

ELK-M1XRF2H

Wireless Receiver and Input Expander

Compatible with specific models of Honeywell™ (Ademco™) "5800" Style Wireless Sensors.
Refer to page 8 for a listing of compatible sensors.

INSTALLATION MANUAL

IMPORTANT NOTE:

ELK-M1G and M1EZ8 Controls SHOULD have application firmware ver. 5.1.24 or higher to be compatible with the M1XRF2H Receiver. Refer to M1Dealer website for update 'flash' files.

The latest version of ElkRP Programming Software is required for programming the M1XRF2H.

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FEATURES:

- Adds up to 144 individual wireless zones (sensors/points)
- Operates from the 4 wire RS485 Data Bus
- Multiple Receivers (up to 11) may be connected to a single M1 or M1EZ8 Control for redundancy and greater coverage
- Flash Memory allows field updating of operating Firmware
- Compatible with the Honeywell (Ademco) style transmitters and with the 5800RP Repeater

SPECIFICATIONS:

- Sensitivity: >105 dbm
- Operating Temperature: 0 to +120 degrees F
- Operating Voltage: 12 Volts D.C.
- Current Draw: 25mA
- Indoor Range: 300 to 500 ft. ** line of sight

** Laboratory tests have achieved greater distances, however walls and metal objects generally reduce actual operating range.

This device complies with Part 15 of FCC Rules which are designed to provide reasonable protection against such interference in a residential installation. The FCC requires the following statement for your information:

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause Interference to radio and television reception. It has been type tested. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause 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:

- * If using an indoor antenna, have a quality outdoor antenna installed.
- * Reorient the receiving antenna until interference is induced or eliminated.
- * Move the receiver away from the security control.
- * Move the antenna leads away from any wire runs to the security control
- * Have the device or controller plugged into a different outlet so that it and the receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user or installer may find a booklet titled "Interference Handbook" prepared by the Federal Communications Commission helpful: This booklet is available from the U.S. Government Printing Office, Washington, DC 20402. The user shall not make any changes or modifications to the equipment unless authorized by the Installation Instructions or Users Manual. Unauthorized changes or modifications could void the user's authority to operate the equipment.

OVERVIEW

The **"2H"** model of the ELK-M1XRF Wireless RF Receiver (full part # ELKM1XRF2H) allows the ELK-M1 and ELK-M1EZ8 Controls to accept specific models of Honeywell (Ademco) 5800 style wireless transmitters. Refer to the list of compatible transmitters elsewhere in the manual. Regardless of model, an M1XRF receiver attaches to the four (4) wire (keypad) data bus and integrates in much the same way as a hardwired zone expander, with the exception that a single M1XRF can handle up to 144 wireless zones (e.g. transmitter sensors or points). Benefits of operating from the data bus are: 1) The receiver can be installed virtually anywhere in a building up to the maximum distance of the data bus. This provides optimum convenience and coverage. 2) Multiple receivers (up to 11 total) can be connected to a single control providing even greater coverage as well as redundancy. Using multiple receivers it is possible to cover hundreds if not thousands of square feet with a receiver placed in strategic locations.

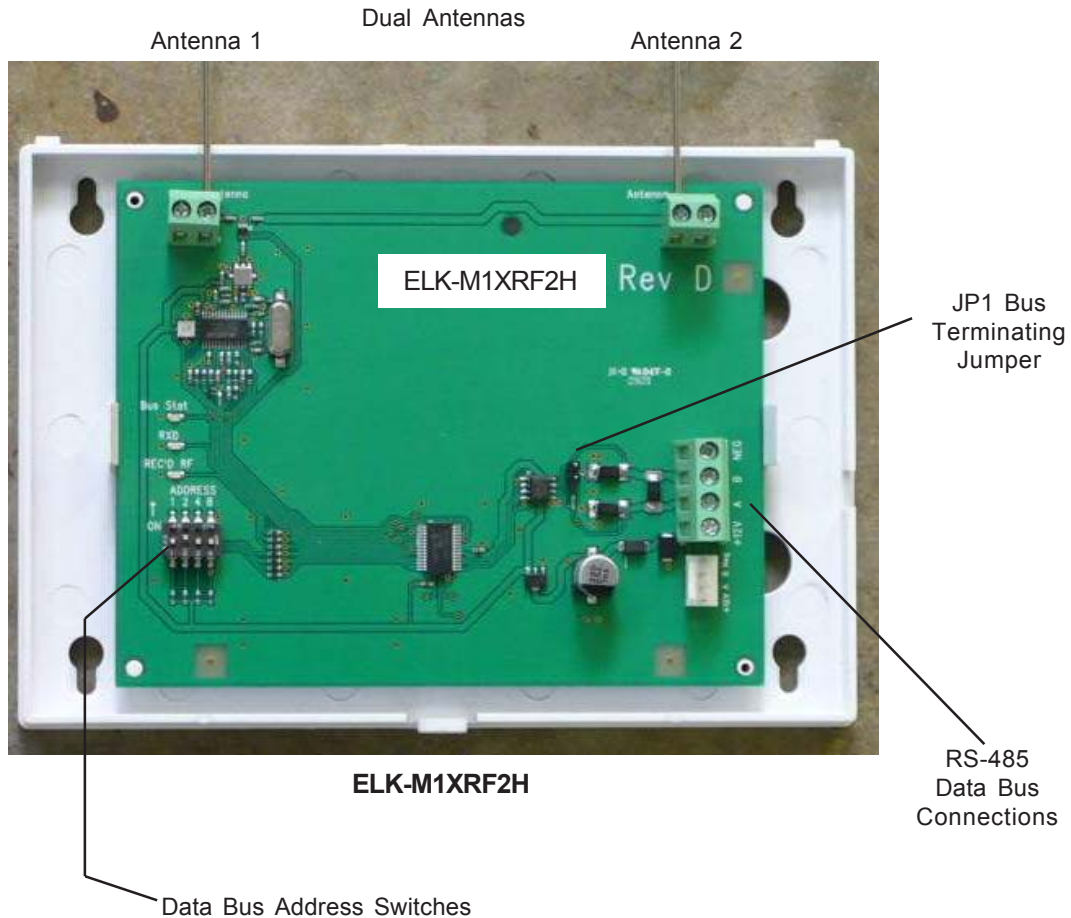
Another strong point of the M1XRF receiver is that all transmitter programming and enrollment data gets stored in the control panel, not in the receiver(s). This provides two advantages: 1) Multiple "redundant" receivers can be deployed in a building and a transmitter only need be enrolled one time. Even portable devices such as Keychain Remotes work perfectly regardless of which receiver picks up the transmission. 2) And should a receiver ever become damaged or need replacement it is not necessary to re-enroll the transmitters. Simply replace the receiver and perform a data bus enrollment of the receiver to the control panel.

IMPORTANT: As this time Elk produces two different models of Wireless (RF) Receivers. The M1XRF2H, designed for Honeywell (Ademco) wireless transmitters, and the M1XRF2G, designed for GE (Caddx) wireless transmitters. YOU MUST HAVE THE CORRECT MODEL RECEIVER TO MATCH THE BRAND OF TRANSMITTERS YOU ARE INSTALLING. It is possible to combine both receiver models on an a single M1 Installation and use a mix of both brands of transmitters. But extreme care must be exercised to assure that each transmitter brand is within range of it's respective receiver model. In other words, the receivers are physically and electronically different and can only receive the transmissions of their particular brand transmitters.

NOTE: The "2H" suffix on the M1XRF part number refers to Dual (2) antenna and Honeywell (Ademco) 5800 Style Sensor compatibility.

General Installation and Setup

INSTALL UNIT * SET ADDRESS AND OPTION JUMPERS * ACTIVATE M1 BUS ENROLLMENT PROCESS



NOTE: Jumper JP1 makes it convenient to terminate the RS-485 Data Bus if this is the last installed device.

1. **Mounting** - Two (2) #6 x 1/2" screws (not provided), one on each side of the housing should be used for mounting. The receiver connects to the M1's Keypad data bus and may be remotely located up to several thousand feet away from the control. Mounting inside a metal enclosure or on metalized wallpaper is NOT RECOMMENDED! Try and mount at least 10 feet away from any electrical device that generates noise including the M1 Control as electrical noise may reduce the receiver sensitivity. For increased signal coverage or redundancy additional M1XRF Receivers (up to 11 max.) may be connected to the same M1 Controller. See Appendix C.

2. **Wiring Connections** - Before making any wiring connections, turn the power Off on the Control Panel. Connect terminals +12V, A, B, and Neg from the receiver to the M1's Keypad Data Bus (terminals +VKP, Data A, Data B, & Neg).

NOTE: Refer to the M1 Installation Manual and the M1DBH information in this manual about proper connections of data bus devices with multiple homerun cables.

3. Antenna Installation

The receiver is supplied with two (2) antennas. These should be installed into the top locations marked Antenna. Dual antennas ensure signal diversity which helps eliminate RF dead spots.

NOTE: Each antenna location has a two (2) position screw terminal block. MAKE SURE to insert and tighten the antennas into the screw terminals marked ANTENNA. Do not use the adjacent screw terminal.

Setting the M1XRF Data Bus Address and the Starting Wireless Zone ID

Devices that communicate on the RS-485 4-wire data bus must each have a valid address setting (from 1 to 15) within their device type. Keypads are TYPE 1, Hardwire and Wireless Input expanders are TYPE 2, Output expanders TYPE 3, Serial expanders TYPE 4. The device types allow address numbers to be re-used in each different device type. There are 4 address switches, each with an OFF or ON position (binary value 0 or 1) and decimal equiv. value of (1, 2, 4, or 8). The total decimal value of the "ON" switches determines the data bus address. Set the switches to the desired data bus address by referring to Tables 1-1 and 1-2. A small screwdriver may be helpful. See important information before proceeding to "Data Bus Enrollment".

VERY IMPORTANT! PLEASE READ!

Due to Hardwire and Wireless expanders sharing the same device type and same bus address range, unintentional data bus "Conflicts" are possible with M1XRF Wireless Receiver(s) and M1XIN Hardwired Expander(s) installed on the same control. These conflicts can be avoided with proper understanding of the issues and careful planning and execution during installation. The important point to remember is that M1XRF Wireless Receivers and M1XIN Zone Expanders share the same data bus addresses. Below are some issues and recommendations to avoid addressing conflicts:

M1XIN Expanders: A single ELK-M1XIN Hardwired Zone Expander (M1XIN) provides 16 hardwired zones. The data bus address SETS THE ID OF THE STARTING ZONE of each 16 zone group. See Table 1-1. If additional M1XINs are installed, each must have a different address (usually the next available) to set the starting zone of the next 16 zone group. I.E., Each data bus address equates to a specific group of 16 zone IDs. Everything works fine as long as there are NO DUPLICATE addresses.

M1XRF Receivers: The main differences between a ELK-M1XRF Wireless Receiver and a ELK-M1XIN Zone Expander are:

- 1) With only a single (1) M1XRF Receiver it is possible to add up to 144 wireless zones to the control, assigned in groups of 16 at a time. The only stipulation is that in order to have 144 total wireless zones the first group of 16 must begin at zone 17 and the balance of the wireless zones must be sequential through zone 160. Caution! If any hardwired zone expanders are enrolled in the range of zones 17 through 160 then 16 wireless zones will be lost for every hardwired (16 zone) expander.
- 2) It is possible to have multiple M1XRF Wireless Receivers installed for added range and coverage redundancy. The "redundant" receivers can be assigned to any unused data bus address. For this reason the data bus address of an M1XRF Receiver does not actually determine the starting wireless zone number. Even so, for the sake of simplicity, installers are encouraged to set the data bus address of the first M1XRF Receiver (if there are multiple Receivers) to the starting zone ID as depicted in Tables 1-1 and 1-2.

NOTE: ELK strongly recommends that the starting wireless zone number conforms to the numbering scheme shown in Tables 1-1 and 1-2, even though the actual data bus address of the M1XRF could be address 10 while the first group of 16 wireless zones could be programmed as 17-32. Although there may be some benefits to being able to program the starting zone without regard to the data bus address, the disadvantages are potential zone numbering conflicts when M1XIN Hardwired Zones Expanders exist. For the sake of simplicity, installers are encouraged to set the starting zone ID and the M1XRF data bus address to conform to the conventional settings used by the hardwired zone expanders. Refer to Tables 1-1 and 1-2 on opposite page.

Other important considerations when installing an M1XRF:

- a) From a system configuration point wireless zones are allocated in minimum blocks of 16 zones. But you are not required to utilize all 16 of the zones.
- b) Care must be taken to ensure that wireless zones NEVER spill over into data bus addresses that are already assigned to or in use by a M1XIN Hardwired Zone Expander and vs. versa,
- c) Regardless of where the wireless zones start we strongly suggest that all additional wireless zones be contiguous and that no M1XIN Hardwired Zone Expanders be installed at data bus addresses associated with those wireless zone numbers. Data Bus Addresses whose zone IDs are effectively "overlapped" by wireless zones are considered "reserved" for wireless use and should not be used by a hardwired zone expander. See Appendix C.
- d) The last wireless zone number can NEVER be assigned higher than zone 160. Put another way, zones 161 through 208 cannot be wireless zones.
- e) The maximum number of wireless zones is 144, therefore the last wireless zone number cannot be greater than 160.

Example: You decide to create 64 contiguous wireless zones. And the starting wireless zone ID is set to "17" (associated with data bus address 2). That would mean that zones 17 to 31, 32 to 48, 49 to 64, and 65 to 80 are going to be wireless zones. Based on Tables 1-1 and 1-2 it is easy to see that zones 17 to 31 are associated with data bus address 2 and zones 32 to 48, 49 to 64, and 65 to 80 are associated with data bus addresses 3, 4, and 5 respectively. As a result, addresses 3,4, and 5 ARE NOT AVAILABLE for use by M1XIN Expanders because the wireless zones are overlapping these addresses.

NOTE: Consider whether the system may ever required more wireless or hardwired zones. If the answer is yes it would be good to plan the data bus address assignments in such a way that future growth is possible without having to default the control or totally re-arrange the addresses at a future date.

M1XIN Zone Expanders

Data Bus Address	Starting and Ending Zone Numbers	Switch Settings			
		S1	S2	S3	S4
2	Zones 17 - 32	Off	On	Off	Off
3	Zones 33 - 48	On	On	Off	Off
4	Zones 49 - 64	Off	Off	On	Off
5	Zones 65 - 80	On	Off	On	Off
6	Zones 81 - 96	Off	On	On	Off
7	Zones 97 - 112	On	On	On	Off
8	Zones 113 - 128	Off	Off	Off	On
9	Zones 129 - 144	On	Off	Off	On
10	Zones 145 - 160	Off	On	Off	On
11	Zones 161 - 176	On	On	Off	On
12	Zones 177 - 192	Off	Off	On	On
13	Zones 193 - 208	On	Off	On	On
14	<i>not valid</i>	-	-	-	-
15	<i>not valid</i>	-	-	-	-

Table 1-1

M1XRF Wireless Receivers

Data Bus Address	Suggested Wireless "Starting Point"	Switch Settings			
		S1	S2	S3	S4
2	Zone 17	Off	On	Off	Off
3	Zone 33	On	On	Off	Off
4	Zone 49	Off	Off	On	Off
5	Zone 65	On	Off	On	Off
6	Zone 81	Off	On	On	Off
7	Zone 97	On	On	On	Off
8	Zone 113	Off	Off	Off	On
9	Zone 129	On	Off	Off	On
10	Zone 145	Off	On	Off	On
11	<i>not valid</i>	-	-	-	-
12	<i>not valid</i>	-	-	-	-
13	<i>not valid</i>	-	-	-	-
14	<i>not valid</i>	-	-	-	-
15	<i>not valid</i>	-	-	-	-

Table 1-2

Other Jumper Settings:

JP1 - Used to engage a 120 Ohm resistor for terminating the RS-485 Data Bus. See Data bus wiring instructions before use.

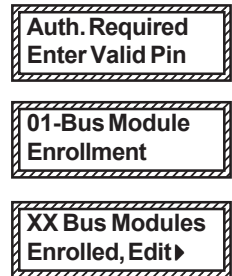
Data Bus Address Switches

Data Bus Enrollment:

Once the address is set and the M1XRF is powered up it will be necessary to manually ENROLL the device so that the M1 Control knows it is present. This is accomplished either from keypad programming "Menu 1 - Bus Module Enrollment" or from the ElkRP Remote Programming Software.

(The steps below require an M1 LCD Keypad)

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. (The default code is 172839)
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 control will transmit an enrollment message to all data bus devices, followed 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.



Operation

Handling Received Transmissions:

Operationally when a transmitter signal is received by the M1XRF it quickly scans through a filter of valid transmitter sensors to determine if that sensor has been enrolled into the M1 or EZ8 control. If that transmitter is valid then its data will be sent to the M1 Controller for additional processing. The M1 Controller automatically informs any additional M1XRF Receivers that it has received this transmitter, just in case they also heard the same transmission. This handling procedure does two things. It eliminates duplicate signal processing while allowing multiple receivers for improved range and reliability. It also helps prevent unwanted or neighboring transmitters belonging to another system from being duplicated on the data bus.

Diagnostic LEDs:

Three (3) Status LEDs provide valuable information as to the operation of the M1XRF:

BUS STAT "STATUS" **RED** LED - This displays multiple conditions as outlined below:

OFF = No Power to the M1XRF

ON Solid = The M1XRF is Not Enrolled or the Microprocessor is not functioning.

BLINKING = 2 different blink rates:

- Normal Operating mode - indicated by a slow blink of once per second with a matching Off time.

- Bootloader mode - indicated by a more rapid "two" blinks per second with a very brief Off time.

This occurs when the unit is awaiting a flash download of its application firmware. Until the firmware application has been successfully downloaded the M1XRF is non-functional as a wireless receiver.

RXD "VALID" **GREEN** LED - This LED will momentarily turn on when the M1XRF receives a valid transmitter and is in the process of sending the signal packet back to the M1 Controller. As soon as the packet is acknowledged by the M1 Controller the LED will turn Off.

REC'D "RF" **YELLOW** LED - This LED blinks whenever and RF transmitter signal is detected.

Requirements for Programming the Receiver and Enrolling Transmitters:

The Receiver and wireless transmitters may be programmed using either the M1 Keypad Installer Programming or the ElkRP Remote Programming software. The following pages document the options and steps for programming from the keypad.

Transmitter (RF) Level Checking [Signal Strength]:

Wireless transmitters send multiple repeats "or rounds" of their data transmission packets to compensate for interference, weak signal, etc. The repeated packets are useful to the receiver in providing level checking [signal strength, walk test, etc.] as a reference of the acceptable reliability of the sensor and its mounting orientation and/or location.




















When the M1XRF receiver first hears a wireless transmission, it tracks and totals the number of received data packets over the next 10 seconds. During keypad enrollment of a new transmitter, the total number of received packets is voice announced by the M1 immediately following the successful enrollment. The number is also voice announced during the Keypad Walk Test of a Wireless zone. For Example: If all data packets from a sensor (8 out of a total of 8) were properly detected you should hear "Sensor X, Level 8". This would indicate the highest signal strength for this particular Intrusion Sensor.

In Elk's opinion, the minimum acceptable level of any wireless sensor would generally be a level 4. This is based on the fact that the M1XRF Receiver REQUIRES a minimum of 2 repeated data packets in order to qualify an event as a valid transmission. Level 4 is just a rule of thumb based on doubling the minimum required number of repeated data packets. It is the responsibility of the installation company and their technicians to adopt their own policy of what should constitute a minimum acceptable level [signal strength] of any wireless transmitter.

IMPORTANT: Because the M1XRF counts all valid data packets received over a 10 second time window, it is possible to occasionally hear a number that is much higher than the number you might expect to hear from a particular sensor. This can occur when multiple transmitters on a site happen to transmit at the same time as the one being tested. Based on the type of RF sensor being tested, if the announced value is too high or just sounds wrong or inconsistent, it is recommended that you retest or retrigger that sensor to get a more correct data packet decode level.


Compatible "5800" Format Wireless Transmitters

The below listed Transmitters have been tested and found to be compatible with the ELK-M1XRF2H Receiver. Elk makes no guarantee for any other transmitter model(s). All information shown below is based on the best available data provided by the transmitter manufacturer. Information subject to change without notice.

Transmitter Enrollment from a M1 Keypad using the "Lrn" method (REMINDER - An alternate method is to use the ElkRP software to type in the Xmtr ID, Loop #, and any viable options.)		
Image	Part Number(s)	From Installer Programing pick Menu 14, sub-menu 3. Enter 3 digit number of transmitter/zone or use keypad Up/Down arrow keys to scroll and locate a particular zone. Follow the specific Xmtr instructions outlined.
	Recessed Dr/Wnd Xmtr, Single Channel Ademco Part # 5800Micra	Use Enroll Method 1
	Ultra Small Dr/Wnd Xmtr, Single Channel Ademco Part # 5814	Use Enroll Method 1
	Dr/Wnd Xmtr, 2 Channels 1 Reed & 1 Ext. contact Ademco Part # 5815	Use Enroll Method 2 B NOTE: This Xmtr has 2 inputs and can be enrolled into 2 zones. The inputs have Loop # assignments which must be set for each zone. The 1st zone could be assigned to Loop 1, the other to Loop 2. See sensor instructions. Repeat the enroll process for the other zone prior to setting it's Loop #. Ext. inputs are N/C by default, but can be changed to N/O by setting zone option WZnxxx 04 (Enable Option 2) to YES.
	Dr/Wnd Xmtr, 2 Channels 1 Reed & 1 Ext. contact Ademco Part # 5816	Use Enroll Method 2B NOTE: This Xmtr has 2 inputs and can be enrolled into 2 zones. The inputs have Loop # assignments which must be set for each zone. The 1st zone could be assigned to Loop 1, the other to Loop 2. See sensor instructions. Repeat the enroll process for the other zone prior to setting it's Loop #. Ext. inputs are N/C by default, but can be changed to N/O by setting zone option WZnxxx 04 (Enable Option 2) to YES.
	Dr/Wnd Xmtr, 3 Channels 1 Reed & 2 Ext. contacts Ademco Part # 5817	Use Enroll Method 2B NOTE: This Xmtr has 3 inputs and can be enrolled into 3 zones. The inputs have Loop # assignments which must be set for each zone. The 1st zone could be Loop 1, the 2nd Loop 2, and the 3rd Loop 3. See sensor instructions. Repeat the enroll process for each of the other zones prior to setting their Loop #. Ext. inputs are N/C by default, but can be changed to N/O by setting zone option WZnxxx 04 (Enable Option 2) to YES.
	Recessed Dr/Wnd Xmtr, Single Channel Ademco Part # 5818	Use Enroll Method 1
	Slim Dr/Wnd Xmtr, Single Channel Ademco Part # 5820L	Use Enroll Method 2
	Keychain Remote Xmtr, Four Button Ademco Part # 5804	Use Enroll Method 3 NOTE: Program Zone Def. as KEYFOB. Each button can be assigned a functionality under SubMenu 4. Consider setting the zone as non-supervised if customer is likely to carry sensor away from the premises. This helps prevent nuisance missing transmitter troubles. Refer to WZnxxx 02 (Supervision Type).
IMPORTANT! #5804E is not compatible with ElkM1XRF2H. The "E" signifies encryption.		
	Single Button Panic Xmtr Ademco Part # 5802, 5802MN	Use Enroll Method 3 NOTE: Program Zone Def. as KEYFOB. The single button responds as KEY 4 and MUST be assigned a functionality as Key # 4 under SubMenu 4. Consider setting the zone as non-supervised if customer is likely to carry sensor away from the premises. This helps prevent nuisance missing transmitter troubles. Refer to WZnxxx 02 (Supervision Type).
	Panic Xmtr w/DbI Key Press Ademco Part # 5802MN2	Enroll Manually by typing in the Xmtr ID NOTE: Select Zone and press the left arrow "HW". Type in Xmtr Decimal ID shown on the unit. Set Loop to "1". Program Zone Def. as desired. Consider setting the zone as non-supervised if customer is likely to carry sensor away from the premises. This prevents nuisance missing transmitter troubles. Refer to WZnxxx 02 (Supervision Type).
	Holdup Switch Xmtr Ademco Part # 5869	Enroll Manually by typing in the Xmtr ID NOTE: Select Zone and press the left arrow "HW". Type in the Xmtr Decimal ID shown on the unit. Set Loop to "1". Since this type of holdup sensor is generally fix mounted, the zone can and should be programmed as supervised. Refer to WZnxxx 02 (Supervision Type).
	PIR Motion Detector Ademco Part # 5890	Use Enroll Method 2
	Wireless Outdoor Motion Sensor Xmtr Ademco Part # 5800PIR-OD	Use Enroll Method 2
	Shock Sensor Ademco Part # 5800SSI	Use Enroll Method 2
	Shock Processor Xmtr, 3 Channels, 2 Ext. & 1 Reed Sw. Ademco Part # 5819	Use Enroll Method 2B NOTE: This Xmtr has 3 inputs and can be enrolled into 3 zones. The inputs have Loop # assignments which must be set for each zone. The 1st zone could be Loop 1, the 2nd Loop 2, and the 3rd Loop 3. See sensor instructions. Repeat the enroll process each of the other zones prior to setting their Loop #. Ext. inputs are N/C by default, but can be changed to N/O by setting zone option WZnxxx 04 (Enable Option 2) to YES.
	Glassbreak Xmtr Ademco Part # 5853	Use Enroll Method 2
	Flood / Temperature Xmtr, Ademco Part # 5821	Use Enroll Method 2B NOTE: This Xmtr can be configured to operate as a stand-alone temperature sensor and/or as either a Remote Temperature Sensor OR Flood Detector. Each channel must have its own zone and Loop # assignment of 1, 2, or 3. Refer to sensor instructions. Repeat the enroll process for each of the other zones prior to setting their Loop #.
	Smoke Detector Ademco Part # 5808W3	Use Enroll Method 4
	Heat 'Rate Of Rise' Xmtr Ademco Part # 5809	Use Enroll Method 4

Transmitter Enrollment from a M1 Keypad using the "Lrn" method

(REMINDER - An alternate method is to use the ElkRP software to program the Xmtr ID, Loop #, and any viable options.)

Image	Part Number(s)	From Installer Programing pick Menu 14, sub-menu 3. Enter 3 digit number of transmitter/zone or use keypad Up/Down arrow keys to scroll and locate a particular zone. Follow the specific Xmtr instructions outlined.
	Wall Transmitter, 6 Button Ademco Part # 5878	<p>Enter manual by typing in the Xmtr ID or use a modified version of Enroll Method 3. To utilize all 6 buttons this Xmtr MUST be enrolled as two (2) sequential M1 transmitters and M1 zones. The 1st transmitter/zone supports the top 4 buttons (1-4), the 2nd transmitter/zone supports the bottom (last) 2 buttons (5 & 6). BOTH Zone Definitions MUST be programmed as KEYFOB and BOTH Transmitters should be programmed as NON-SUPERVISED. [See Menu 14, WZnxxx 02 Supervision Type.] Start at the 1st Xmtr location and enroll the transmitter utilizing enroll method 3. After "Lrn" press and hold button 1 - 4. You may also use the manual method and type in the Decimal ID of the transmitter. In the next transmitter location repeat enroll method 3 only this time press and hold button 5 or 6 after "Lrn". When using the manual method make sure to type in the Decimal ID INCREASED by "1". I.E. Add 1 to the printed ID. Program the Loop for both transmitters as "1". To make the bottom buttons (5 & 6) respond properly as the 5th and 6th keyfob events, Option 1 MUST be enabled on the 2nd transmitter/zone. Set this option to "YES". [See Menu 14, WZnxxx 03]. Failure to do this will result in the bottom 2 buttons acting just like the top 2 buttons. i.e. They will duplicate buttons 1 & 2..</p>

From Installer Programing pick Menu 14, sub-menu 3. Enter 3 digit number of transmitter/zone or use keypad Up/Down arrow keys to scroll and locate a particular zone. Then follow specific Enroll Method instructions below.

Enroll Method 1 - Sensors with no tamper switch. * Verify Xmtr battery is installed before proceeding *

- Step 1 - Loop MUST first be programmed to a "1" as follows: Press keypad left arrow labeled "HW". Move cursor to Loop using the right arrow. Enter 1 & press ELK twice.
- Step 2 - Press keypad right arrow labeled "Lrn" & trip sensor 2 or 3 times so that it transmits. Sensor is enrolled when keypad chimes & briefly displays Xmtr 7 digit Hex ID. Keypad will step to next available (blank) zone allowing rapid enrollment of sensors (except type that requires loop to be set first) by tripping the next one to enroll.
- Step 3 - To end rapid enrollment press ELK.
- Step 4 - To view or verify the Decimal ID & Loop # of a Xmtr it is necessary to reselect the zone number and press the left arrow "HW". Press ELK twice when done.

Enroll Method 2 - Sensors with 1 channel and a tamper switch. * Verify Xmtr battery is installed before proceeding *

- Step 1 - Remove sensor cover so that tamper is activated.
- Step 2 - Press the keypad right arrow labeled "Lrn". Activate sensor so it transmits. Sensor is enrolled when keypad chimes & briefly displays Xmtr 7 digit Hex ID. Keypad will step to next available (blank) zone allowing rapid enrollment of sensors (except type that requires loop to be set first) by tripping the next one to enroll.
- Step 3 - To end rapid enrollment press ELK.
- Step 4 - To view the Xmtr Decimal ID & set the Loop # it is necessary to reselect the zone number and press the left arrow "HW".
- Step 5 - Move cursor over to Loop using the right arrow. Since this is a single channel Xmtr press 1 to set the Loop to "1". When done press ELK twice.

Enroll Method 2B - Sensors with 2 or 3 channels and a tamper switch. * Verify Xmtr battery is installed before proceeding *

- Step 1 - Remove sensor cover so that tamper is activated.
 - Step 2 - Press the keypad right arrow labeled "Lrn". Activate sensor so it transmits. Sensor is enrolled when keypad chimes & briefly displays Xmtr 7 digit Hex ID. Keypad will step to next available (blank) zone allowing rapid enrollment of sensors (except type that requires loop to be set first) by tripping the next one to enroll.
 - Step 3 - To end rapid enrollment press ELK.
 - Step 4 - To view the Xmtr Decimal ID & set the Loop # it is necessary to reselect the zone number and press the left arrow "HW".
 - Step 5 - Move cursor to Loop with right arrow. Program Loop according to which Xmtr input this zone is using. Refer to Xmtr Mfg. supplied instructions. External input(s) generally start at lower Loop (1 or 2), internal reed switches are generally the last Loop (2 or 3). When done press ELK twice.
- NOTE: To use multiple channels select another zone for each & repeat the enrollment. Make sure to set the loop for each zone to an appropriate value.

Enroll Method 3 - Keychain Remotes * Verify Xmtr battery is installed before proceeding *

- Step 1 - Press the keypad right arrow labeled "Lrn". Press & hold any Xmtr key 1 to 4. Sensor is enrolled when keypad chimes & briefly displays Xmtr 7 digit Hex ID. Keypad will step to next available (blank) zone allowing rapid enrollment of sensors (except type that require loop to be set first) by tripping the next one to enroll.
- Step 2 - To end rapid enrollment press ELK.
- Step 3 - To view the Xmtr Decimal ID & Loop # it is necessary to reselect the zone number and press the left arrow "HW". Set the Loop to a "1". Press ELK twice when done.

Enroll Method 4 - Smoke & Heat Sensors * Verify Xmtr battery is installed before proceeding *

- Step 1 - Twist off or separate main detector from backplate so tamper is activated.
- Step 2 - Press the keypad right arrow labeled "Lrn". With a Smoke detector activate the test button procedure to trip sensor so that it transmits. With a Heat detector press the activation button located on underside of circuit board. Sensor is enrolled when Keypad chimes & briefly displays 7 digit Hex ID. Keypad will step to next available (blank) zone allowing rapid enrollment of sensors (except type that requires loop to be set first) by tripping the next one to enroll.
- Step 3 - To end rapid enrollment press ELK.
- Step 4 - To view the Xmtr Decimal ID & set the Loop # it is necessary to reselect the zone number and press the left arrow "HW".
- Step 5 - Move cursor over to Loop using the right arrow. Set Loop # for smoke and heat Xmtr to a "1". When done press ELK twice.

NOTE: In the Keypad enroll process an Ademco Xmtr ID displays as a 7 digit HEX number instead of the DECIMAL number printed on the Sensor & Packaging. The reason for this is that M1 originally accomodated only GE wireless which used HEX ID numbers. The display will not accomodate both, but the Decimal ID can viewed as follows:
 Step 1. Locate the Zone by entering the 3 digit zone #, or use the keypad Up/Down arrow keys to scroll and locate the zone.
 Step 2. Press the left arrow "HW". The displayed Decimal ID should match the label on the sensor and the Loop should be verified as correct. When done press Elk twice.

Programming via Keypad

From the keypad enter the Installer Level Programming mode. Press ELK, 9 > (enter installer code).
 Navigate to the Wireless Setup - Menu 14 and press the RIGHT arrow key to select.

14 - Wireless Setup ▶

There are four (4) wireless setup submenus: 1-Receiver Options, 2-Xmitter Options, 3-Xmitter Enroll, and 4-Keyfob Event Definitions. Use the UP or DOWN arrow keys to locate the desired submenu, then press the right arrow key to select.

Wireless Submenu

Description

1:Rec Sel ◀ Prg▶
Receiver Options

This submenu is for Receiver options. To select this menu press the RIGHT arrow key, or press the Up or Down arrow keys to scroll the submenus.

RO3:=024 Hours ▶
Reg. Supervision

Rec. Option R03 is the time value for zones programmed as Supervisory Type 1 or "Non-Fire" transmitters (see Xmit Transmitter Opt 02 below). The range is 001 to 255 hours. If a Type 1 sensor fails to check-in prior to the expiration of this time it is considered "missing". Factory default setting is 024 hours. NOTE: A value less than 4 hours is NOT RECOMMENDED!

RO4:=004 Hours ▶
Fire Supervision

Rec. Option R04 is the time value for zones programmed as Supervisory Type 2 or "Fire" transmitters (see Xmit Transmitter Opt 02 below). The range is 001 to 255 hours. If a Type 2 sensor fails to check-in prior to the expiration of this time it is considered "missing". Factory default setting is 004 hours. NOTE: A value less than 4 hours is NOT RECOMMENDED!

2:Xmit Sel ◀ Prg▶
Transmitter Opt ▶

This submenu is for specific transmitter options. However, some options are not applicable to this model of the M1XRF. To select this menu press the RIGHT arrow key, or press the Up or Down arrow keys to scroll the submenus.

WZn017:Sel ◀ Prg▶
Wireless Zone

Use the UP and DOWN arrow keys to locate a particular wireless transmitter. Press the RIGHT arrow key to select and program the displayed transmitter.

WZn017 01: = No ▶
Enable Transmitt

Displays whether a transmitter is enabled or disabled. This option CANNOT be used to add a new device, but it can be used to temporarily suspend an already enrolled device. The enroll process must be used to add a new transmitter, after which this location will be set to Yes.

WZn017 02: = 0 ▶
Supervision Type

Selects the supervision "Type" for each transmitter. Type 0=Non-Supervised (Keyfobs or devices that may leave the premises), Type 1=Normal Supervision (Burglar Sensors), Type 3=HI Supervision (Fire Sensors). See receiver selections R02 and R03 for supervision time values. Valid values are: 0, 1, or 3 Factory default setting is 1 (Normal Supervision).

WZn017 03: = No ▶
Enable Option 1

Option for certain types of Transmitters. Example: For keyfob transmitters setting this option to Yes converts buttons 1 to 4 to appear instead as buttons 5 to 6. Default is No. **See list of compatible Transmitters to determine which (if any) transmitters use this option.**

WZn017 04: = No ▶
Enable Option 2

Option for certain types of Transmitters. Example: For transmitters with Ext. contact terminals setting this option to Yes permits Open Circuit [N/O] switches. If set to No then only Closed Circuit [N/C] switches may be connected. Default is No. **See list of compatible Transmitters to determine which (if any) transmitters use this option.**

WZn017 05: = 001 ▶
Keyfob User ID

Used to program the User ID that is logged when a Keychain Remote transmitter assigned to this zone is used to arm or disarm. Valid range is 001 to 255. Numbers 001 to 199 mirror keypad user codes. Note: Open/Close reports may be programmed for every User code.

WZn017 06: = No ▶
PIR Auto Restore

Not currently used for M1XRF2H. FYI: To conserve battery most Wireless PIRs transmit alarms only, no restorals. Therefore the panel has to take for granted a restoral condition after a small time delay. Wireless PIRs also conserve battery by permitting only 1 detect and transmission in a timed cycle, and are virtually dead until the time cycle expires. For this reason Wireless PIRs are not very useful or practical for automation or occupancy detection applications.

WZn017 shown as an example only!

< continued on next page >

3:Learn Sel◀ Prg▶
Wireless Transmtr

This submenu is used for manually enrolling transmitters. To select this menu press the RIGHT arrow key, or press the Up or Down arrow keys to scroll submenus.

WZone = 017 HW ◀
TransmtrToLrn ▶

Select zone for enrolling a new transmitter by entering the three (3) digit zone number OR by scrolling to the zone number using the UP and DOWN arrow keys. NOTE: If a transmitter is already enrolled for this zone the display will resemble 3c below. Otherwise, it will display "TransmtrToLrn".

Once a zone is selected there are 2 ways to enroll a new transmitter.

3a
WZone = 017 Push
TransmitterButton

Method 1) Rapid Enroll by transmitting - Press keypad RIGHT arrow for "TransmtrToLrn". Keypad will display "Push TransmitterButton". Follow enroll process for Xmtr. type. (pgs 8 & 9) Upon successful enrollment keypad will chime and display the HEX ID number (see box 3c below). Using Rapid Enroll, the M1 (not the EZ8) speaks: "Zone XXX Enrollment, followed by "Activate Transmitter for Zone XXX (the next zone)". Within a few seconds the M1 will speak the relative strength of last transmitter signal. Refer to "Transmitter Level Checking."

NOTE: Following Rapid Enroll the Loop # MUST be manually set for each zone. Use Method 2 to enter the Loop #.

3b
WZone = 017 HW ◀
A0000000 Loop=0

Method 2) Manually entering Xmtr. ID number & Loop #. Press the LEFT arrow key for "HW". The display will be all zeros for the ID# and Loop IF no transmitter exists for this zone. Use the number keys to type in the 7 numeric digits/ ID # found on the transmitter. Press the RIGHT arrow to move cursor to Loop. Set the Loop # to 1, 2, 3, or 0 as follows: Enter a 1 for transmitters that have only a single channel (input). **Loop CANNOT be "0"**. Enter a "2" if the transmitter has 2 inputs and you want this zone assigned to input 2.

Note: Some Door/Window transmitters have 2 or 3 inputs (channels). Enter a "3" if the transmitter has 3 inputs and you want this zone assigned to input 3. To erase a mistake and start over OR to delete a Xmtr permanently enter a "0" for the Loop. **Refer to Mfg. supplied Xmtr instructions for Loop specifics. In most cases the external input(s) are Loop(s) 1 & 2 and the internal reed switch will be the last Loop (2 or 3).**

When complete, press the ELK key once or twice to return to the previous display. Enter another zone number or use the arrow keys to scroll to another zone to enroll.

3c
WZone = 017 HW ◀
Enrolled ABCDE1

Example of display with a successfully enrolled transmitter. The ID # is displayed in HEX notation, even though the number from the transmitter was in DECIMAL. Pressing the Left arrow key will permit the ID # to be viewing in DECIMAL. A handy HEX to DECIMAL converter calculator can be found at: <http://www.easycalculation.com/hex-converter.php>.

NOTE! A transmitter can be temporarily disabled by programming the location "WZnxxx 01" to "No". A transmitter may be permanently erased by setting its Loop to a "0".

WZone = 17 shown as example only!

4:KeyfobSel◀ Prg▶
Event Definition

This submenu is used for programming the event operation (action) of buttons on Keyfobs (Keychain Remotes). To select this menu press the RIGHT arrow, or press Up or Down arrow keys to scroll submenus. Each button corresponds to a Key # which is assigned an event operation or function. By default the buttons respond as Keys 1 - 4 respectively.

Key=1 Evt=0000▶
[name of event]

A Keyfob's buttons can be programmed to respond as keys 5,6,7,8 by setting location "WZnxxx 03" (Enable Option 1) to "Yes". Examples of applications for this are:
1) To make it possible for two different sets of operations on different Keyfobs. OR
2) To support a Keyfob that has more than 4 buttons. Since only 4 buttons can be decoded per zone, a keyfob with more than 4 buttons would need to be enrolled to a 2nd zone in order to decode the additional buttons. EG: On a 6 button device the 5th and 6th buttons would decode as buttons 1 & 2 on the 2nd zone. Setting location "WZnxxx 03" to "Yes" on the 2nd zone will convert those buttons to appear and function as if they were keys 5 & 6.

Key=2 Evt=0000▶
[name of event]

Key=3 Evt=0000▶
[name of event]

Press the UP or DOWN arrow keys to select key 1 to 4, or 5 to 8. The event operation is programmed using the four (4) digit event codes in the Zone Definitions table of the M1 Installation Manual (Appendix A - Event Codes). Range is 0000 to 0030.

Key=8 Evt=0000▶
[name of event]

The factory default events (operation) assigned to these buttons are:

Key	M1 Default	Operation	Key	M1 Default	Operation
Key 1	Event=0027	KeySwitch (Arm)	Key 5	Event=0000	None
Key 2	Event=0029	KeyMomDisarm (Disarm)	Key 6	Event=0000	None
Key 3	Event=0000	None	Key 7	Event=0000	None
Key 4	Event=0000	None	Key 8	Event=0000	None

Appendix A - Data Bus Selection Tables

These tables are intended to help visualize how the Wireless Zones and Hardwired Zones share the data bus address assignments. They should help with the setting of a starting zone ID and data bus address(s) to obtain the total and best mix of wireless and hardwired zones. At a minimum, the left column shows the total "max." wireless zones that may be obtained based on the starting zone ID and data bus addresses chosen.

1. Each table has a bolded column showing the 1st wireless zone ID at a particular value (associated with a data bus address).

NOTE: The total (max.) number of wireless zones is decreased by 16 zones for any hardwired expanders installed or enrolled in the range of zones 17 through 160. This is because only zones 17 through 160 can be used for wireless.

2. Decide how many "total" wireless zones might be required for the job. This narrow down which table to concentrate on.

3. Consider existing or future M1XIN hardwired zone expanders. The wireless starting zone ID is critical if you want all wireless zones to be sequential with no hardwired zones interspersed between them. The following are some suggested guidelines:

- If the job needs 16 hardwired zones or less with no plans for expansion then start the first wireless at zone 17 (associated with data bus address 2). This leaves the most room for future wireless expansion all the way up to zone 160.
- If the job needs lots of hardwired zones and only a handful of wireless zones consider starting the M1XRF at a higher address, leaving room for future hardwired expansion at the lower addresses.

4. Select any table below and start from the left column by choosing the total number of wireless zones required. Follow the row of cells across to the bold column displaying the starting zone ID and associated data bus address where you wish to begin.

- Cells marked with " * * " indicate bus addresses "reserved" exclusively for wireless zones. However, any of these addresses may also be used for a redundant M1XRF Receiver. Redundant Receivers provide additional range and coverage for extremely large or difficult buildings. See Appendix C regarding Redundant Receivers.
- Cells marked "RRF" indicate bus addresses where ONLY a redundant M1XRF Receiver can be installed.
- Cells marked "H or RRF" indicate bus addresses where either a M1XIN Hardwired Expander OR a redundant M1XRF Receiver can be installed.

NOTE: An M1XRF installed for redundancy does not increase the number of wireless zones, it only increases range and/or coverage.

Total Wireless Zones (max.)	Starting Zn ID #17 Data bus Addr 2 Zn 17-32	No RF Zones Here										
		Data Bus Addr 3	Data Bus Addr 4	Data Bus Addr 5	Data Bus Addr 6	Data Bus Addr 7	Data Bus Addr 8	Data Bus Addr 9	Data Bus Addr 10	Data Bus Addr 11	Data Bus Addr 12	Data Bus Addr 13
		Zn 33 - 48	Zn 49 - 64	Zn 65 - 80	Zn 81 - 96	Zn 97 - 112	Zn 113-128	Zn 129-144	Zn 145-160	Zn 161-176	Zn 177-192	Zn 193-208
16	M1XRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
32		**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
48		**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
64		**	**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
80		**	**	**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
96		**	**	**	**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
112		**	**	**	**	**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
128		**	**	**	**	**	**	**	H or RRF	H or RRF	H or RRF	H or RRF
144		**	**	**	**	**	**	**	**	H or RRF	H or RRF	H or RRF

Total Wireless Zones (max.)	Data Bus Addr 2 Zn 17 - 32	Starting Zn ID #33 Data bus Addr 3 Zn 33-48	No RF Zones Here									
			Data Bus Addr 4	Data Bus Addr 5	Data Bus Addr 6	Data Bus Addr 7	Data Bus Addr 8	Data Bus Addr 9	Data Bus Addr 10	Data Bus Addr 11	Data Bus Addr 12	Data Bus Addr 13
			Zn 49 - 64	Zn 65 - 80	Zn 81 - 96	Zn 97 - 112	Zn 113-128	Zn 129-144	Zn 145-160	Zn 161-176	Zn 177-192	Zn 193-208
16	H or RRF	M1XRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
32	H or RRF		**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
48	H or RRF		**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
64	H or RRF		**	**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
80	H or RRF		**	**	**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
96	H or RRF		**	**	**	**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
112	H or RRF		**	**	**	**	**	**	H or RRF	H or RRF	H or RRF	H or RRF
128	H or RRF		**	**	**	**	**	**	**	H or RRF	H or RRF	H or RRF

Total Wireless Zones (max.)	Data Bus Addr 2 Zn 17 - 32	Data Bus Addr 3 Zn 33 - 48	Starting Zn ID #49 Data Bus Addr 4 Zn 49 - 64	No RF Zones Here								
				Data Bus Addr 5	Data Bus Addr 6	Data Bus Addr 7	Data Bus Addr 8	Data Bus Addr 9	Data Bus Addr 10	Data Bus Addr 11	Data Bus Addr 12	Data Bus Addr 13
				Zn 65 - 80	Zn 81 - 96	Zn 97 - 112	Zn 113-128	Zn 129-144	Zn 145-160	Zn 161-176	Zn 177-192	Zn 193-208
16	H or RRF	H or RRF	M1XRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
32	H or RRF	H or RRF		**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
48	H or RRF	H or RRF		**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
64	H or RRF	H or RRF		**	**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
80	H or RRF	H or RRF		**	**	**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
96	H or RRF	H or RRF		**	**	**	**	**	H or RRF	H or RRF	H or RRF	H or RRF
112	H or RRF	H or RRF		**	**	**	**	**	**	H or RRF	H or RRF	H or RRF

Cells marked " * * " indicate a **Reserved Address** which can only be used for wireless zones.

Cells marked " **RRF** " indicate bus addresses where ONLY a redundant M1XRF Receiver can be installed.

Cells marked " **H or RRF** " indicate bus addresses where either a M1XIN Hardwired Expander OR a redundant M1XRF Receiver can be installed.

Appendix A - Data Bus Selection Tables (cont'd)

Total Wireless Zones (max.)	Data Bus Addr 2	Data Bus Addr 3	Data Bus Addr 4	Starting Zn ID #65 Data Bus Addr 5 Zn 65 - 80	Data Bus Addr 6	Data Bus Addr 7	Data Bus Addr 8	Data Bus Addr 9	Data Bus Addr 10	No RF Zones Here			
	Zn 17 -32	Zn 33 - 48	Zn 49 - 64		Zn 81 - 96	Zn 97 - 112	Zn 113-128	Zn 129-144	Zn 145-160	Data Bus Addr 11	Data Bus Addr 12	Data Bus Addr 13	
16	H or RRF	H or RRF	H or RRF	M1XRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	
32	H or RRF	H or RRF	H or RRF		**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
48	H or RRF	H or RRF	H or RRF		**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
64	H or RRF	H or RRF	H or RRF		**	**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
80	H or RRF	H or RRF	H or RRF		**	**	**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
96	H or RRF	H or RRF	H or RRF		**	**	**	**	**	**	H or RRF	H or RRF	H or RRF

Total Wireless Zones (max.)	Data Bus Addr 2	Data Bus Addr 3	Data Bus Addr 4	Data Bus Addr 5	Starting Zn ID #81 Data Bus Addr 6 Zn 81 - 96	Data Bus Addr 7	Data Bus Addr 8	Data Bus Addr 9	Data Bus Addr 10	No RF Zones Here			
	Zn 17 -32	Zn 33 - 48	Zn 49 - 64	Zn 65 - 80		Zn 97 - 112	Zn 113-128	Zn 129-144	Zn 145-160	Data Bus Addr 11	Data Bus Addr 12	Data Bus Addr 13	
16	H or RRF	H or RRF	H or RRF	H or RRF	M1XRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	
32	H or RRF	H or RRF	H or RRF	H or RRF		**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
48	H or RRF	H or RRF	H or RRF	H or RRF		**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
64	H or RRF	H or RRF	H or RRF	H or RRF		**	**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
80	H or RRF	H or RRF	H or RRF	H or RRF		**	**	**	**	**	H or RRF	H or RRF	H or RRF
96	H or RRF	H or RRF	H or RRF	H or RRF		**	**	**	**	**	H or RRF	H or RRF	H or RRF

Total Wireless Zones (max.)	Data Bus Addr 2	Data Bus Addr 3	Data Bus Addr 4	Data Bus Addr 5	Data Bus Addr 6	Starting Zn ID #97 Data Bus Addr 7 Zn 97 - 112	Data Bus Addr 8	Data Bus Addr 9	Data Bus Addr 10	No RF Zones Here			
	Zn 17 -32	Zn 33 - 48	Zn 49 - 64	Zn 65 - 80	Zn 81 - 96		Zn 113-128	Zn 129-144	Zn 145-160	Data Bus Addr 11	Data Bus Addr 12	Data Bus Addr 13	
16	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	M1XRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	
32	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF		**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
48	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF		**	**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
64	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF		**	**	**	H or RRF	H or RRF	H or RRF	H or RRF
80	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF		**	**	**	**	H or RRF	H or RRF	H or RRF

Total Wireless Zones (max.)	Data Bus Addr 2	Data Bus Addr 3	Data Bus Addr 4	Data Bus Addr 5	Data Bus Addr 6	Data Bus Addr 7	Starting Zn ID #113 Data Bus Addr 8 Zn 113-128	Data Bus Addr 9	Data Bus Addr 10	No RF Zones Here			
	Zn 17 -32	Zn 33 - 48	Zn 49 - 64	Zn 65 - 80	Zn 81 - 96	Zn 97 - 112		Zn 129-144	Zn 145-160	Data Bus Addr 11	Data Bus Addr 12	Data Bus Addr 13	
16	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	M1XRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	
32	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF		**	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF
48	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF		**	**	**	H or RRF	H or RRF	H or RRF

Total Wireless Zones (max.)	Data Bus Addr 2	Data Bus Addr 3	Data Bus Addr 4	Data Bus Addr 5	Data Bus Addr 6	Data Bus Addr 7	Data Bus Addr 8	Starting Zn ID #129 Data Bus Addr 9 Zn 129-144	Data Bus Addr 10	No RF Zones Here		
	Zn 17 -32	Zn 33 - 48	Zn 49 - 64	Zn 65 - 80	Zn 81 - 96	Zn 97 - 112	Zn 113-128		Zn 145-160	Data Bus Addr 11	Data Bus Addr 12	Data Bus Addr 13
16	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	M1XRF	H or RRF	H or RRF	H or RRF	H or RRF
32	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF		**	**	H or RRF	H or RRF

Total Wireless Zones (max.)	Data Bus Addr 2	Data Bus Addr 3	Data Bus Addr 4	Data Bus Addr 5	Data Bus Addr 6	Data Bus Addr 7	Data Bus Addr 8	Data Bus Addr 9	Starting Zn ID #145 Data Bus Addr 10 Zn 145-160	Data Bus Addr 11	Data Bus Addr 12	Data Bus Addr 13
	16	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	H or RRF	M1XRF	H or RRF	H or RRF

Cells marked " *** " indicate a **Reserved Address** which can only be used for wireless zones.
 Cells marked " **RRF** " indicate bus addresses where ONLY a redundant M1XRF Receiver can be installed.
 Cells marked " **H or RRF** " indicate bus addresses where either a M1XIN Hardwired Expander OR a redundant M1XRF Receiver can be installed.

Appendix B - Examples of Zone Configurations

Example A			Example B			Example C			
All 208 Zones as Hardwired			16 Hardwired Zones 144 Wireless Zones			48 Hardwired Zones 112 Wireless Zones PLUS 2 Redundant Receivers			
Zones 1-16	Bus Addr x	Inputs on Main Panel	Zones 1-16	Bus Addr x	Inputs on Main Panel	Zones 1-16	Bus Addr x	Inputs on Main Panel	
Zones 17-32	Bus Addr 2	M1XIN	Zones 17-32	Bus Addr 2	M1XRF	Zones 17-32	Bus Addr 2	M1XIN	
Zones 33-48	Bus Addr 3	M1XIN	Zones 33-48	Bus Addr 3	NO M1XIN Expanders on these addresses	Zones 33-48	Bus Addr 3	M1XIN	
Zones 49-64	Bus Addr 4	M1XIN	Zones 49-64	Bus Addr 4		Zones 49-64	Bus Addr 4	M1XRF	
Zones 65-80	Bus Addr 5	M1XIN	Zones 65-80	Bus Addr 5		Zones 65-80	Bus Addr 5	<----- Redundant M1XRF *	
Zones 81-96	Bus Addr 6	M1XIN	Zones 81-96	Bus Addr 6		Zones 81-96	Bus Addr 6	<----- Redundant M1XRF *	
Zones 97-112	Bus Addr 7	M1XIN	Zones 97-112	Bus Addr 7		Zones 97-112	Bus Addr 7	NO M1XIN Expanders on these addresses	
Zones 113-128	Bus Addr 8	M1XIN	Zones 113-128	Bus Addr 8		Zones 113-128	Bus Addr 8		
Zones 129-144	Bus Addr 9	M1XIN	Zones 129-144	Bus Addr 9		Zones 129-144	Bus Addr 9		
Zones 145-160	Bus Addr 10	M1XIN	Zones 145-160	Bus Addr 10		Zones 145-160	Bus Addr 10		
Zones 161-176	Bus Addr 11	M1XIN	Zones 161-176	Bus Addr 11		M1XIN or Redundant M1XRF *	Zones 161-176	Bus Addr 11	M1XIN or Redundant M1XRF *
Zones 177-192	Bus Addr 12	M1XIN	Zones 177-192	Bus Addr 12			Zones 177-192	Bus Addr 12	
Zones 193-208	Bus Addr 13	M1XIN or Keypad Zones	Zones 193-208	Bus Addr 13	M1XIN or Keypad Zones	Zones 193-208	Bus Addr 13	M1XIN or Keypad Zones	
N/A	Bus Addr 14	N/A	N/A	Bus Addr 14	N/A	N/A	Bus Addr 14	N/A	
N/A	Bus Addr 15	N/A	N/A	Bus Addr 15	N/A	N/A	Bus Addr 15	N/A	

Maximum of 144 Wireless Zones

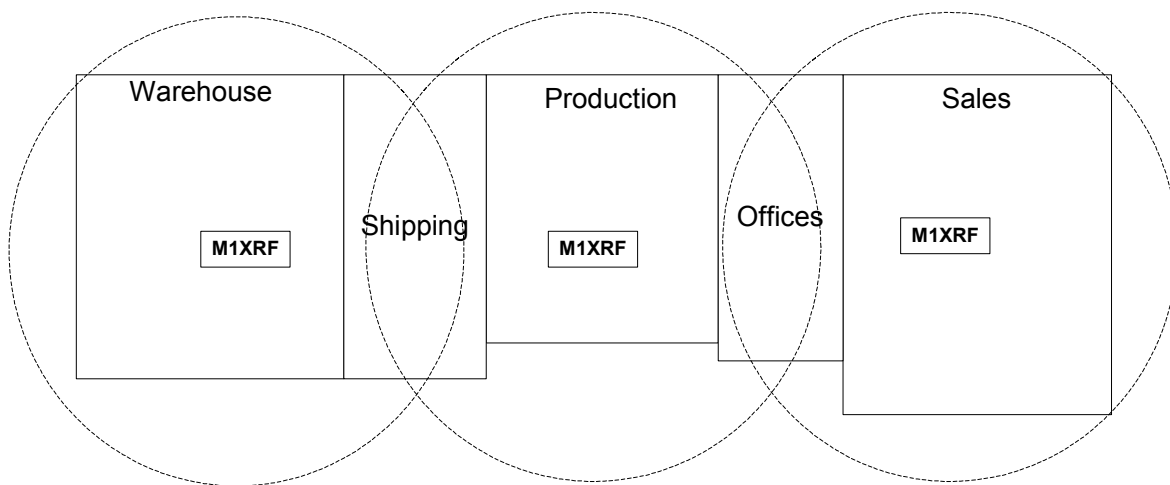
Maximum of 112 Wireless Zones

Appendix C - Installing Multiple Redundant Receivers

After the first M1XRF Receiver has been installed, additional receivers can be installed for redundancy or improved coverage and range. Each additional M1XRF will require its own data bus address and must be enrolled into the control. The data bus address setting of any additional "redundant" M1XRF Receivers can be any unused data bus address except for addresses 13, 14, 15, 16.

NOTE: While M1XIN Expanders cannot be assigned to addresses overlapped by wireless zones this is not true for M1XRF Receivers. From the example above, addresses 3, 4, and 5 could be used by additional "redundant" M1XRF Receivers. In theory it is possible to install up to 11 total M1XRF Receivers onto a single M1 or M1EZ8 control, but only if there were NO M1XIN Expanders installed.

* For large installations or added coverage in areas with poor wireless conditions, additional M1XRF "Redundant" Receivers can be connected to the data bus. Redundant receivers must be addressed and enrolled for proper supervision. Loss of any enrolled bus device causes a Missing Bus Device Trouble. NOTE: Redundant M1XRFs can be set to any of the unused addresses that fall in the total wireless zone number assignments.



EXAMPLE OF LARGE COMMERCIAL BUILDING with 3 M1XRF Receivers

Appendix D - Updating Firmware in the ELK-M1XRF

Operating firmware is stored in "Flash" memory. This state-of-the-art memory allows electronic field updates and eliminates the old fashion method of changing IC chips or shipping boards back to the factory. As new firmware updates become available, they will be posted on ELK's Dealer ONLY restricted website found at www.elkproducts.com. **NOTE: Firmware updating can only be done through the M1 Control using a Direct to PC Com port connection or an optional Ethernet Network connection. Dial-up connections cannot be used to perform firmware updates.**

How to Update Firmware:

1. Physically connect the Computer and Control using either the RS-232 Serial Ports or the M1XEP Ethernet Interface.
3. Start ElkRP and open the account belonging to the control. Click on the Connection menu icon and establish a connection. Again, use the appropriate **Direct using Com_ OR Network** options.
4. Click on Update/Verify Firmware from the Send/Rcv menu icon.
5. On the Update/Verify screen, select the device to be updated. In this case it is a Input Expander. Then also select the "Update to new firmware" option. Then click Continue.
6. The Update Firmware screen displays the device name, the current Firmware, Hardware, and Bootware version, and a pull down window for selecting the firmware version to use on the update. Select the appropriate firmware that you wish to use. NOTE: All update (.bin) files that are downloaded or received should be stored in your ~Program Files\ElkRP\Updates directory. This is where RP looks for all update files.
7. Click on the check box for "Update". If "Reprogram" or "Rollback" is displayed the firmware file is the same as OR older that what is in the control. Reprogramming with the same firmware is a waste of time but was included for factory testing purposes. Rollback is not recommended except under the guidance of Elk Technical Support.

