LCD Keypad   ELK-M1KP

APPLICATION

The ELK-M1KP is an addressable LCD Keypad for the M1 Cross Platform Controls. It features a 32 character back lighted display with adjustable intensity and extra large character fonts for ease of readability. The M1KP includes a plug-in connector on the back for adding an internal proximity reader (ELK-M1PR) or for interfacing to virtually any external 26 bit Wiegand compatible proximity reader. Prox cards/fobs can be used for touchless arming, disarming, door strike control, etc.

FEATURES

- Large, Easy to Read Characters
- Back lighted with Adjustable Intensity
- Removable Hinged Door
- Programmable Function Keys (6)
- Unique Menu Navigation/Direction Keys
- Operates on 4-Wires (M1 Data Bus)
- Adjustable Beep Tone and Volume
- Accepts Plug-in Proximity Card Reader (Optional)
- Input for 1 Supervised Zone
- One Programmable Voltage Output
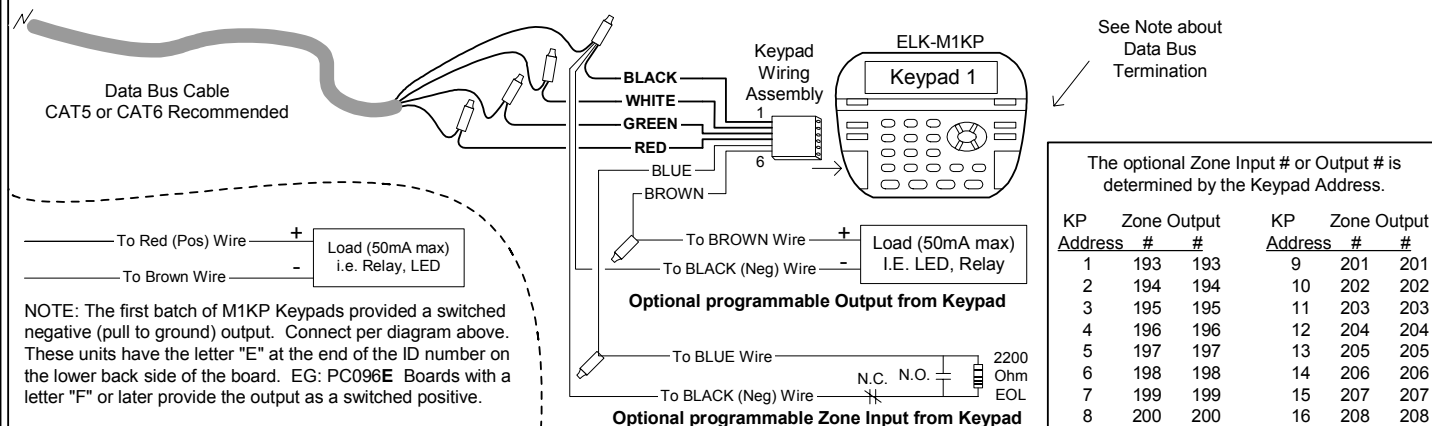- Exit, Stay, Chime, and Bypass Keys

SPECIFICATIONS

- Input Connection: 6 Pin Plug-in "Flying Lead" Connector Included
- Prox Connection: 5 Pin Plug-in "Flying Lead" Connector (optional ELK-WO35A required for external prox reader)
- Color: Glacier White
- Operating Voltage: 13.8 VDC
- Current Draw: 40 - 50 mA Idle (low back light level, sounder silent)
  160 mA Fully Active (max. back light & sounder active)
- Size: 6.875" W x 5.25" H x 1.375 D

Features and Specifications subject to change without notice.

Hookup Diagram for Keypad
(see M1 Instruction Manual and back of this sheet for multiple Keypad hookups.)
Splice 6 Pin Keypad Wiring Assembly to the Data Bus cable using ELK-900-2 "B" Connectors.

Data Bus Cable CAT5 or CAT6 Recommended

BLACK
WHITE
GREEN
RED
BLUE
BROWN

Keypad Wiring Assembly

ELK-M1KP
Keypad 1

See Note about Data Bus Termination

To Red (Pos) Wire +
To Brown Wire −
Load (50mA max) i.e. Relay, LED

To BROWN Wire +
To BLACK (Neg) Wire −
Load (50mA max) I.E. LED, Relay

Optional programmable Output from Keypad

NOTE: The first batch of M1KP Keypads provided a switched negative (pull to ground) output. Connect per diagram above. These units have the letter "E" at the end of the ID number on the lower back side of the board. EG: PC096**E** Boards with a letter "F" or later provide the output as a switched positive.

To BLUE Wire
To BLACK (Neg) Wire
N.C.   N.O.
2200 Ohm EOL

Optional programmable Zone Input from Keypad

The optional Zone Input # or Output # is determined by the Keypad Address.

KP Address	Zone #	Output #	KP Address	Zone #	Output #
1	193	193	9	201	201
2	194	194	10	202	202
3	195	195	11	203	203
4	196	196	12	204	204
5	197	197	13	205	205
6	198	198	14	206	206
7	199	199	15	207	207
8	200	200	16	208	208

INSTALLATION AND ENROLLMENT OF ELK-M1KP KEYPAD

Ideal keypad mounting height is 50-58 inches above the floor. Select a location with an ambient temperature range between 32° and 120° F (0° to +49° C). Avoid direct sunlight if possible. Keypads operate on the M1 data bus, which uses 4-wires. However, CAT5 or CAT6 eight (8) conductor is recommended for all data bus cables. The extra wires are for data return paths. **NOTE: See pages 12 and 13 in the M1 Installation Manual for important information about Data Bus termination when multiple homerun cables are installed. DO NOT SPLICE OR CONNECT WIRE WITH CONTROL POWER ON.** Minimum cabling should be four conductor 22 or 24 gauge. Maximum resistance per wire is 25 Ohms. Device placement beyond 1000' is not recommended.

1. Fasten mounting plate to electrical box (or directly to wall) using flat head screws to prevent shorts to the back of the circuit board.
2. Splice the Black, Red, White, and Green wires of the plug-in connector to the data bus cable. Plug connector into keypad. Tuck wires neatly into back plate and install Keypad on mounting plate.

Setting the Data Bus Address and Enrolling Device(s) into the System

Keypads and expander devices communicate with the M1 over the RS-485 4-wire data bus. Each device must have a unique address setting (from 1 to 16) within it's device type. Keypads are device TYPE 1, input (zone) expanders TYPE 2, output expanders TYPE 3, etc. The purpose of device types is so that the address numbers can be re-used in each different device type. It is OK to have a Keypad, a Zone Expander, and a Output Expander all set to address 2 and on the same data bus since each device is a different device type. **It is NOT OK to have duplications of addresses within the same device type. I.E. Multiple keypads on the same control cannot be set to 'like' addresses.**

SETTING THE ADDRESS: From the factory all keypads are set to address 1. Valid keypad addresses are 1 to 4 for the ELK-M1, or 1 to 16 for the ELK-M1G. The first keypad on the system (Keypad 1) is automatically enrolled upon power up. Each additional keypad must be assigned a unique address and then manually enrolled from "Menu 1 - Bus Module Enrollment". (See M1 Instruction Manual, Menu 01, for complete instructions on Bus Module Enrollment)

1. Press and hold the " * " key, followed by the F5 key . HOLD BOTH keys pressed for 5-10 seconds or until the LCD displays:
   Exit when done. F1 Set Addr. (This is Keypad setup mode)
   NOTE: This mode may also be accessed by removing power from the keypad (unplugging the data bus cable) and then applying power while holding any key pressed.
2. Press the F1 key to display the current address setting.
3. Set the desired address by entering a number from 1 to X.
4. Press the Exit key when done.

Effective with firmware version 2.1.42 or higher it is possible to access the keypad setup mode by just pressing and holding the "" key for 10 seconds.*
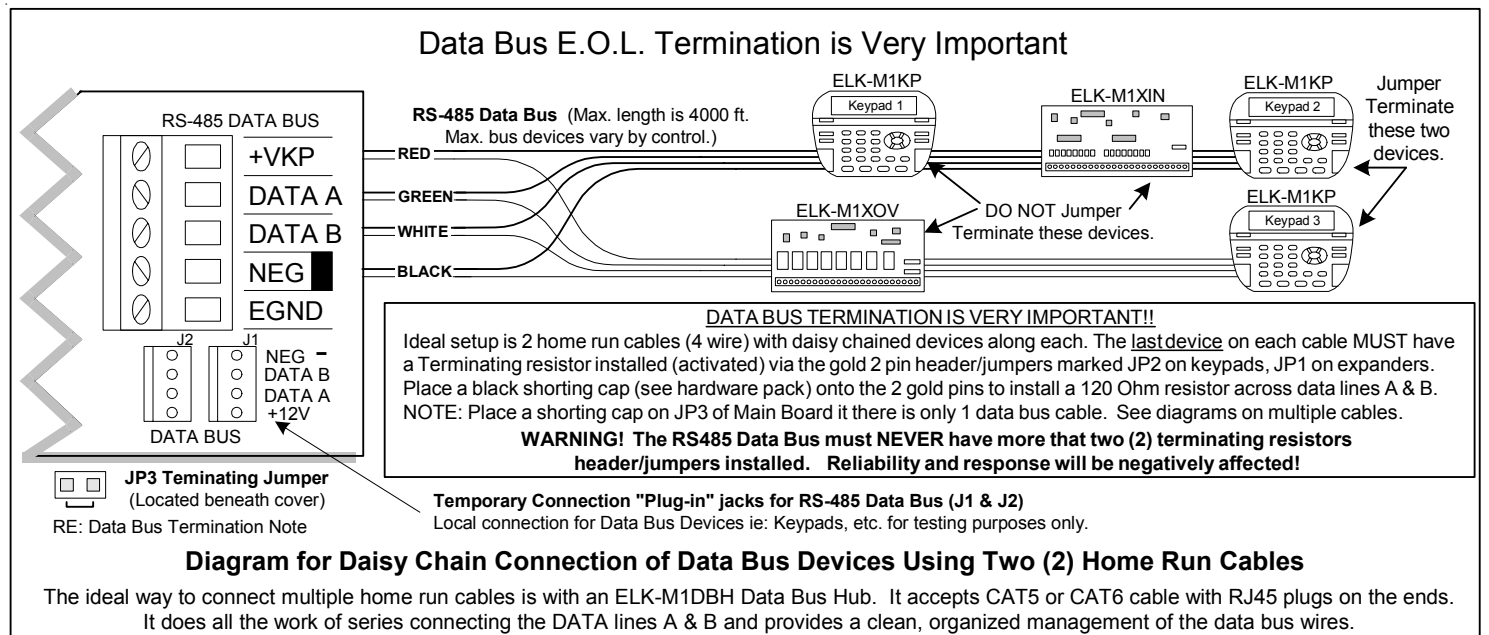
ENROLLING:
1. Press the ELK key, then press 9 (or scroll up) to display 9 - Installation Programming. Press the RIGHT arrow key to select this menu. The Installer Program Code (PIN) must be entered to access this menu.
2. Enter the Installer Program Code. (See M1 Manual for the default Code)
3. The first Installer Programming menu displayed will be "Bus Module Enrollment"
4. Press the RIGHT arrow key to select this menu. "Enrolling Bus Modules" will display
5. The M1 transmit an enrollment message to all data bus devices, following by a display showing the total Bus Modules that are enrolled. To view the enrolled devices and/or remove a device press the RIGHT arrow key next to the word Edit.
6. Press the * or Exit keys to exit Installer Programming.

```
Auth. Required
Enter Valid Pin
```

```
01-Bus Module
Enrollment
```

```
XX Bus Modules
Enrolled, Edit▶
```


Data Bus E.O.L. Termination is Very Important

RS-485 Data Bus (Max. length is 4000 ft. Max. bus devices vary by control.)

RS-485 DATA BUS
+VKP
DATA A
DATA B
NEG
EGND

J2 J1
NEG –
DATA B
DATA A
+12V
DATA BUS

JP3 Teminating Jumper
(Located beneath cover)
RE: Data Bus Termination Note

RED
GREEN
WHITE
BLACK

ELK-M1KP — Keypad 1
ELK-M1XIN
ELK-M1KP — Keypad 2
ELK-M1OV
ELK-M1KP — Keypad 3

Jumper Terminate these two devices.
DO NOT Jumper Terminate these devices.

DATA BUS TERMINATION IS VERY IMPORTANT!!
Ideal setup is 2 home run cables (4 wire) with daisy chained devices along each. The last device on each cable MUST have a Terminating resistor installed (activated) via the gold 2 pin header/jumpers marked JP2 on keypads, JP1 on expanders. Place a black shorting cap (see hardware pack) onto the 2 gold pins to install a 120 Ohm resistor across data lines A & B. NOTE: Place a shorting cap on JP3 of Main Board it there is only 1 data bus cable. See diagrams on multiple cables.
WARNING! The RS485 Data Bus must NEVER have more that two (2) terminating resistors header/jumpers installed. Reliability and response will be negatively affected!

Temporary Connection "Plug-in" jacks for RS-485 Data Bus (J1 & J2)
Local connection for Data Bus Devices ie: Keypads, etc. for testing purposes only.

Diagram for Daisy Chain Connection of Data Bus Devices Using Two (2) Home Run Cables

The ideal way to connect multiple home run cables is with an ELK-M1DBH Data Bus Hub. It accepts CAT5 or CAT6 cable with RJ45 plugs on the ends. It does all the work of series connecting the DATA lines A & B and provides a clean, organized management of the data bus wires.

KEYPAD INTERNAL TEMPERATURE SENSOR

Every standard ELK-M1KP has a built-in temperature sensor, which detects the surrounding ambient temperature. The sensor temperature may be displayed on the LCD, and read from another keypad or the telephone remote control. It may also be used with the Elk-RP Whenever/And/Then Rules to automatically cause an action or control something. i.e., a fan, pump, light, etc.

Viewing a Keypad temperature sensor reading
1. To view a keypad temperature sensor press the <u>ELK</u> key once (enter code if prompted), then press the <u>RIGHT</u> arrow to select the <u>View/Control Automation </u>menu.
2. Press the 5 key (or scroll up) to display: <u>4-Keypad Temperature</u>, then press the <u>RIGHT</u> arrow key.
3. The first Keypad (Keypad 01 will be displayed along with its Name, Keypad Number, and Temperature.
4. Additional Keypad Temperature sensors (if any) may be displayed by entering the 2 digit Keypad number OR by scrolling with the UP or DOWN arrow keys. To exit from this menu press the * key.

Using a Keypad temperature reading in a Rule to create an action or output
The following is an example of an ELK-RP Whenever/And/Then Rule to automatically turn on Output 3 (controlling a Fan, etc.) for 10 minutes whenever the Keypad temperature reading exceeds 90 degrees.
1. Start RP and open an account. Click the <u>Automation</u> tab and the <u>Rules</u> tab followed by <u>New</u>.
2. Click <u>Trigger</u>, then point to <u>Time Occurrence</u>, then <u>Every X Seconds</u>, and then click to select. **
3. In the block beside the words Fixed Value, type in 30 and click <u>OK</u>.
4. Click <u>And</u>, follwed by <u>Temperature</u> which is located near the bottom of the drop down list.
5. Highlight the Keypad temperature sensor (by name), click the <u>Greater than</u> button, and change the temperature selection number to 90. Make sure the button beside F is selected, and click <u>OK</u>.
6. Click <u>Then</u>, followed by <u>Turn Output On/Off</u>. Highlight Output 3 (use the scroll down arrow), make sure the button beside <u>Turn on</u> is selected, then select the box labeled <u>For</u>. Highlight the hrs:mins:secs window and enter 00:10:00 (10 minutes). Click OK. Double check everything and click Done.
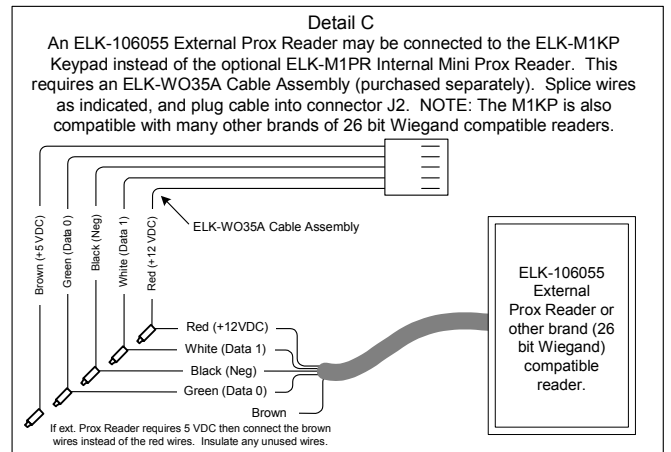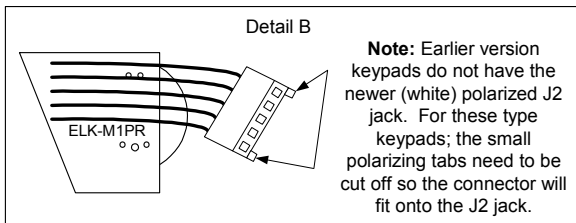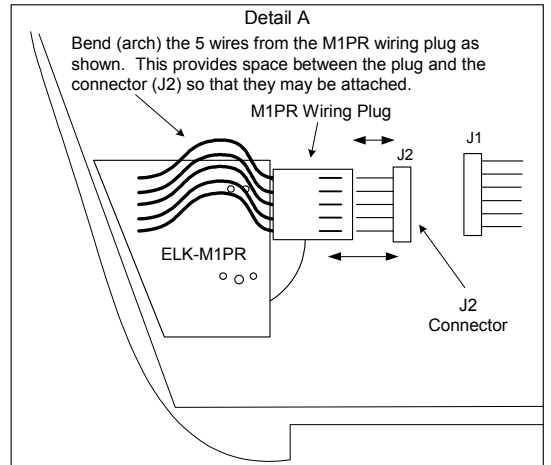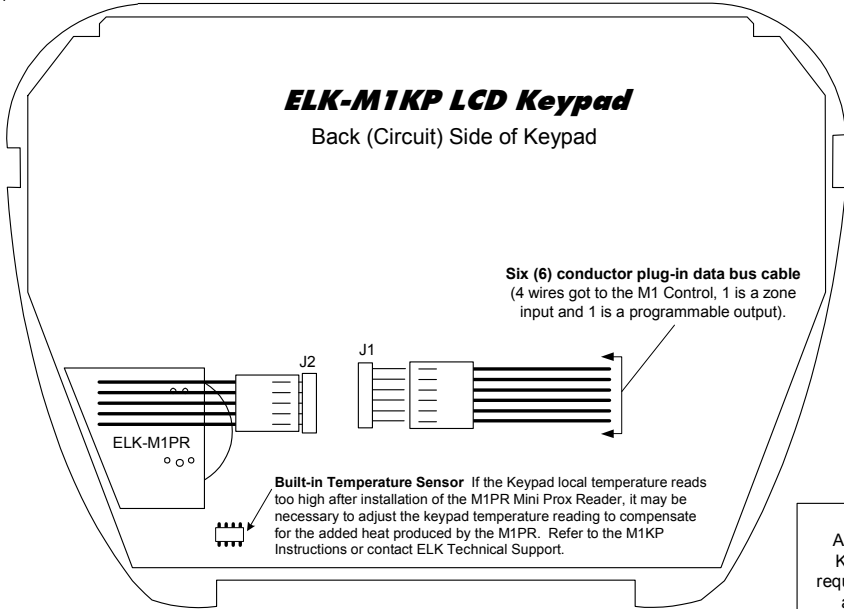7. The completed Rule should resemble the example below.
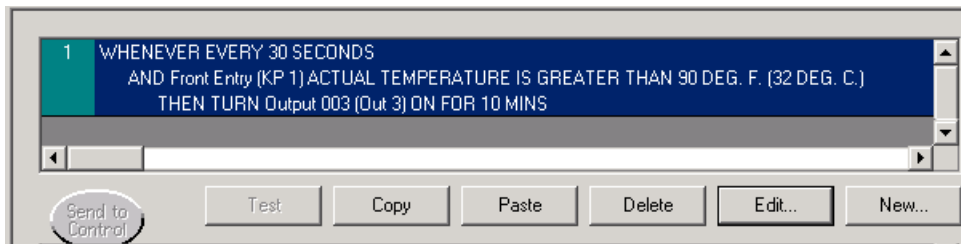
** Numerous triggers may be used for a temperature type rule, i.e., time occurence, arming of the security system, opening of a zone, etc. However, the M1 does not allow a temperature reading to be used as a trigger. This helps prevent a false activation "runaway" that could occur simple because the temperature has fluctuated by a degree or fraction of a degree. Instead, the AND command is used to compare or "test" a temperature sensor reading against a target value, each time the trigger occurs. The target value is programmable and the compare options are "Equal to, Not equal to, Less than, and Greater than". The "Equal to" is not recommended as a compare opton because it may be impossible for a temperature reading to be exactly at the target value when the trigger occurs.

TEMPERATURE READING ADJUSTMENT   If the Keypad internal temperature sensor appears to read higher or lower than other room thermostats/thermometers, it may be due to the Keypad mounting location, the room conditions, or the installation of a optional Mini Prox Reader (ELK-M1PR). The Keypad has an adjustment procedure which allows compensation for these conditions.

1. Press and hold the " * " key, followed by the F5 key . HOLD BOTH keys pressed for 5-10 seconds or until the LCD displays
Exit when done. F1 Set Addr.   (This is Keypad setup mode)
NOTE: This mode may also be accessed by removing power from the keypad (unplugging the data bus cable) and then applying power while holding any key pressed.
2. Press the F2 key and the LCD will display: **Temperature Degrees F = XX.X** (This is the current temperature)
3. Use the UP or DOWN arrow keys to adjust the current temperature display until it approximates the desired setting. Each press of the arrow keys changes the setting by approximately 3 tenths of a degree (00.3) It may not be possible to end up exactly on an even temperature setting.
4. Press the Exit key twice do return back to the regular operation mode.

INSTALLATION OF OPTIONAL ELK-M1PR INTERNAL PROXIMITY CARD READER

1. Turn Off the M1 Master Power Switch.
2. Remove the M1KP Keypad from its mounting plate, disconnect the 6 pin data bus cable, and place face down on a soft surface.
3. Locate the 1" mounting hole in the lower left corner and the 5 pin male connector marked J2 to the right of the mounting hole.
4. Position the M1PR in the 1" mounting hole with its 5 wire female cable facing towards connector J2 on the keypad circuit board.
5. Gently lift up on the 5 wire cable, then bend the white plug down to form a slight arch in the wires. **SEE DETAIL A.** This will shorten the cable enough that it can be plugged into connector J2.
6. Reconnect the 6 pin data bus cable to connector J1 and install the keypad onto its mounting plate.
7. Turn On the M1 Master Power Switch and follow the instructions for enrolling cards or fobs

ELK-M1KP LCD Keypad
Back (Circuit) Side of Keypad

Six (6) conductor plug-in data bus cable
(4 wires got to the M1 Control, 1 is a zone input and 1 is a programmable output).

ELK-M1PR

J2 J1

Built-in Temperature Sensor If the Keypad local temperature reads too high after installation of the M1PR Mini Prox Reader, it may be necessary to adjust the keypad temperature reading to compensate for the added heat produced by the M1PR. Refer to the M1KP Instructions or contact ELK Technical Support.

Detail A
Bend (arch) the 5 wires from the M1PR wiring plug as shown. This provides space between the plug and the connector (J2) so that they may be attached.

M1PR Wiring Plug

ELK-M1PR

J1

J2 Connector

Detail B
ELK-M1PR

Note: Earlier version keypads do not have the newer (white) polarized J2 jack. For these type keypads; the small polarizing tabs need to be cut off so the connector will fit onto the J2 jack.

Detail C
An ELK-106055 External Prox Reader may be connected to the ELK-M1KP Keypad instead of the optional ELK-M1PR Internal Mini Prox Reader. This requires an ELK-WO35A Cable Assembly (purchased separately). Splice wires as indicated, and plug cable into connector J2. NOTE: The M1KP is also compatible with many other brands of 26 bit Wiegand compatible readers.

Brown (+5 VDC)
Green (Data 0)
Black (Neg)
White (Data 1)
Red (+12 VDC)

ELK-WO35A Cable Assembly

Red (+12VDC)
White (Data 1)
Black (Neg)
Green (Data 0)
Brown

ELK-106055 External Prox Reader or other brand (26 bit Wiegand) compatible reader.

If ext. Prox Reader requires 5 VDC then connect the brown wires instead of the red wires. Insulate any unused wires.

ENROLLING PROX CARDS AND FOBS

Prox cards/fobs are enrolled into a User Code location using the same procedures used to add/change User Code PINs.
1. Press the ELK key, then press the 6 key (or scroll up) to display 6 - Change User Codes. Press the RIGHT arrow key to select this menu. A Master user code (PIN) must be entered to gain access to this menu.
2. Enter the three digit number of the desired User Code location (001 to 099) or use the UP or DOWN arrow keys to scroll through the codes. Then select CHG by pressing the RIGHT arrow key.
3. The keypad will display any existing 4 or 6 digit code that is programmed for this user along with any programmed name.
4. Place a new (not previously enrolled) prox card/fob near the Keypad's right speaker grill, just below the Stay key. The read range is approximately 1/8" to 3/8" from the front surface. If accepted the Keypad will beep 3 times and display the card/fob 12 digit ID.
5. If the card/fob is rejected, a low error tone and Code Not Authorized, Redo will display. Causes for reject include: A. The card/fob has already been enrolled (duplicate codes are not allowed) OR B. The facility code in the card/fob does not match the reader facility code. A prox reader can only read cards/fobs with a matching facility code.
6. Once a prox card/fob is enrolled in a user code location, its capabilities are set by the User Code Options found in Menu 02 of the M1 Installer Level Programming. The commonly used options are: Arm the M1 Control, Disarm the M1 Control, or Access event.

An Access event occurs when a valid prox card/fob is read at a keypad. It will not do anything unless included in a Whenever/And/ Then Rule from the Elk-RP software. An Access event can be used to create virtually any desired reaction. i.e., turn on an output, a light, close/open a relay, etc. The following is an example of a rule which will turn on Output 003 for 10 seconds whenever a valid prox card/fob (with Access Option enabled) is presented at Keypad 01. This output could be used to break or make power to a door strike.

WHENEVER Keypad 01 Access is Activated
THEN Turn On Output 003 for 10 seconds.