode	
Users Storage	1024 Max
Events Storage	1024 Max (circular FIFO - last 1024 events are stored)
Time Zones	4