LS2/LS2P Access Control Lockset

Keypad Programming Manual

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

Service Company. Put Contact Information Here:

Company Name: _____

Service Number: _____

Optional access system programming: These access control locksets possess IR communications capability and can be managed as part of an overall access control system with Hub Manager Professional™ software and LS Link PDA software. See the inside cover for system requirements.

Enclosed with this manual is an **upgrade CD** enabling LS access control locksets to be added to an existing access system. Installation instructions are included on the CD. For new systems separately purchased software is recommended (see inside cover).

Part Number: 6041000 **Rev. 3.1, Date: 04-20-04, D8**

Optional access system programming - System Requirements:

- Hub Manager™ Professional access control software version 4 or higher (part number HUBSWR also includes LS Link application and installation instructions)

PC Hardware Requirements

- IBM-compatible Pentium-class computer
- 30 MB available hard disk space
- VGA monitor or better, 800x600 resolution recommended
- CD-ROM or DVD-ROM drive
- Mouse

Operating System List

- Windows 98; Windows 2000; Windows XP

LS-Link PDA Application

Use only with IEI approved Palm device. This list includes but is not necessarily restricted to the following models. For an up to date list of compatible devices go to www.ieib.com or contact IEI sales. **Also, see section 1.4.12.**

M125	Palm IIIxe
M130	Palm V
M500	Palm Vx
M505	Palm VIIx
Zire	Sony Clie SJ20
Palm IIIc	Tungsten E
Palm IIIx	Tungsten T2
Zire 71	Tungsten W
	Kyocera 7135 Smart Phone

- USB or serial port for PDA cradle to import and export LS Link operations (if used)
- PC application software including Hot Sync
- Memory: 200 KB/door import or export

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LS2/LS2P Access Control Lockset Programming Guide

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Foreword

F.1 About this Manual

This manual details hardware function and operation as well as keypad programming for the International Electronics LS2/LS2P Access Control Lockset system.

For hardware installation information, refer to the *LS2 Installation Instructions* (document #6041002) included with this unit.

F.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 LS2/LS2P system. Static shock can render the product unusable. Commands mentioned in the description paragraph are all listed in Table 1-5.

F.3 FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/television technician for help

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The term "IC:" before the radio certification number only signifies that Industry of Canada technical specifications were met.

F.4 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.

F.5 Reproduction Disclaimer

F.6.A Technical Support—Service Company

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

F.6.B Technical Support—End User

Contact your Service company.

F.7 Warranty

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

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

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

Warranty Periods Are:

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

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

LS2/LS2P Access Control Lockset Programming Guide

This guide provides information about programming the LS2/LS2P system. **You must program certain parameters, such as such as changing the default Master Code, upon initial installation (see section 1.2.1).**

NOTE: All features and programming commands relating to proximity cards are available in the LS2P model only.

1.1 Features

The following is a list of features available in the LS2/LS2P system.

- Non-volatile eeprom memory allows in-shop programming
- One non-handed unit for both indoor and outdoor applications
- Wire Raceway provides clean installation and protects wires inside door
- Programs the same as all IEI products
- Durable alphanumeric Braille keys
- Selective Lockout of groups of users
- Passage/Toggle codes allow door to remain unlocked
- Service codes allow one-time entry then are deleted automatically
- Error Lockout for successive invalid entry attempts
- Two-Stage Low Battery Alert assures entry
- Propped Door and Forced Door alerts when used with a standard magnetic switch
- Request to Exit allows door to be unlocked from a distance
- Four standard AA batteries provide up to 150,000 operations. (100,000 LS2P)

1.1.1 Specifications

Table 1-1. Specifications

Voltage	6 Volts (four 1.5-volt AA batteries)
Current Draw (sleep mode)	30 μA
REX	Normally Open Dry Contact
Door Loop	Normally Open Dry Contact
Temperature	-35° C to +66° C (-31° F to +151° F)
Environment	Indoor/Outdoor* *The rear part of the system must be indoors; only the keypad can be outside.

Table 1-2. LS2 Connectors

Connector	Description
J1	**Battery Connector** **Pin** **Wire Color** **Function** 1 Red Battery + 2 Black Battery - 3 Not Used
J2	**Keypad Connector for Flex Cable 26 Pins**. The flex cable is keyed and pin 1 must match up.
J4	**REX/Door Loop** **Pin** **Wire Color** **Function** 1 Brown REX 2 Orange REX 3 Green Not Used 4 White Door Loop 5 Yellow Door Loop 6 Gray Not Used
J5	**Motor Cable** **Pin** **Wire Color** **Function** 1 Red Motor A 2 Gray Motor B

1.1.2 Battery Powered

The LS2/LS2P system is battery powered; when the system is not in use, it consumes very little power, but the batteries normally discharge over an extended period. The LS2/LS2P system powers itself down (sleep mode) after one of the following events:

- fifteen (15) seconds after the last keypress that does not result in an unlock
- immediately after sending the lock pulse regardless of what triggered it (valid PIN, REX input, Toggle/Passage code, etc..)
- fifteen (15) seconds after a Lockout code is entered
- immediately after a Toggle/Passage ON/OFF code is entered

1.1.2.A Low Voltage Operation

The LS2/LS2P has two low voltage indicators, the Low Voltage Warning and Low Voltage Inhibit. The system wakes up momentarily every 30 seconds and checks the battery voltage to determine if the voltage is low. When either of these situations arises, the battery should be changed.

1.1.2.B Low Voltage Warning

When the battery voltage drops to 4.4 volts, the Low Voltage Warning is indicated by four long beeps after any code is entered and then the lock energizes. This action lets you know the batteries are getting low and should be charged, but does not prevent you from operating the door.

1.1.2.C Inhibit Operation Warning

When the battery pack voltage reaches below 4.0 volts and a user enters his/her code, the LS2/LS2P sounder issues four (4) long beeps, pauses, then sound another four (4) long beeps.

This lets you user know the batteries are so low that sufficient power may not be present to perform a lock pulse after the unlock pulse. At this point, the door will not unlock.

To open the door now, either the Master code, Supervisor code, or an Emergency code **must** be used (for details on user types, see Table 1-4, command 46). These three types of users (Master, Supervisor, or Emergency) override the Inhibit warning, allowing someone to open the door and then change the batteries.

1.1.2.D Lock Prior to Sleep

The Lock Prior to Sleep option (command 30, option 14) determines if the keypad sends the lock pulse before the system goes to sleep. The default is "only if necessary," but you can set it to "always lock prior to sleep" if required. Example:

30 # 14 # set/clear # **
(default—0=only if necessary,
1=always lock
prior to sleep)

Table 1-3. LS2/LS2P LED Indicators/Sounder Operations

LED or Sounder	Visual/Audible Condition	Description
Bi-color	Steady green	Door unlocked (timed or latched)
	Green drop out	Auto-Unlock active (unlocked) green LED drops out for 100 ms every second
	Alternating red/green	Awaiting second PIN of “card and code” user
	1/2 second green flash	Following a 5 # PIN * sequence indicates programmed “Single Use” PIN
	Single red flash	Prox card detected
	Double green flash	Valid prox card read
	Double red flash	Invalid prox card read
Yellow LED	Slow blink	System 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 *
	Steady (5 seconds)	Error lockout (no keypress feedback)
	Very rapid blink	EEPROM erase in progress (command 40, command 46, full board reset)
	Pulsing rapid blink	Block delete of user in progress (command 58)
Sounder After PIN Entered	3 very rapid beeps	PIN is not found
	Double beep	User lockout is canceled
	Pair of double beeps	User lockout is activated
	1 long beep followed by 1 short beep	Access is denied, “user disabled”

Table 1-3. LS2/LS2P LED Indicators/Sounder Operations (continued)

Sounder After PIN Entered	Visual/Audible Condition	Description
	1 long beep followed by 2 short beeps	Access denied, “bad time zone”
	1 long beep followed by 3 short beeps	Access denied, “user locked out”
	4 quick beeps	Auto-unlock timezone activated with first IN
	4 long beeps	Low voltage indication (low voltage warning)
	4 long beeps, pause, 4 more long beeps	Voltage too low to operate (low voltage inhibit)
	6 quick beeps	Toggle mode is active
	1 long beep	PIN verified, but ignored (only occurs after toggle code entered during auto-unlock)
Sounder Miscellaneous		
	Short beep (100 ms) every 2 seconds	Propped door audio alert
	1/2 second on, 1/2 second off	Forced door audio alert

1.2 Programming the Keypad

The first step in programming the system is to place it into Program mode. You can verify that the system is in Program mode as the yellow LED blinks slowly; when the yellow LED stops blinking and is OFF completely, the system is no longer in Program mode. If the desired programming is not understood by the system 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. The system remains in Program mode for 45 seconds if no key is pressed.

1.2.1 Master Code

To place the system in Program mode, you must first enter **99 #** followed by the "Master code," which is the code that is stored in user location 1.

To place the system in Program mode, press:

99 # Master Code *

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

To change the Master code, enter:

1 # new master code * new master code *
(example: 1 # 4321 * 4321 *
press * to exit Program mode)

If you forget the Master code, remove the battery cover, take out the battery pack and control board (leave all wires connected), and press the SW1 switch. (SW1 is located next to pin 25 on J2, through a hole in the bracket.)

A slow blinking yellow LED indicates that the system 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.)

1.2.2 User #2, Supervisor

Any code assigned to user # 2 is designated as a "Supervisor" user. This code can also enter Program mode as well as unlock the door.

Upon entering Program mode, the Supervisor gains access to limited programming commands, including:

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

By default, user location #2 is empty. This means that if you need a Supervisor code, you must program one. To program a Supervisor code, press:

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

To enter Program mode using the Supervisor code, press:

99 # supervisor code *

1.2.3 Master Code and Supervisor Code Special Features

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

- The Master and Supervisor codes can only be programmed as Standard users.
- Both the Master and Supervisor users can be programmed as "card AND code" or "card OR code."
- When either are programmed as "card AND code," both are also required to enter Program mode.

- The Supervisor cannot change the Master code or itself
- When they are“card OR code”only, the code is required to enter Program mode.
- There is a feature to allow “card OR code” Master and Supervisor to require both to enter Program mode. (This feature is enabled/disabled in command 30, option 3 and is disabled by default.)
- The Master or Supervisor cannot be set to “card only.”

1.2.4 Getting Ready to Program

Prior to setting up your LS2/LS2P unit, there are a number of things to consider.

- (1) The first thing you need is a list of people that you want to have access to your doors and which doors each person can access.
- (2) Then you must decide what type of access the users are allowed, such as cards, codes, or both and what type of user each person is, like a “toggle” user or a “standard” user.
- (3) If you are using software to manage your system, you also need to consider a few other things, such as when people are allowed to enter the building. Many people have similar schedules and work in the same departments. This allows you to group multiple users together and set up access levels. Table 1-4 on the next page shows an example of how to organize this information.

Table 1-4. Getty Ready to Program Chart

Employee Group	User Name	Code/ Card	User Type	Timezone*	Allowed Doors	Access Level*
Office Staff	Joe Stevenson	Code: 1742	Standard	8:00 AM-5:00 PM, Mon-Fri	Main Entrance, Computer Room	Office Staff
	Liz Roberts	Code: 9362	Standard	8:00 AM-5:00 PM, Mon-Fri	Main Entrance, Computer Room	Office Staff
Sales	Bob Smith	Card: 45132	Extended Unlock	10:00 AM-7:00 PM, Mon, Tue, Wed	Main Entrance, Sales Office	Sales
Manager	Jessica Monroe	Code: 8934 Or Card: 15673	Emergency	24 Hours	All Doors	Manager

* Feature is available only when using software.

1.3 Programming Users

1.3.1 Adding New or Changing Existing Codes/Cards

The most basic LS2/LS2P 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.

The following section describe the various ways to program users.

> **NOTE:** When 26-bit cards are used and you choose to add new cards manually, the facility code MUST be entered into the unit first. For the programming sequence used to enter the 3-digit facility code, see command 32, parameter 4 (see Table 1-7).

1.3.2 Programming Code and Card Options

The LS2/LS2P 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.

Table 1-5. User Types

User Type	Numeric ID	Description
Toggle	0	Toggle users latch the lock in the unlock position. Toggle mode is indicated by six (6) quick beeps and a solid green LED.
Standard	1	Standard users use the lock duration programmed in command 11.
Lockout	3	Lockout users “lock out” other users—see User Lockout (section 1.4.5). These codes do not unlock the door.

Table 1-5. User Types (continued)

User Type	Numeric ID	Description
Extended Unlock	4	Extended Unlock Users are like standard users except they use the unlock duration programmed in command 32, option 3.
Single Use Code	5	Single Use Codes are codes that can only be used once. To verify a Single Use is programmed, enter the sequence [5 # PIN *] and this looks up the PIN and generates a 1/2 second green flash if the PIN is programmed as a single use code. If the PIN is not found, the system generates three quick beeps and increments the invalid PIN counter. If PIN is found but is not programmed as a single use code, the system does not respond at all.
Relock	6	Relock codes are used to relock the door when a toggle or auto-unlock is active. Entering 00# prior to a relock code allows auto-unlock to be re-triggered, when First-In is enabled.
Emergency	7	Emergency users are special users that cannot be locked out and operate below the Low Voltage Inhibit Threshold. The user also uses the unlock duration programmed in command 32, option 3. This user type also cannot be disabled.
Comm. Enable	8	Comm Enable User (Communications) is used to enable communications, which allows transfer of data to/from the PDA to the LS2/LS2P system. This code does not unlock the door.

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

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

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

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

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

1.3.2.B Quick Program Feature

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

loc # PIN * PIN *

OR

loc # ** <present card>

1.3.2.C Programming Code ONLY Use

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

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

1.3.2.D Programming Code AND Card Use

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

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

When a combination code/card user employs the LS2/LS2P unit, that user can present the proximity card

first at the proximity reader, or enter the code first at the LS2/LS2P 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.

1.3.2.E Programming Card ONLY Use

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

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

1.3.2.F Programming Code OR Card

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

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

1.3.3 Batch Load Cards by Presentation

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

The format of the command is as follows:

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

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

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

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

1.3.4 Enabling/Disabling Users Command

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

To disable a user, enter:

56 # 1 # user location # **

To enable a user, enter:

56 # 0 # user location # **

- The Master Code can NEVER be disabled.
- The Master Code can disable the Supervisor user (user # 2).
- The Supervisor can disable users 3-2000.
- The Master Code user cannot be disabled, and the Supervisor user cannot disable his/her self.
- A disabled Supervisor cannot access Program mode; a non-programmed user cannot be enabled or disabled (generates a program error).

1.3.5 Batch Load Cards Manually (without presentation)

"Batch entry" allows you to enter multiple, sequential 26-bit HID cards into the LS2/LS2P 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 command 32, parameter 4 (see Table 1-7). **The default facility code is 11.**

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

1. Place the LS2/LS2P 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 LS2/LS2P keypad, press:

   57 # (total number of cards to be added) # (starting user location) # card number * repeat card number *

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

3. On the LS2/LS2P keypad, press * to exit Program mode.

   Up to 1998 users can be added this way at one time. (User 1 is reserved for the Master code, User 2 for the Supervisor code.)

1.3.6 Block Delete of Users

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

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

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

1.3.7 Deleting Users

To delete a user from the LS2/LS2P unit's memory, you must know the user location in which the information is stored.

To delete a user, follow the steps below.

1. Place the LS2/LS2P 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 LS2/LS2P keypad, enter the **user number** you wish to delete and a pound symbol #. To delete user 100, for example, press:

   100 # ** (to delete user 100)

   The yellow LED blinks slowly.
3. Press * to exit Program mode.

1.4 Programming Keypad Options and Parameters

1.4.1 Set Unlock Duration

The Set Lock Time feature is enabled by using this command:

11 # tt # 0 # * *

where tt = number of seconds to operate lock on access (1 through 99)

The default is 5 seconds.

1.4.2 Propped and Forced Door Audio Alerts

The LS2/LS2P system support both Propped Door and Forced Door Audio alerts. By default both audio alerts are disabled, but can be activated using command 32, parameter 2. Please note this parameter only controls the audio alerts. These features cannot be disabled by setting the parameter to 0, meaning the door loop is always active and continues to record these transactions, when door contacts are used, even though there is no audio alert.

The door loop is Normally Open, meaning you **must** close the loop to activate either function.

Action	Press		Details
Change keypad parameters	**32 # parameter # value # ****		See below
	Parameter 2, door loop audio output select	**Value** 0-3 (**def=0**) 0=no door loop audio outputs 1=forced door audio output on 2=propped door audio output on 3=both forced & propped door audio outputs on	

1.4.2.A Forced Door Audio Alert

When enabled, the Forced Door Audio alert comes on for a period of time (it is set using command **45 # ttt # 0 # ****), when the door is in a locked state and a valid code was not entered before the door was opened; an example would be someone forcing the door open. (ttt can be a value from 00 to 990, in 10-second intervals. The default is 10 seconds.)

This option requires the use of a Normally Open door position switch. (The door contact is attached to the white and yellow wires located in the battery compartment on the wire harness that plugs into J4).

If you hear the Audio alert, entering a valid code turns OFF the Forced Door Audio alert.

To ensure that you do not get a Forced Door Audio alert when the door is opened from the secure side of the door (the side without keypad), the Normally Open Request-To-Exit (REX) input of the LS2/LS2P unit **must** be closed prior to using the handle to open the door.

Failure to trigger the REX input before opening the door results in the Forced Door Audio Alert coming on for the preset time.

NOTE: For REX information, see section 1.4.4.

1.4.3 Propped Door Audio Alert

When enabled, the Propped Door Audio alert comes on when the door is held open for a period of time (it is set using command **44 # ttt # 0 # ****), after the door is opened using a valid code. (ttt can be a value from 00 to 990, in 10-second intervals. The default is 30 seconds. Setting the propped door time to 00 disables the feature.)

This requires the use of a door position switch. (The door contact is attached to the white and yellow wires

located in the battery compartment on the wire harness that plugs onto J4). If you hear the Audio alert, entering a valid code or closing the door turns OFF the Propped Door Audio alert.

1.4.4 Request-To-Exit (REX) Input

The Request-To-Exit (REX) input can be used to wire in a remote Normally Open switch, such as a button at a receptionist's desk. The switch is wired to the brown and orange wires located in the battery compartment on the wire harness that plugs into J4.

Either an external REX button can be used or you can order your LS2/LS2P system with the –REX option installed; the installed system has a contact switch built into the internal workings of the secure side door handle and has two flying leads that must then be tied to the brown and orange wires in the battery compartment. This input is always enabled (ON). Each time the REX input closes, the system LS2/LS2P system unlocks for the preset unlock time set with command 11.

1.4.5 User Lockout Option

The LS2/LS2P system supports two types of user lockouts: "Lockout By Location" and "Lockout By Group." The two lockouts share the following features: (1) entering Program mode always clears an active lockout (2) and neither the "Master," the" Supervisor," nor an "emergency" user can be locked out. The user lockout function, which is enabled by default, can be disabled through command 30, option #5. The lockout type is selected through command 30, option #8 and defaults to "Lockout By Location."

1.4.5.A Lockout By Location

In the Lockout By Location mode the location of the Lockout Code in the user table determines which users are locked out. Entering a Lockout Code (when no lockouts are active) excludes all users programmed in

locations greater than the location of that Lockout Code. For example if user #20 is programmed as a Lockout Code and that user's PIN is entered, then users #21 and above are locked out.

Entering the same Lockout Code cancels the current lockout. If a different Lockout Code (programmed in a location less than the current lockout) is entered during an active lockout, the lockout is "lowered" to the location of that PIN. This means that to cancel a lockout initiated by another user, the "new" user **must enter his PIN twice**. The first entry lowers the lockout and the second cancels the lowered lockout.

1.4.5.B Lockout By Group

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

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

Entering a Lockout Code (when no lockouts are active) sets the current lockout group to that user's lockout group. Subsequently, whenever a valid PIN is entered,

that user's lockout group is compared to the currently active lockout group. It is the result of this test that determines whether the user is locked out.

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

The LS2/LS2P firmware can select one of four different lockout operations. The selection is made by setting the Lockout By Group "operand" in command 32, parameter 7 to one of the following values:

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

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

1.4.6 Error Lockout Option

The LS2/LS2P system supports error lockout, which is always enabled and cannot be disabled. When the lockout threshold (set with command 32, parameter 0, defaults to 3) is reached, the keypad locks up and the yellow LED turns on (it does not process codes) until the lockout duration expires (lockout duration is set with command 32, parameter 1, defaults to 10 seconds). Example:

32 # parameter # value # **

[0, error lockout threshold1-50 (default=3)
1, error lockout duration1-255 (default=10)]

When the lockout duration is activated, the yellow LED turns on for 5 seconds and shuts off. When the keypad wakes up and error lockout is still active, the LED turns back on for an additional 5 seconds. This is to preserve battery life.

The count is cleared after a correct code is entered or if the LS2/LS2P system goes to sleep.

1.4.7 Turning Audio Keypress Feedback ON/OFF

The Audio Keypress Feedback command enables the sounder to beep once for each keypress. This feature provides an audio acknowledgment that a particular key was pressed hard enough for the system 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 LS2/LS2P system in Program mode. Press:

   99 # Master Code * (default is 1234)

   A slow blinking yellow LED indicates that the system is in Program mode.

2. To enable this feature, press:

   30 # 0 # 1 # **

   The yellow LED continues to blink slowly. (A steady yellow LED, in contrast, means that errors were detected during programming. Error states can be cleared by pressing the asterisk * key.)

3. To disable this feature, press:

   30 # 0 # 0 # **

   The yellow LED continues to blink slowly.

4. Press * to exit Program mode.

1.4.8 Turning Visual LED/Keypress Indicator ON/OFF

This visual LED/keypress indicator lights the visual LED once for each keypress. This feature provides a visual acknowledgment that a particular key was pressed hard enough for the system 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 un-

authorized user from viewing visual feedback produced when an authorized user enters his/her code.

1. Place the LS2/LS2P system in Program mode. Press:

   99 # Master Code * (default is 1234)

   A slow blinking yellow LED indicates that the system is in Program mode.
2. To enable this feature, press:

   30 # 1 # 1 # **

   The yellow LED continues to blink slowly. (A steady yellow LED, in contrast, means that errors were detected during programming. Error states can be cleared by pressing the asterisk * key.)
3. To disable this feature, press:

   30 # 1 # 0 # **

   The yellow LED continues to blink slowly.
4. Press * to exit Program mode.

1.4.9 Auto Entry

Auto Entry, which is disabled by default, can be enabled by entering the following Set/Clear Platform command (see Table 1-5 for details). To disable, enter:

30 # 2 # 0 # **

When Auto Entry is enabled, you are not required to enter the asterisk (*) after your code. To enable, enter:

30 # 2 # 1 # *

This only applies to codes the same length as the Master. If, for some reason, you need a code longer than the Master code, press **#** before the desired code followed by * (asterisk). This is called "auto-entry suspend." Example: if the Master code is 4 digits and your code is 23456, press **#23456***

1.4.10 TimeZone/Holiday Features

Using software, the LS2/LS2P system supports up to eight timezones and thirty-two holidays, including single-day and block holidays. Without software, the only timezone available is timezone eight, which is from 9:00 A.M. to 5:00 P.M, Monday through Friday.

Through the keypad, it is possible to assign users to this timezone and only allow them access to the door during this time period. It is also possible to make this timezone an auto-unlock timezone.

Before you can use any of the timezone features, timezones **must** first be enabled. To enable timezones, enter the following on keypad while in program mode:

30 # 9 # 1 # **

To disable timezones, enter the following on keypad while in Program mode:

30 # 9 # 0 # **

1.4.10.A Default Auto-Unlock Timezone

By default, timezone eight (9:00 A.M. to 5:00 P.M.) is already an auto unlock timezone. Before the auto-unlock feature will work however, you **must** enable auto-unlock timezones. To enable auto-unlock timezones, enter the following on keypad while in Program mode:

30 # 11 # 1 # **

To disable auto-unlock timezones, enter the following on keypad while in Program mode:

30 # 11 # 0 # **

It is important to note that by default the door does not auto-unlock automatically because the First-In auto-unlock feature is enabled. This means that a user **must** enter their PIN on the keypad during the auto-unlock to activate it.

If you want the door to auto-unlock automatically, you **must** disable First-In auto-unlock by entering the following on keypad while in Program mode:

30 # 12 # 0 # **

To enable First-In auto-unlock, enter the following on keypad while in Program mode:

30 # 12 # 1 # **

1.4.10.B Assign Users to Default Timezone

To assign users to the default timezone, you **must** set the user timezone mask prior to adding users through the keypad. To program users to timezone eight, enter the following on the keypad while in Program mode:

32 # 5 # 128 # **

If you want users to have access twenty-four hours a day, seven days a week, enter the following on the keypad while in Program mode:

32 # 5 # 255 # **

NOTE: Twenty-four hour access is the default setting, so no programming is required if you are not using timezone features.

1.4.10.C Midnight Crossing TimeZones

Using software, the LS2/LS2P system supports "midnight crossing timezones," which is always enabled. This means a timezone can cross the midnight boundary. For example: A timezone can start at 11:00 P.M. and end at 7:00 A.M.

There is another option for allowing timezones to cross over midnight if the next day is a holiday. For example, you have a timezone set for 6:00 P.M. to 2:00 A.M., Monday-Friday and Friday happens to be a holiday. If you enable this option, users still have access after midnight on Friday. If you disable this option, users will not have access after midnight on Friday. This option is enabled by default.

NOTE: Additional timezones can be added only with software.

1.4.10.D Holidays

Using software, the LS2/LS2P system supports up to thirty-two (32) holidays. Holidays can be single days or block holidays (one block holiday counts as only one holiday; you can have up to thirty-two block holidays).

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

NOTE: Additional timezones can be added only with software.

1.4.10.E Daylight Savings Time

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

30 # 13 # 0 # **

Entering 1 instead of 0 enables the option.

The LS2/LS2P system currently supports U.S. and European daylight savings formats; this can be changed using command 30, option 15. U.S. is the default value. To specify U.S.A., enter 0, European 1:

30 # 15 # 0 # **

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

1.4.10.F Leap Year

The LS2/LS2P system supports leap year; on the appropriate leap years February 29th is a valid date.

1.4.10.G Time/Date Set

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

41 # hhmm # 0 # **
[hhmm=hour and minute (24-hour format)]

To set the Date, enter:

42 # mmddyy # dow # **
[mmddyy=month, day, year
dow=day of week (1=Sunday,
2=Monday, etc.)**]**

1.4.11 Transaction Event Log

Up to 2000 transaction log events can be stored in the LS2/LS2P system. See command 73 in the command list (Table 1-7) for the list of transactions. To delete the transaction log, use command 76. Transactions can only be viewed if you are using the IEI LS Link PDA software and Hub Manager™ Professional software (version 4 or higher).

1.4.12 PDA Communications

The LS2/LS2P system supports IRDA communications. The IRDA transceiver is located on the right-hand side of the keypad faceplate, and is used to communicate with a PDA device with IEI LS Link PDA software and Hub Manager™ Professional software (version 4 or higher).

To communicate with the LS2/LS2P system, communications **must** first be unlocked either by entering a Comm. Enable code (user type 8), the Master code, or Supervisor code.

IMPORTANT NOTE: There are currently multiple versions of LS2/LS2P hardware in existence (see the label on the rear housing), which support communications with different versions of Palm Operation Systems (Palm OS) and Palm PDA devices. Some Palm devices available are using Palm OS version 5 and have an OMAP processor.

To determine if your Palm is using Palm OS 5, refer to your Palm instructions. To determine if your Palm has an OMAP processor, look at the back of your Palm device for the OMAP symbol. These devices will not work with older LS2/LS2P hardware. New LS2/LS2P hardware is compatible with Palm OS 5 and OMAP processors.

For further details on hardware compatibility, see the next page.

To determine if your LS2/LS2P hardware is compatible with Palm OS 5 with OMAP processors, you **must** perform a keypad self-test.

To perform a keypad self-test, enter the following on the keypad outside of Program mode:

7 8 9 0 # 1 2 3 4 5 6 *

After you enter this key sequence, the keypad LED's cycle and the keypad beeps three times then pauses. The number of beeps that follows the pause determines if your LS2/LS2P hardware is compatible with Palm OS 5 and OMAP processors.

- One beep means it is not compatible with Palm OS 5
- Two beeps means it is compatible with Palm OS 5

If you must use a Palm with OS 5 and an OMAP processor, then all the hardware in your system **mus**t be compatible. The LS2/LS2P controller can be upgraded by replacing the control board assembly in the rear battery housing with updated hardware, which is available from IEI. The entire unit does not need replacement, only the control board assembly.

Please note that Palm devices using Pam OS 4 (and no OMAP processor) are compatible with new hardware and old hardware. If you already have a PDA with Palm OS 4, it is not necessary to get a new Palm to install new LS2/LS2P hardware.

1.4.13 LS2/LS2P Default Settings

Table 1-6 lists the default settings for the LS2/LS2P system as shipped from the factory. Subsequent sections in this chapter explain how to change these default settings or program additional functions.

Table 1-6. LS2/LS2P Default Settings

Parameter	Default Setting	Cross-Reference
Master Code (user location 1)	1234	See section 1.2.1
Main Relay energizes for	Five (5) seconds	See section 1.3.1
Audible Keypress Feedback	ON	See section 1.4.7
Visual Keypress Feedback	ON	See section 1.4.8
Auto Entry (no * required)	DISABLED	See section 1.4.9
Error Lockout	ENABLED (cannot be disabled)	See section 1.4.6
Error Lockout Duration	10 seconds	See Table 1-7, command 32, parameter 1
Error Lockout Threshold	3 attempts	See Table 1-7, command 32, parameter 0
User Lockout Codes	ENABLED	See section 1.4.5
Forced Door Alert	DISABLED	See sections 1.4.2
Propped Door Alert	DISABLED	See sections 1.4.2-1.4.3
Event Logging	All ENABLED	See Table 1-7, command 73
Facility Code (site code)	11	

1.4.14 Restoring System Defaults

Entering command 40 erases everything from the LS2/LS2P memory **except** the user codes and restores the system default settings. This is useful if the system has experienced programming problems, or you wish to delete earlier programming of settings but not the user codes.

1. Place the LS2/LS2P system in Program mode. Press:

   99 # Master Code * (default is 1234)

   A slow blinking yellow LED indicates that the system is in Program mode.

2. Press:

   40 # 00000 # 00000 # **

   The yellow LED continues to blink slowly. (A steady yellow LED, in contrast, means that errors were detected during programming. Error states can be cleared by pressing the asterisk * key.**)**

3. Press * to exit Program mode.

1.4.15 Erasing User Table/Restore System Defaults

Entering command 46 deletes everything from the LS2/LS2P memory **including** the user codes and restores the system default settings. The system is brought back to the "out of box" state.

1. Place the LS2/LS2P system in Program mode. Press:

   99 # Master Code * (default is 1234)

   A slow blinking yellow LED indicates that the system is in Program mode.

2. Press:

   46 # 00000 # 00000 # **

   The yellow LED continues to blink slowly. (A steady yellow LED, in contrast, means that errors were detected during programming. Error states can be cleared by pressing the asterisk * key.)

3. Press * to exit Program mode.

1.5 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.

Table 1-7. Program Commands

Action Desired	Press	Details
To enter Program mode	**99 # (Master Code) ***	Yellow LED blinks slowly; default Master code=1234
Program Master code (Code only)	**1 # new master code * new master code ***	See sections 1.2.1 and 1.2.3
Program Supervisor code (Code only)	**2 # new supervisor code * new supervisor code ***	See sections 1.2.2 and 1.2.3
1. Set lock time	**11 # tt # 0 # ****	where *tt* is the number of seconds to operate lock on access (1-99 maximum); **defaults to 5 seconds**

Action Desired	Press		Details
2. Set/clear platform options (bit values)	**30 # option # set/clear # ****		See parameters 0-15 below (defaults shown in bold)
	Option	**Set/Clear**	
	0, audio keypress	0=OFF, **1=ON**	
	1, visual keypress	0=OFF, **1=ON**	
	2, auto entry enable	**0=OFF**, 1=ON	
	3, card and PIN required for program mode	**0=OFF**, 1=ON	
	5, user lockout enable	0=OFF, **1=ON**	
	8, user lockout select	**0=by location**, 1=by group	
	9, timezones select	**0=OFF**, 1=ON	
	11, auto-unlock select	**0=OFF**, 1=ON	
	12, first-in auto-unlock	0=OFF, **1=ON**	
	13, daylight savings time select	0=OFF, **1=ON**	
	14, lock prior to sleep	**0=only if necessary**, 1=always lock prior to sleep	
	15, daylight savings time	**0=USA**, 1=European	

Action Desired	Press		Details
3. Change keypad parameters	**32 # parameter # value # ****		See parameters 0-7 below
	Parameter	**Value**	
	0, error lockout threshold	1-50 **(def=3)**	
	1, error lockout duration	1-255 **(def=10)**	
	2, door loop audio output select	0-3 **(def=0)** 0=no door loop audio outputs 1=forced door audio output on 2=propped door audio output on 3=both forced & propped door audio outputs on	
	3, extended unlock	1-255 **(def=10)**	
	4, site ID (for commands 51 and 57)	0-255 **(def=11)**	
	5, user timezone mask (for programming users through faceplate)	0-255 **(def=255)**	
	6, user lockout group (for programming users through faceplate)	0-15 **(def=4)**	
	7, lockout by group operand	0-3 **(def=0)** 0=lockout users in all other groups 1=lockout users in this group (except lockout users) 2=lockout users in higher numbered groups 3=lockout users in lower numbered groups	

Action Desired	Press	Detailed
4. Restore system defaults (Master user and system options/parameters)	**40 # 00000 # 00000 # ****	
5. Set system time	**41 # hhmm # 0 # ****	hhmm=hour and minute (24-hour format)
6. Set system date	**42 # mmddyy # dow # ****	mmddyy=month, day, year dow=day of week (1=Sunday, 2=Monday, etc.)
7. Set propped door time (see sections 1.4.2-1.4.3)	**44 # ttt # 0 # ****	*ttt*=propped door time (to nearest 10th second) entered as 10-990; entering 00 disables propped door **(default=30 second)**
8. Set forced door time (see section 1.4.2)	**45 # ttt # 0 # ****	*ttt*=propped door time (to nearest 10th second) entered as 00-990 **(default=10 second)**

Action	Press	Details
9. Clear eeprom memory and restore default settings	**46 # 00000 # 00000 # ****	
	User Types 0 = toggle code 1 = standard access 3 = lockout 4 = extended unlock 5 = single use 6 = relock code 7 = emergency 8 = communications enable	
10. Add “code only” user	**50 # type # location # key pin * key pin ***	See user types above
11. Add “card only” user by presentation	**50 # type # location # ** <present card>**	See user types above
12. Add “card AND code” user	**50 # type # location # key pin * key pin * <present card>**	See user types above
13. Delete user	**50 # 0 # location # ****	See user types above
14. Add 26-bit “card only” user without presenting card	**51 # type # location # card pin * card pin ***	Location **must** be greater than 2; Master/Supervisor cannot be set as “card only”
15. Add “card OR code” user	**52 # type # location # key pin * key pin * <present card>**	

Action	Press	Details
16. Add consecutive “card only” users by presentation	**53 # type # start user # ** <present card> <present card>...**	Start user **must** be greater than 2; Master/Supervisor cannot be set as “card only”
17. Enable/disable user	**56 # s/c # user # ****	1=disables the specified user 0=enables that user The Master user cannot be disabled. A non-programmed user cannot be enabled or disabled (generates program error)
18. Add block of 26-bit “card only” users without presenting cards	**57 # number of users # start user # card pin * card pin ***	Start user **must** be greater than 2; Master/Supervisor cannot be set as “card only” Uses site ID set in command 32, parameter 4
19. Delete block of consecutive users	**58 # start user # start user # number of users * number of users***	

Action	Press	Details
20. Set/clear event log mask	**73 # event # set/clear # ****	All events are logged by default
	Event 0 unknown event 1 access denied, invalid PIN 2 program denied 4 REX 5 propped door 6 door closed 7 forced door 17 access granted to user #N 19 access denied to user #N, bad timezone 20 toggle mode activated by user #N (latch set) 21 toggle mode deactivated by user #N (latch clear) 22 1st in auto-unlock triggered by user #N 23 door relocked by user #N 24 user lockout enabled by user #N 25 user lockout disabled by user #N 26 access denied to user #N, user is disabled 27 card/code mismatch 29 program mode started by user #N 30 log erased by user #N 31 comm enabled by user #N 34 auto unlock 35 auto lock 50 log retrieved 51 access denied to user #N, user group lockout	Events #30 and #50 cannot be disabled Events #34 and #35 are disabled by default
21. Reset (erase) transaction log	**76 # 00000 # 00000 # ****	
	To exit Program mode, press *.	