

ELK-M1XRF2G

Wireless Receiver and Input Expander

Compatible with specific models of GE Wireless Sensors.
Refer to page 7 for a listing of compatible sensors.

INSTALLATION MANUAL

IMPORTANT NOTE:

ELK-M1G and M1EZ8 Controls MUST be operating application firmware ver. 5.0.12 or higher in order to work with the M1XRF Receiver. Refer to the M1Dealer website for update 'flash' files.

ElkRP Programming Software version 1.6.16 or higher is required for programming the M1XRF.

Do Not update controls that are connected to GE "NX" wireless receivers to 5.x.x firmware. Continue to use 4.x.x firmware with GE receivers. Firmware 5.x.x is ONLY for use with the ELK-M1XRF receiver.

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FEATURES:

- Adds up to 144 individual wireless zones (sensors/points)
- Operates from the 4 wire RS485 Data Bus
- Additional Receivers (up to 11) may be Connected to a single M1 or M1EZ8 Control for redundancy or greater coverage
- Flash Memory for Updating of operating Firmware

SPECIFICATIONS:

- Sensitivity: >105 dbm
- Operating Temperature: 0 to +120 degrees F
- Operating Voltage: 12 Volts D.C.
- Current Draw: 70mA
- Indoor Range: 300 to 1000 ft. ** line of sight (For optimum range the ground plane antennas should be installed)

** Walls or metal may 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 **ELK-M1XRF2G** is a Wireless (RF) Receiver and Input Expander for use with the ELK-M1 and ELK-M1EZ8 Controls. The receiver connects to the four (4) wire data (keypad) bus of the control and integrates in much the same way as a M1XIN hardware zone expander except that a single Receiver can handle up to 144 wireless zones (e.g. transmitter sensors or points). The benefits of operating from the data bus are: 1) A receiver can be installed virtually anywhere in the building for convenience and optimum coverage. 2) Multiple receivers (up to 11 total) can be connected to a single control for ultimate range and/or coverage redundancy. The major benefit of having multiple Receivers is that hundreds if not thousands of square feet can now be covered by strategically placing each receiver in a different geographic location.

The design of the M1XRF2G receiver provides for all transmitter programming and enrollment data to be stored in the control panel, not in the Receiver. The only data stored in the Receiver is a pre-filter or list of "valid transmitters" that is automatically updated by the control each time the sensor enrollment mode is exited. In regular operation the M1XRF is listening for sensor transmissions and passes data coming from "valid sensors" to the control for processing. The purpose of the pre-filter is to reduce the amount of unnecessary data bus traffic, particularly in locations where transmitters from an adjacent neighbor may be heard. The pre-filter is automatically disabled during setup and enrollment so that it will be possible for newly enrolled sensor transmissions to reach the control. In the event a receiver ever needs to be replaced it should only be necessary to enroll the replacement receiver onto the data bus and then enter and exit the wireless setup programming. This would cause the pre-filter information to be updated and the new receiver to become operational. In the event that multiple Receivers are installed the storing of sensor data in the control makes it possible to use portable devices such as keyfobs without regard as to which receiver hears the transmission.

The ELK-M1Gold or M1EZ8 MUST be operating firmware 5.0.12 or higher.

ElkRP Programming Software version 1.6.16 or higher is required for programming.

NOTE: The "2G" suffix on the M1XRF part number refers to "2 antenna" & "GE" compatibility. The M1XRF2G is ONLY compatible with specific models of GE 319.5MHz transmitters, and ONLY those sensors which utilize Crystal technology.

This receiver incorporates Crystal frequency technology and is a dual (2) antenna, phase diversity design capable of long range wireless coverage. It comes packaged with two (2) optional ground plane antennas for extremely long range coverage requirements.

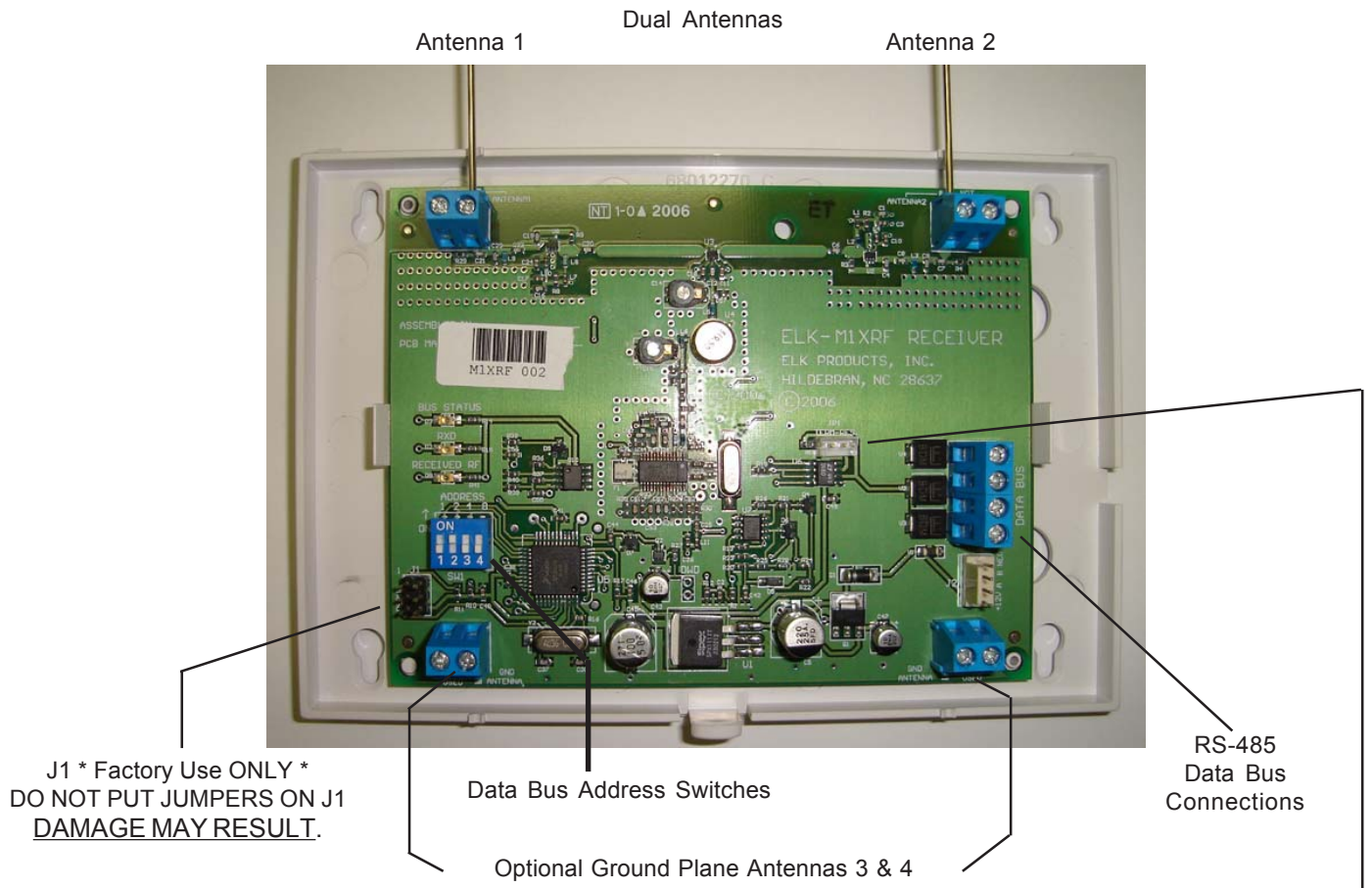
*NOTE: GE makes both **Crystal** and **SAW** technology transmitters in the 319.5MHz range. **Crystal** technology has very narrow frequency tolerances and utilizes highly accurate filtering technology to reduce noise susceptibility and provide the best possible range. **SAW** technology has a broader frequency tolerance making them less costly and less accurate, generally resulting in shorter range.*

*The use of **SAW** transmitters with any **Crystal** based receiver is not a good practice due to the fact that the broader frequency **SAW** transmission may be filtered out (ignored) by the narrower Crystal receiver.*

While it may be possible to get a SAW transmitter to enroll into the M1XRF receiver IT IS NOT RECOMMENDED due to the possibility of a transmission being filtered out (ignored).

General Installation and Setup

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



NOTE: Jumper JP1 may be used 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 M1XRF 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 12 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 M1XRF 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**
M1XRF2G is supplied with four (4) antennas. Two (2) of these antennas installed into the top locations marked Antenna 1 & Antenna 2 will be more than adequate for proper receiver performance. The dual antennas ensure signal diversity which helps eliminate RF dead spots. The two (2) extra antennas are called Ground Plane Antennas. In extreme applications or where maximum range is desired these additional antennas can be installed in the bottom locations marked Antenna 3 & Antenna 4.

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 M1XRF2G 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, Input expanders 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!

Unintentional data bus address "Conflicts" are possible when an M1XRF2G Receiver is installed on the same control with M1XIN Zone Expander(s). These can be avoided with proper understanding of the issues and careful planning and execution during installation. The important thing to remember is that M1XRF2G Wireless Receivers and M1XIN Zone Expanders share the same data bus "device type" and there are only 15 possible address settings per device type. The following provides additional information on the issues and the 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.

M1XRF2G Receivers: The main differences between a Wireless Receiver and a ELK-M1XIN Zone Expander are:

- 1) With only a single (1) Wireless Receiver it is possible to add up to 144 wireless zones to the control in groups of 16 at a time. However, in order to have 144 total wireless zones the first group of 16 must begin at zone 17 and the rest 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 M1XRF2G 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 Wireless 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 M1XRF2G 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 M1XRF2G 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 M1XRF2g 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 M1XRF2G:

- a) From a system standpoint wireless zones should be considered to be minimum blocks of 16 zones, even though all of the 16 zones do not necessarily need to be utilized.
- 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 cannot be above 160. Basically, 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: Let's say the starting wireless zone ID is set to "17" (associated with data bus address 2) and you decide to create 64 contiguous zones starting from 17. That means 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. Based on this, 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

M1XRF2G 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 M1XRF2G 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.
















**Auth. Required
Enter Valid Pin**

**01-Bus Module
Enrollment**

**XX Bus Modules
Enrolled, Edit▶**

List of GE "Crystal" Wireless Transmitters

This list was compiled from the latest manufacturer's provided information. Elk Products makes no assurances as to the accuracy of this information. All information is subject to change without notice.

Device	Part Number(s)	Special Info	**
	Smoke Detector GE part # 60-848-02-95, or equivalent	Enroll Process - For units with tamper supervision activate the tamper, otherwise press the front Test button, Test Button can also be used to transmit a violation (alarm) >OPTIONS - WZnxxx 03 (Option 1) For units with tamper supervision this option MUST BE set to YES. For units without tamper supervision this option MUST BE set to NO	2
	Single Button Wrist/Pendant Panic GE part # 60-906-95, or equivalent	Enroll Process - Press Main Button >OPTIONS - None	3
	Single Button Pendant Panic GE part # 60-578-10-95, or equivalent	Enroll Process - Press Main Button >OPTIONS - None	3
	PIR Motion Detector GE part # 60-880-95, or equivalent	Enroll Process - Remove back cover / activate tamper switch Note: Transmitter does not send restores. Control automatically assumes restoral 8 seconds after violation. >OPTIONS - None	4
	PIR Motion Detector GE part # 60-703-95, or equivalent	Enroll Process - Remove back cover / activate tamper switch Note: Transmitter does not send restores. Control automatically assumes restoral 8 seconds after violation. >OPTIONS - None	4
	PIR Motion Detector GE part # 60-511-01-95, or equivalent	Enroll Process - Remove back cover / activate tamper switch Note: Transmitter does not send restores. Control automatically assumes restoral 8 seconds after violation. >OPTIONS - None	4
	Door And Window Transmitter GE part #'s 60-362-10-319.5, 60-641-95, or equivalent	Enroll Process - Press Test Button or Tamper Switch >OPTIONS - WZnxxx 03 (Option 1) set to YES to disable internal Reed Switch. NO leaves the internal switch active. >OPTIONS - WZnxxx 04 (Option 2) set to YES to use a N/C Switch on External Contacts, NO to use a N/O Switch.	A
	Door And Window Transmitter GE part # 60-499-10-319.5, or equivalent	Enroll Process - Press Test Button or Tamper Switch >OPTIONS - WZnxxx 03 (Option 1) set to YES to disable internal Reed Switch. NO leaves the internal switch active. >OPTIONS - WZnxxx 04 (Option 2) set to YES to use a N/C Switch on External Contacts, NO to use a N/O Switch.	5
	Door And Window Transmitter GE part # 60-688-95, or equivalent	Enroll Process - Press Test Button or Tamper Switch >OPTIONS - WZnxxx 03 (Option 1) set to YES to disable internal Reed Switch. NO leaves the internal switch active. >OPTIONS - WZnxxx 04 (Option 2) set to YES to use a N/C Switch on External Contacts, NO to use a N/O Switch.	A
	Door And Window Transmitter GE part # 60-741-95, or equivalent	Enroll Process - Twist end cap using a coin or screwdriver 1/8" CCW >OPTIONS - WZnxxx 03 (Option 1) set to YES to disable internal Reed Switch. NO leaves the internal switch active. >OPTIONS - WZnxxx 04 (Option 2) set to YES to use a N/C Switch on External Contacts, NO to use a N/O Switch.	A
	Heat 'Rate Of Rise' Transmitter GE part # 60-460-319.5, or equivalent	Enroll Process - Press Test Button located on circuit board inside the unit next to the battery >OPTIONS - None	6
	Glass Break Transmitter GE part # 60-873-95, 60-834-95, or equivalent	Enroll Process - Activate Tamper Switch >OPTIONS - WZnxxx 04 (Option 2) MUST be set to YES	9
	Shock Sensor GE part # 60-886-95, or equivalent	Enroll Process - Press Test Button >OPTIONS - WZnxxx 04 (Option 2) MUST be set to YES	9
	Single Button Large Panic Transmitter GE Part # 60-458-10-319.5, or equivalent	Enroll Process - Press Button >OPTIONS - None	B
	Glass Guard Transmitter GE Part # 6046210319.5	Enroll Process - Press Button >OPTIONS - None	D
	Freeze Sensor Transmitter GE Part # 60-504-10-95R, or equivalent	Enroll Process - Press Test Button >OPTIONS - None	E
	Four Button Keyfob Transmitter GE Part # 60-606-319.5, or equivalent	Enroll Process - Press and hold the Lock and Unlock Buttons (buttons 1 & 2) together at the same time. >OPTIONS - WZnxxx 03 (Option 1) set to YES swaps the action of the Light button from Key=3 to Key=5. >OPTIONS - WZnxxx 04 (Option 2) set to YES swaps the action of the Asterisk button from Key=4 to Key=6 Note: Pressing the Lock and Unlock buttons together momentarily triggers the event assigned to Key 7. Pressing the Light and Asterisk buttons together momentarily triggers the event assigned to Key 8.	F

** The first digit of the transmitter's ID code should begin with this alphanumeric character. It is the transmitter "type" or ID and is used internally by the receiver to determine what options or setup pertain to the transmitter.

Operation and Programming

Handling Received Transmissions:

Operationally when a transmitter signal is received by the M1XRF2G 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 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 M1XRF2G:

"ORANGE" STATUS LED - This LED has multiple purposes as outlined below:

OFF = No Power to the M1XRF2G

ON Solid = The M1XRF2G is powered but it is either Not Enrolled or the Microprocessor is not functioning.

BLINKING = There are 2 possible blinking rates:

- A slow blink of once per second with a matching Off time indicates normal operating mode.

- A more rapid "two" blinks per second with a very brief Off time indicates the M1XRF2G is in Bootloader mode.

This occurs when the unit is awaiting a flash download of its application firmware. Until the firmware application has been successfully downloaded the M1XRF2G is non-functional as a wireless receiver.

"GREEN" VALID LED - This LED will momentarily turn on whenever the M1XRF2G receives a valid "enrolled" transmitter and it 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.

"YELLOW" RF LED - This LED will blink whenever the M1XRF2G hears ANY GE/Caddx/ITI transmitter signal, regardless of whether the transmitter is valid. This only means that a transmitter was received, it does not mean that the signal is being sent back to the M1 Controller. Refer to Valid LED above and the section titled "Handling of Received Signals".

Receiver Setup/Programming and Enrolling of 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. In the case of GE Transmitters, Intrusion type sensors send 8 repeats "rounds", Fire type sensors send 16 repeats, and Panic type sensors send 12 repeats. These repeated packets are also useful to the receiver in providing level checking [signal strength, walk test, etc.] as a reference of the acceptable reliability of the sensor and it's mounting orientation and/or location.

When the M1XRF2G 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 an Intrusion 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 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 Receiver 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.

14 - Wireless Setup

From the M1 Installer Level programming locate Menu 14 and press the RIGHT arrow key to select.

The following four (4) submenus may be selected: 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 Setup

Description

**1:Rec Sel Prg
Receiver Options**

Press the right arrow to select Receiver Options.

**RO3:=024 Hours
Reg. Supervision**

Rec. Option R03: Reg. Supervision is for "non-fire" transmitters, i.e. transmitters programmed as "Supervisory Type 1" (see Xmit Transmitter Opt 02 below). The time setting for this determines how often a sensor must check-in with the control in order to supervise its presence. The programmable range is 001 to 255 hours. Should a sensor fail to check-in prior to the expiration of each interval it will be considered "missing". NOTE: A value less than 4 hours is NOT RECOMMENDED! Factory default setting is 024 hours.

**RO4:=004 Hours
Fire Supervision**

Rec. Option R04: Fire Supervision is for "fire" type transmitters, i.e. transmitters programmed as "Supervisory Type 2" (see Xmit Transmitter Opt 02 below). The time setting for this determines how often a sensor must check-in with the control to supervise its presence. Range is 001 to 255 hours. Should a sensor fail to check-in prior to the expiration of each interval it will be considered "missing". NOTE: A value less than 4 hours is NOT RECOMMENDED! Factory default setting is 004 hours.

**2:Xmit Sel Prg
Transmitter Opt**

Press the RIGHT arrow key to select 2:Xmit Transmitter Opt.

**WZnxxx: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.

**WZnxxx 01:=No
Enable Transmtr**

WZnxxx 01 displays whether transmitter xxx is enabled or disabled. It can be used to temporarily disable an existing enrolled device. It cannot be used to add a new device. This can only be done via the "learn" or enroll process which then sets this location to a Yes.

**WZnxxx 02:=0
Supervision Type**

WZnxxx 02 is used to select the type of supervision for transmitter xxx. 0 - (No Supervision), 1 - (Regular Supervision), 2 - (Fire Supervision). See receiver selections R02 and R03 for supervision time values. Factory default setting is 1 (Regular Supervision).

**WZnxxx 03:=No
Enable Option 1**

WZnxxx 03 is used to select functionality traits "options" for certain types of GE Transmitter Devices. **IMPORTANT: Refer to the Listing of GE "Crystal" Transmitters on previous page for any devices that utilize or require these options.**

**WZnxxx 04:=No
Enable Option 2**

WZnxxx 04 is used to select functionality traits "options" for certain types of GE Transmitter Devices. **IMPORTANT: Refer to the Listing of GE "Crystal" Transmitters on previous page for any devices that utilize or require these options.**

**WZnxxx 05:=001
Keyfob User ID**

WZnxxx 05 is used to set the User ID that will be logged for a transmitter which is a Keyfob when that Keyfob is used to arm of disarm. Valid range is 001 to 255. Numbers 001 to 199 mirror the keypad user codes. Note: Opening and closing reports may be programmed for every User code.

**WZnxxx 06:=No
PIR Auto Restore**

WZnxxx 06 is currently NOT required with GE Wireless PIR Motion sensors. It may be used in the future. * FYI: To conserve battery power almost all Wireless PIR Motion sensors transmit alarms only, no restorals. Therefore, the panel or receiver must assume a restoral condition from these sensors after a short time delay. Wireless PIRs also conserve power by only detecting and transmitting once is a several minute time cycle. They remain quiet until the time cycle expires, regardless of motion in the room. For this reason Wireless PIRs are not very practical for most automation or occupancy detection applications.

3:Learn Sel◀ Prg▶
WirelessTransmtr

This menu allows manual enrollment of wireless transmitters. To select this menu press the RIGHT arrow key.

WZone = xxx ▶
TransmtToLearn

Choose the ZONE to enroll a new transmitter by entering the three (3) digit zone number OR by scrolling the UP and DOWN arrow keys. Press the RIGHT arrow key to select and program that zone.

WZone = xxx Push
TransmitterButton

This message will display and the M1 will speak: "Press Transmitter Button for Zone XXX", *UNLESS a transmitter is already enrolled (see below)*. Proceed to the transmitter and execute the enroll process. I.E. Press the tamper button, etc. The keypad will chime and the M1 will speak: "[Zone Name] Enrollment" if successful. It will also speak a number indicating the relative strength of the last transmission. Refer to section titled "Transmitter Level Checking."

WZone = xxx
Enrolled ABCDE1

This display shows the zone number and ID of the enrolled transmitter. NOTE: After a new transmitter is enrolled the control automatically advances to the next zone number and the M1 speaks "Press Transmitter Button for Zone XXX". This permits rapid enrollment of additional transmitters in sequential order. When transmitter enrollment is complete press the ELK key twice to exit the enrollment and return to the other menus.

IMPORTANT! If it becomes necessary to delete or replace an existing transmitter you must use the transmitter option "WZnxxx 01" and select "No" to disable the existing transmitter.

4:KeyfobSel◀ Prg▶
Event Definition

This menu is used to program the operation or "action" that a keyfob button will perform. A GE four (4) button keyfob can be assigned up to six (6) separate operations as explained below. To select this menu press the RIGHT arrow key.

Key=1 Evt=0000▶
[name of event]

Press the UP or DOWN arrow keys to select a key (1 to 8). There are 8 possible keys but only 6 of them can be used. The definition or operation is programmed using a four (4) digit event code derived from the Zone Definitions table located in the M1 Installation Manual. The range is 0000 to 0030 See M1 Installer Manual, Appendix A, Event Codes.

Key=2 Evt=0000▶
[name of event]

Each of the four (4) buttons on a GE Keyfob has a printed symbol and the M1 programming has the following default event (operation) assigned to these buttons:

Key=3 Evt=0000▶
[name of event]

Key Symbol	M1 Default Value	Operation
Lock {Key=1}	Event=0027	KeyMomAway (Arm the Control)
Unlock {Key=2}	Event=0029	KeyMomDisarm (Disarm the Control)
Light {Key=3}	Event=0000	"No default function"
Asterisk {Key=4}	Event=0000	"No default function"

Key=4 Evt=0000▶
[name of event]

ALTERNATE KEY FUNCTIONS

The operation of the Light and Asterisk symbol buttons can be altered by selection of the transmitter option "WZnxxx 03" and "WZnxxx 04". Refer to the previous page.

Example of a keyfob transmitter enrolled at Zn017:

Key=5 Evt=0000▶
[name of event]

Setting WZn017 03: {Option1} to NO makes the Light button trigger the event assigned to Key=3. Setting WZn017 03: {Option1} to YES makes the Light button trigger the event assigned to Key=5 instead. Effectively swaps Key 3 for Key 5.

Key=6 Evt=0000▶
[name of event]

Key=7 Evt=0000▶
[name of event]

Setting WZn017 04: {Option2} to NO makes the Asterisk button trigger the event assigned to Key=4. Setting WZn017 04: {Option2} to YES makes the Asterisk button trigger the event assigned to Key=6 instead. Effectively swaps Key 4 for Key 6.

Key=8 Evt=0000▶
[name of event]

DOUBLE KEY PRESSES

Pressing the Lock and Unlock buttons together momentarily will trigger the event assigned to Key 7. The M1 Default Event Value is "0000" or "No default function".

Pressing the Light and Asterisk buttons together momentarily will trigger the event assigned to Key 8. The M1 Default Event Value is "0000" or "No default function".

Appendix A - Data Bus Selection Tables

These charts are intended to help visualize how the Wireless Zones and Hardwired Zones interact and to assist with setting the starting zone ID and the data bus addresses to obtain the total and best mix of wireless and hardwired zones. Special attention should be given to the left most column as it represents the total "max." wireless zones that may be obtained based on the starting zone ID and data bus addresses utilized by wireless and hardwired expanders.

- Each chart 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.

- Decide how many "total" wireless zones might be required for the job. This narrow down which charts to concentrate on.
- 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.
- Select any chart 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 to the right marked with "*" indicate bus addresses considered "reserved" exclusively for wireless zones. 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		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		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		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 Zn 17 -32	Data Bus Addr 3 Zn 33 - 48	Data Bus Addr 4 Zn 49 - 64	Starting Zn ID #65 Data Bus Addr 5 Zn 65 - 80	Data Bus Addr 6 Zn 81 - 96	Data Bus Addr 7 Zn 97 - 112	Data Bus Addr 8 Zn 113-128	Data Bus Addr 9 Zn 129-144	Data Bus Addr 10 Zn 145-160	No RF Zones Here			
										Data Bus Addr 11 Zn 161-176	Data Bus Addr 12 Zn 177-192	Data Bus Addr 13 Zn 193-208	
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 Zn 17 -32	Data Bus Addr 3 Zn 33 - 48	Data Bus Addr 4 Zn 49 - 64	Data Bus Addr 5 Zn 65 - 80	Starting Zn ID #81 Data Bus Addr 6 Zn 81 - 96	Data Bus Addr 7 Zn 97 - 112	Data Bus Addr 8 Zn 113-128	Data Bus Addr 9 Zn 129-144	Data Bus Addr 10 Zn 145-160	No RF Zones Here			
										Data Bus Addr 11 Zn 161-176	Data Bus Addr 12 Zn 177-192	Data Bus Addr 13 Zn 193-208	
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 Zn 17 -32	Data Bus Addr 3 Zn 33 - 48	Data Bus Addr 4 Zn 49 - 64	Data Bus Addr 5 Zn 65 - 80	Data Bus Addr 6 Zn 81 - 96	Starting Zn ID #97 Data Bus Addr 7 Zn 97 - 112	Data Bus Addr 8 Zn 113-128	Data Bus Addr 9 Zn 129-144	Data Bus Addr 10 Zn 145-160	No RF Zones Here			
										Data Bus Addr 11 Zn 161-176	Data Bus Addr 12 Zn 177-192	Data Bus Addr 13 Zn 193-208	
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

Total Wireless Zones (max.)	Data Bus Addr 2 Zn 17 -32	Data Bus Addr 3 Zn 33 - 48	Data Bus Addr 4 Zn 49 - 64	Data Bus Addr 5 Zn 65 - 80	Data Bus Addr 6 Zn 81 - 96	Data Bus Addr 7 Zn 97 - 112	Starting Zn ID #113 Data Bus Addr 8 Zn 113-128	Data Bus Addr 9 Zn 129-144	Data Bus Addr 10 Zn 145-160	No RF Zones Here			
										Data Bus Addr 11 Zn 161-176	Data Bus Addr 12 Zn 177-192	Data Bus Addr 13 Zn 193-208	
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 Zn 17 -32	Data Bus Addr 3 Zn 33 - 48	Data Bus Addr 4 Zn 49 - 64	Data Bus Addr 5 Zn 65 - 80	Data Bus Addr 6 Zn 81 - 96	Data Bus Addr 7 Zn 97 - 112	Data Bus Addr 8 Zn 113-128	Starting Zn ID #129 Data Bus Addr 9 Zn 129-144	Data Bus Addr 10 Zn 145-160	No RF Zones Here		
										Data Bus Addr 11 Zn 161-176	Data Bus Addr 12 Zn 177-192	Data Bus Addr 13 Zn 193-208
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 Zn 17 -32	Data Bus Addr 3 Zn 33 - 48	Data Bus Addr 4 Zn 49 - 64	Data Bus Addr 5 Zn 65 - 80	Data Bus Addr 6 Zn 81 - 96	Data Bus Addr 7 Zn 97 - 112	Data Bus Addr 8 Zn 113-128	Data Bus Addr 9 Zn 129-144	Starting Zn ID #145 Data Bus Addr 10 Zn 145-160	No RF Zones Here		
										Data Bus Addr 11 Zn 161-176	Data Bus Addr 12 Zn 177-192	Data Bus Addr 13 Zn 193-208
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	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 All 208 Zones as Hardwired			Example B 16 Hardwired Zones 144 Wireless Zones			Example C 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		M1XIN or Redundant M1XRF *	Zones 177-192	Bus Addr 12	M1XIN or Redundant M1XRF *
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

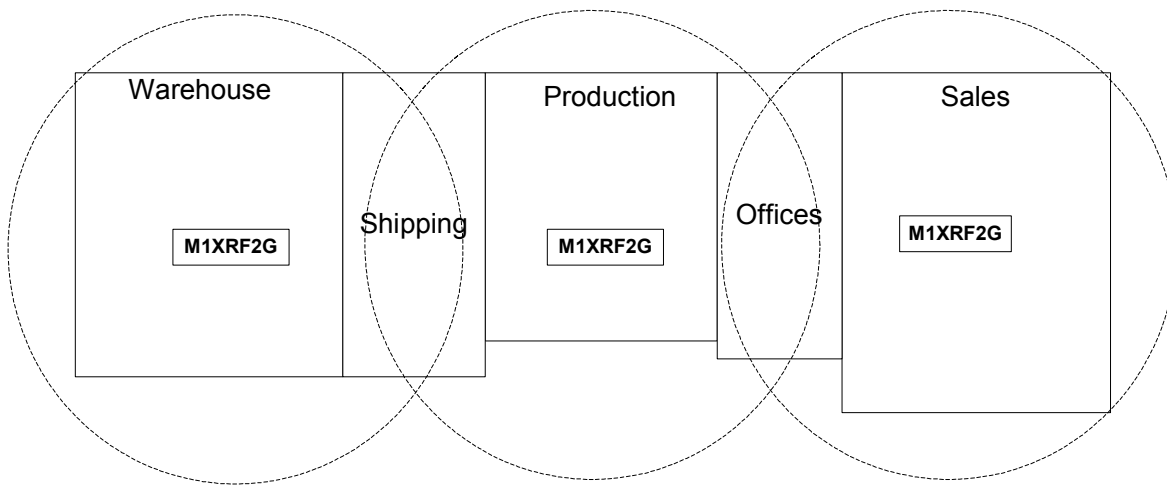
Maximum of 112 Wireless Zones

Appendix C - Installing Multiple Redundant Receivers

After the first M1XRF2G Receiver has been installed, additional receivers can be installed for redundancy or improved coverage and range. Each additional receiver will need its own data bus address and will need to be enrolled into the control. The data bus address setting of any additional "redundant" 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 M1XRF2G Receivers. From the example above, addresses 3, 4, and 5 could be used by additional "redundant" Receivers. In theory it is possible to install up to 11 total M1XRF2G 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 M1XRF2G Receivers

Appendix D - Updating Firmware in the ELK-M1XRF2G

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.

