ELK-M1XRF319
Wireless Receiver and Input Expander

Compatible with Wireless Transmitters that operate on the 319.5MHz Frequency and adhere to the Interlogix protocol.

A list of known compatible transmitters can be found inside.

INSTALLATION MANUAL

IMPORTANT NOTE:

Please consult the Elk M1 Dealer website for downloads of the latest M1 Control firmware and ElkRP Software.   For compatibility with this Receiver we recommend the M1 Control be operating firmware version 5.3.10 or higher and the ElkRP software be version 2.0.35 or higher.

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FEATURES:

- Adds up to 144 individual wireless transmitters (zones/sensors)
- Operates from the 4 wire RS485 Data Bus
- Multiple Receivers (max. of 9) may be connected to a single M1 or M1EZ8 Control for redundancy and greater coverage
- Compatible with wireless transmitters that operate on the 319.5MHz Frequency and adhere to the Interlogix protocol.

SPECIFICATIONS:

- Sensitivity: >105 dbm
- Operating Temperature: 0 to +120 degrees F
- Operating Voltage: 12 Volts D.C.
- Current Draw: 52mA
- 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.

OVERVIEW

The ELK-M1XRF319 Wireless Receiver allows wireless transmitters that operate on the 319.5MHz Frequency and that adhere to the Interlogix protocol to work with ELK-M1 Controls. A list of compatible transmitters brands and models is published on page 7 of this manual. The receiver connects to the M1's RS-485 four (4) wire data bus and integrates much the same as a hardwired zone expander. It can be installed remotely from the control virtually anywhere inside the premises up to the maximum allowed distance of the data bus. One receiver can cover an average size home and up to 144 wireless transmitters. All transmitter programming and enrollment data is stored in the M1 Control and not in the receiver(s). This means that additional receivers, up to 9 total, may be connected for extremely large coverage areas and without needing to relearn transmitters.

WARNING: Elk offers two other models of Wireless Receivers for the M1 Control. Each Receiver operates on a different frequency. It is critical that the frequency and protocol of each installed transmitter be matched with a receiver that is compatible with that same frequency and protocol. A mixture of receivers and transmitters on the same installation is possible as long as each transmitter is installed within range of the receiver which matches its frequency and protocol. Receivers are physically and electronically different and can only receive the transmissions of their matching transmitters.

Installation and Setup

MOUNT UNIT * CONNECT WIRING * SET ADDRESS * PERFORM BUS ENROLLMENT PROCESS

Antenna 1   **Antenna 2**
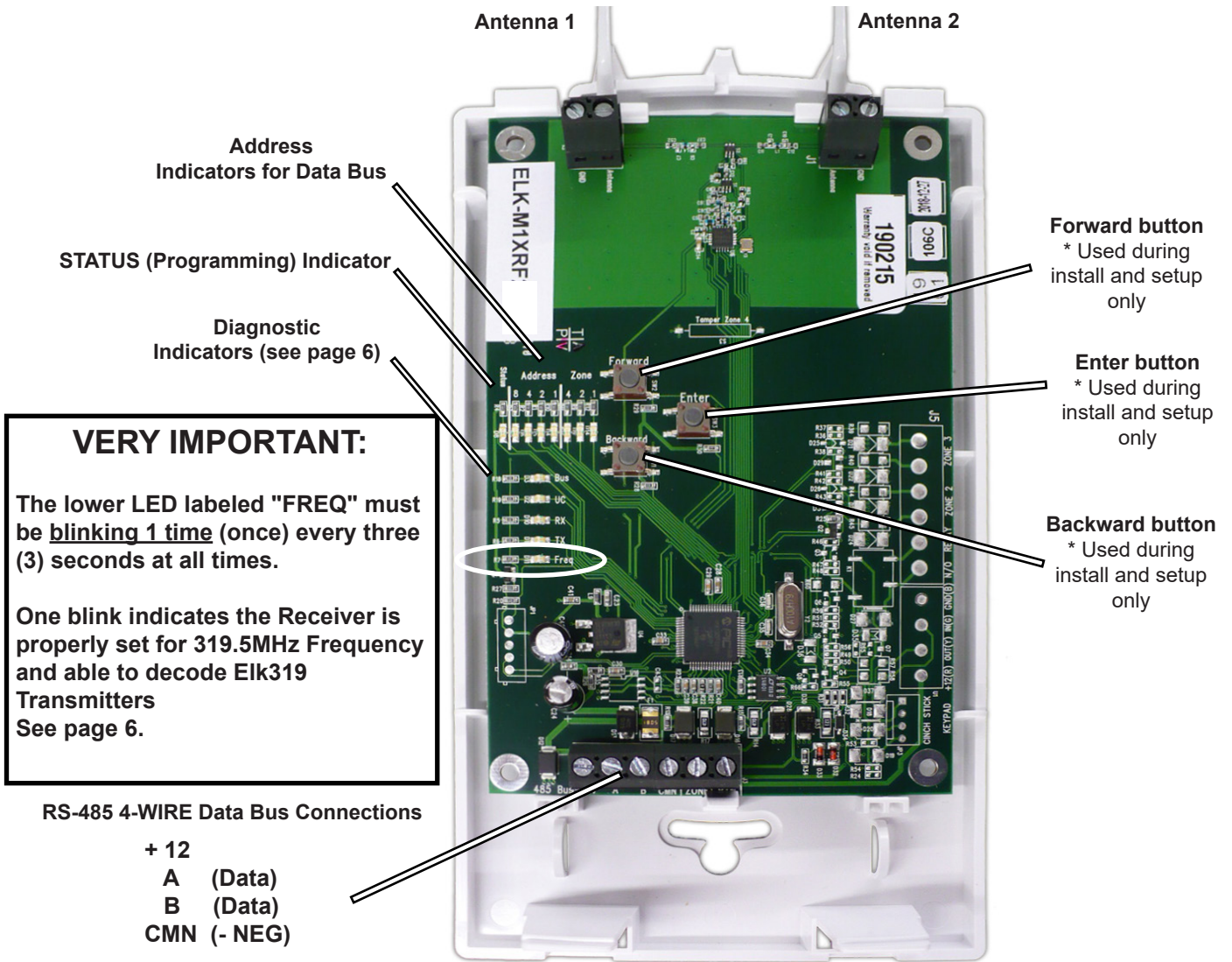
Address Indicators for Data Bus

STATUS (Programming) Indicator

Diagnostic Indicators (see page 6)

Forward button
* Used during install and setup only

Enter button
* Used during install and setup only

Backward button
* Used during install and setup only

VERY IMPORTANT:

The lower LED labeled "FREQ" must be <u>blinking 1 time</u> (once) every three (3) seconds at all times.

One blink indicates the Receiver is properly set for 319.5MHz Frequency and able to decode Elk319 Transmitters
See page 6.

RS-485 4-WIRE Data Bus Connections

+ 12
A   (Data)
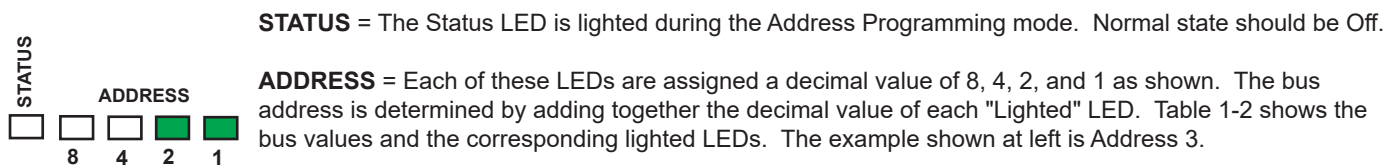**B   (Data)**
CMN (- NEG)

Note: The last 2 screws are not used. Do not connect any wires to terminals ZONE or RTN.

IMPORTANT: If this Receiver is the LAST device on the RS-485 Data Bus then connect a 120 Ohm Resistor (included in hardware bag) across terminals A and B along with the wiring. The last device on the data bus MUST include this bus termination.

1. **Mounting -** NEVER mount a Wireless Receiver inside a metal enclosure or on any metalized surface! Stay at least 10 feet away from any electrical device which might generate noise and reduce receiver sensitivity. The Receiver is easily attached away from the Control since it operated on the RS-485 Data Bus. Attach with two (2) #6 x 1/2" screws. For increased signal coverage additional Receivers (up to 9 max.) may be connected to the same M1 Controller.   See Appendix C.

2. **Wiring Connections** - Turn the Control power Off before making any wiring connections. Connect terminals +12V, A, B, and CMN (- Neg) from the receiver to the M1's Data Bus (terminals +VKP, Data A, Data B, & Neg).
   NOTE: Refer to the M1 Installation Manual for proper connections of data bus devices with multiple homerun cables.

3. **Antenna Installation** - The Receiver comes 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. Be SURE to insert and tighten the antennas into the screw terminals marked <u>ANTENNA</u>. The adjacent screw terminal is not used.

Setting the Data Bus Address of the Wireless Receiver

The Data Bus Address is set by entering Address Programming mode and then using the two (2) pushbuttons marked Forward and Backward to change the Address. The Address is displayed in Binary on the small row of LEDs beneath the word Address.

STATUS = The Status LED is lighted during the Address Programming mode. Normal state should be Off.

ADDRESS = Each of these LEDs are assigned a decimal value of 8, 4, 2, and 1 as shown. The bus address is determined by adding together the decimal value of each "Lighted" LED. Table 1-2 shows the bus values and the corresponding lighted LEDs. The example shown at left is Address 3.

STATUS ADDRESS 8 4 2 1

Note: The factory default Data Bus Address is 3

Follow these steps to set the Data Bus Address:

1. Use two fingers to <u>momentarily</u> press the Forward and Backward buttons <u>together at the same time</u> to enter Program mode. <u>This may require practice</u> as these must be pressed together at exactly the same time.

2. The Status LED should turn ON and remain solid during Program mode. <u>Repeat Step 1 if Status LED does not turn on.</u>

3. With the Status LED ON, press either the Forward button or Backward button to modify the Address setting. Refer to Table 1-2 to see how the Address LEDs should be lighted according to your desired Address.

4. Once the desired Address is displayed, press the Forward and Backward buttons together at the same time again to EXIT from the Program mode. The Address will be stored in non-volatile memory.

5. VERIFY the Status LED turns OFF and that the Address LEDs still display the desired Bus Address. CAUTION: Incorrect pressing of the Forward and Backward buttons may result in the Address being changed before or during Program mode exit. In some cases the Status LED (program mode) may be left ON. It may be necessary to repeat some earlier steps

6. Perform a Data Bus Enrollment (see next page) using either the M1 Keypad or the ElkRP Software. **THIS IS CRITICAL!**

7. The LED labeled BUS should start to blink once the receiver has been properly set and enrolled.

WARNING! AVOID DATA BUS ADDRESS CONFLICTS
Unintentional data bus "Conflicts" are possible between Wireless Receivers and Hardwired Expander(s) since they share the same bus and Device Type. Conflicts can be avoided <u>with careful planning and execution</u>. Below is an explanation of the potential issues.

Hardwired Expanders (M1XIN) - M1 Hardwired Expanders are physically limited to 16 hardwired zones each. The Data Bus Address assigned to the expander establishes the ID of the first (starting) zone. EG: For Address 2 the first zone is 17, Address 3 the first zone is 33, etc. Table 1-1 shows each Data Bus Addresses of Hardwired Expanders with their starting and ending Zones.

Wireless Receivers (M1XRF--) - M1 Wireless Receiver Expanders are NOT physically limited to 16 zones. A single Wireless Receiver can handle up to 144 wireless transmitter/zones with one condition: to handle a full complement of 144 transmitter/zones the Wireless Receiver must be set as Address 2 so the first wireless transmitter can be zone 017. This is because M1 only allows wireless zones to reside from Zone 017 to 160. When using ElkRP Programming Software all zones, wireless or hardwired are added in groups of 16 zones at a time. This helps enforce proper organization when wireless zones and hardwired zones are combined on the same control. We recommend installing all wireless expanded zones in the lower range beginning at zone 017 and installing all hardwired expanded zones at the higher end of the zone range. Since no wireless zones can reside past Zone 160 there is ample room for up to 48 hardwired expanded zones even on a fully loaded wireless panel. If hardwired expanded zones are installed inside the range of zones 17 through 160 a full group of 16 wireless zones will be lost even if only a few of the hardwired zones are being used.

Conflicts can exist if a group of hardwired zones are allowed to overlap or intrude where wireless sensors/zones exist. ***Wireless sensors/zones and hardwired zones MUST NEVER be allowed to overlap!*** If there is a likelihood of future wireless zone expansion then we recommend skipping up to a higher address to install a hardwired expanders. This effectively leaves open addresses for future wireless. Do NOT install any Hardwired Expanders in that open address space. Tables 1-1 and 1-2 illustrate the Data Bus Address setting of a wireless receiver while pointing out Addresses to avoid when adding or installing Hardwired Expanders.

- Never assign a Wireless Receiver and a Hardwire Expander to the same Data Bus Address.
- Never assign a Hardwire Expander to any Address that correlates to Wireless Transmitter/Zones. EG: If a Control has 40 wireless transmitters/zones and the Receiver is set to Address 2 the first wireless zone will be 17 and the last will be 57. Referring to Table 1-1 we see that zone 57 correlates to Data Bus Address 4. In this example a hardwired expander CANNOT be installed at Addresses 2, 3, or 4 since those addresses correspond to Zones 17 to 64.
- Never learn a new wireless transmitter that spills over into a data bus address assigned to a Hardwired Expander.
- Try to always keep wireless transmitter zones so they are contiguous and never split up by any hardwired expanded zones. 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.
- The maximum number of wireless zones is 144 and the last wireless zone number cannot be greater than 160.

   NOTE: Consider whether the system may ever need additional wireless or hardwired zones. If the answer is yes, we suggest the data bus address assignments be strategically set to permit future growth without being forced to re-arrange the addresses at a future date or defaulting the control and starting over.

Hardwired Zone Expanders (M1XIN)

Data Bus Address	Starting and Ending Zone Numbers	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	*not valid*	-	-	-	-
15	*not valid*	-	-	-	-

Table 1-1

Wireless Receiver Expanders (M1XRF319)

Data Bus Address	Suggested Wireless "Starting Point"	8	4	2	1
2	Zone 17	□	□	■	□
3	Zone 33	□	□	■	■
4	Zone 49	□	■	□	□
5	Zone 65	□	■	□	■
6	Zone 81	□	■	■	□
7	Zone 97	□	■	■	■
8	Zone 113	■	□	□	□
9	Zone 129	■	□	□	■
10	Zone 145	■	□	■	□
11	*not valid*	-	-	-	-
12	*not valid*	-	-	-	-
13	*not valid*	-	-	-	-
14	*not valid*	-	-	-	-
15	*not valid*	-	-	-	-

Table 1-2

Examples of Data Bus Address Settings

Data Bus Enrollment::

Once the address is set and the Wireless Receiver is powered up it must be manually ENROLLED with the M1 Control. This can be performed from keypad programming "Menu 1 - Bus Module Enrollment" or 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 ▶
```

Operation

When the Wireless Receiver detects a sensor transmission it will be passed to the M1 Control for processing. The M1 Control quickly scans through a filter of valid transmitter sensors to determine if it that sensor has been enrolled into it. Should an additional Receiver pick up the same transmission the M1 will disregard that to help prevent duplication.

Diagnostic LEDs

Five (5) Diagnostic LEDs provide valuable information as to the operation of the Receiver:

🟥 **BUS** The BUS LED blinks to indicate the Receiver is enrolled on the Data Bus. NOTE: See Data Bus Enrollment.

🟩 **UC** This LED blinks once every ~3 seconds to indicate the Receiver Processor is functioning normally.

🟥 **RX** Whenever an RF transmission is detected this LED should flash.

🟩 **TX** Not Used

🟨 **Freq.** This LED should blink 1 time (once) every 3 seconds when the Receiver is set for Freq. 319.5MHz (see note below)

IMPORTANT! If the Freq. LED is blinking 2 times (twice) every 3 seconds this indicates the receiver is NOT set for the correct Frequency (319.5MHz) that is required to receive Elk319 Transmitters and others that adhere to the Interlogix protocol.

For operation with <u>ELK319 Transmitters this receiver MUST be set to the 319.5MHz frequency AT ALL TIMES</u>

The frequency can be toggled back to the correct 319.5MHz setting by pressing and holding the ENTER Button for 3 seconds or until the Freq. LED starts to BLINK 1 time (once) as expected.

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 a relative signal strength as a reference of the acceptable reliability of the sensor and it's mounting orientation and/or location. When the Receiver hears a wireless transmission it tracks and totals the number of received data packets over the next few seconds.

During keypad Walk Test mode the total number of received packets may be announced by the M1 through the Voice Output 1 Speaker(s). Example: If all data packets from a sensor (8 out of a total of 8) are detected the announcement should be: "Sensor X, Level 8", indicating the highest signal strength for this particular Intrusion Sensor.

It is Elk's opinion that a minimum acceptable level of any wireless sensor be a level 3 or 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. 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: While the receiver tracks received data packets over a time span, it cannot distinguish whether all packets came from a single tested sensor or from multiple sensors which happened to transmit at about the same time. If the announced level number seems unusually high we recommend retesting the sensor(s) multiple time to try and gain a more accurate packet decode level.

Compatible Transmitters:

The following page lists Elk brand transmitter models that have been tested and guaranteed to be compatible with this receiver. There are additional pages showing other brands of transmitters which were tested to be compatible as of the date of this printing. Unfortunately the compatibility of the other brand sensors cannot be guaranteed because companies sometimes discontinue a particular model or make alterations which breaks the compatibility. All information shown is based on the best available data provided by the transmitter manufacturer(s) and is subject to change without notice. Elk shall not be responsible if a manufacturer changes or discontinues any listed model.

Elk Products 319.5MHz Transmitters

When used with Elk M1 Controls these transmitters may be enrolled either from Keypad Installer Programming (Menu 14. Sub-Menu 3) using the "Lrn" method, OR by entering the TXID through Elk's RP Programming Software. Carefully follow the specific transmitter notes outlined below. **IMPORTANT: When using these with other 319.5MHz panels it may be necessary to follow enrollment procedures of that panel.**

Image	Part Number, Description, Notes, Enroll Process, Options and Loop ID
	ELK-319DWM Door/Window Mini Transmitter > Notes: None **> Enroll Process:** Remove cover and pull out battery isolation tabs to apply power. Press and release Tamper plunger to send enrollment to panel. **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop**: Set Loop to 2
	ELK-319DG All Weather Door & Gate Transmitter > Notes: Two screw terminals permit an external N/O (normally open) switch to be used instead of the built-in reed. **> Enroll Process:** Remove cover and pull out battery isolation tabs to apply power. Press and release Tamper plunger to send enrollment to panel. **> Options:** Set Opt1 & Opt2 to 0 (no) if using built-in reed **OR** Set Opt1 & Opt2 to 1 (yes) if a external N/O switch is connected to the screw terminals. **> Loop:** Set Loop to 2 if using built-in reed **OR** Set Loop to 1 if using screw terminals. **REED AND EXTERNAL SWITCH ARE NOT DESIGNED TO BE USED AT THE SAME TIME.**
	ELK-319DR Recessed Door Transmitter > Notes: To change battery remove end cap by twisting open 1/8" CCW using a coin or screwdriver. Gently grasp edge of board using needle nose pliers and pull out. **> Enroll Process:** Remove cover and pull out battery isolation tab to apply power. Place magnet to sensor and remove to send enrollment to panel. **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop**: Set Loop to 2
	ELK-319WS Window Reed & Shock Combo > Notes: The reed and shock each require separate (2) panel zones. The printed TXID # is the shock. The reed is the same TXID # with the last digit increased by +1. The enrollment procedure and order determines which zone is 1st. **> Enroll Process:** To enroll both sensors with the shock being the 1st zone use the instructions packed with the sensor. To enroll both sensors with the reed being the 1st zone use these steps: 1. Remove cover from sensor. 2. Start panel enroll process. 3. Hold one finger on the tamper plunger and then remove the battery isolation tabs to apply power. Keep finger on tamper! Panel should enroll the reed and display the printed TXID # +1 digit higher. 3. Ensure panel enroll is advanced to next zone. 4. Release the tamper plunger. Panel should enroll the shock as the 2nd zone and display the actual printed TXID #. **Options:** Set Opt1 & Opt2 to 0 (no) **> Loop:** Set Loop to 2 for both 1st and 2nd zone.
	ELK-319KF4 Four (4) Button Keyfob > Notes: Program M1 zone definition as Keyfob and assign button activations via M1 Menu 14, submenu 4. Icons: Button 1=Lock, Button 2 =Unlock, Button 3=Light, Button 4=Asterisk. **> Enroll Process:** Press and hold buttons 1 & 2 (Lock & Unlock) at the same time. **> Options:** Setting Opt1 to 1 (yes) will swap the 4 button assignments from 1 thru 4 to 5 thru 8. Opt2 should be left as 0 (no). **> Loop**: N/A **Additional info:** Combo pressing the Lock and Unlock buttons at same time will trigger the event assigned to Key 7. Pressing the Light and Asterisk together will trigger the event assigned to Key 8.
	ELK-319KF1 Single (1) Button Panic > Notes: <u>Programmed differently from a Keyfob.</u> EG: Program M1 zone definition as the desired alarm type. Def: 23 = audible Police. **> Enroll Process:** Press and hold the button. **> Options:** Set Opt1 & Opt2 to 0 (no) **> <u>Loop: Set Loop to 1</u>** **Additional info:** LED flashes periodically to let User know the battery is good. Following an alarm the zone will remain violated (Police Trouble) until transmitter sends hourly check-in OR until User manually resets zone by pressing and holding the button a second time for ~ 6 sec.
	ELK-319PB1 Heavy Duty 1 Button Panic > Notes: <u>Programmed differently from a Keyfob.</u> EG: Program M1 zone definition as the desired alarm type. Def: 23 = audible Police. **> Enroll Process:** Press and hold the button. **> Options:** Set Opt1 & Opt2 to 0 (no) **> <u>Loop</u>: Set Loop to 1** **Additional info:** LED flashes periodically to let User know the battery is good. Following an alarm the zone will remain violated (Police Trouble) until transmitter sends hourly check-in OR until User manually resets zone by pressing and holding the button a second time for ~ 6 sec.
	ELK-319HRR Heat Rate of Rise Detector > Notes: To activate a manual test hold a magnet next to mark on front edge for ~15 seconds. **> Enroll Process:** Pull out battery isolation tabs to apply power and send enrollment to panel. If the unit is already powered try pushing and releasing the tamper. **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop**: Set Loop to 1
	ELK-319PIRC Ceiling Mount 360 PIR Sensor > Notes: To conserve battery life sensor has a 3-minute sleep mode lockout between motion detections and transmissions. For walk testing the 3-minute lockout may be avoided by momentarily removing sensor from its base. Walk test times out and ends after 1 minute of no motion. **> Enroll Process:** Pull out battery isolation tabs to apply power and send enrollment to panel. If the unit is already powered try pushing and releasing the tamper. **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop**: Set Loop to 1

Elk Products 319.5MHz Transmitters (continued)

When used with Elk M1 Controls these transmitters may be enrolled either from Keypad Installer Programming (Menu 14. Sub-Menu 3) using the "Lrn" method, OR by entering the TXID through Elk's RP Programming Software. Carefully follow the specific transmitter notes outlined below.
IMPORTANT: When using these with other 319.5MHz panels it may be necessary to follow enrollment procedures of that panel.

Image	Part Number, Description, Notes, Enroll Process, Options and Loop ID
Coming Soon	**ELK-319SMK Smoke Detector**
Coming Soon	**ELK-319CO Carbon Monoxide Detector**
Coming Soon	**ELK-319PIRW Wall Mount PIR**
Coming Soon	**ELK-319GB Glassbreak Detector**
Coming Soon	**ELK-319WF Water Flood Detector**

Interlogix brand compatible 319.5MHz Transmitters

Elk makes no guarantee of compatibility for any transmitter model not listed. Elk shall not be responsible if a manufacturer changes or discontinues any listed model.

These alternate brand transmitters, when used with an Elk M1 Control, can be enrolled from either Keypad Installer Programming (Menu 14. Sub-Menu 3) via the "Lrn" method, OR by entering the TXID through Elk's RP Programming Software. Carefully follow the specific transmitter notes outlined below.

Image	Part Number, Description, Notes, Enroll Process, Options and Loop ID
	Smoke Detector - Part # 60-848-02-95, or equivalent **> Notes:** None **> Enroll Process:** For units with tamper supervision activate the tamper, otherwise press the front Test button which will transmit a violation (alarm) **> Options:** Set Opt1 to 1 (yes) for units with tamper supervision. Leave Opt2 as 0 (no). **> Loop**: Set as 2
	Single Button Wrist/Pendant Panic - Part # 60-906-95, or equivalent **> Notes:** None **> Enroll Process:** Press and hold main button **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop:** Set as 2
	Single Button Pendant Panic - Part # 60-578-10-95, or equivalent **> Notes:** None **> Enroll Process:** Press and hold main button **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop**: Set as 2
	PIR Motion Detector - Part # 60-880-95, or equivalent **> Notes:** Transmitter does not send restores. Control automatically assumes restoral 8 seconds after violation **> Enroll Process:** Remove back cover to activate tamper switch **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop**: Set as 2

Image	Description
	PIR Motion Detector - Part # 60-703-95, or equivalent **> Notes:** Transmitter does not send restores. Control automatically assumes restoral 8 seconds after violation **> Enroll Process:** Remove back cover to activate tamper switch **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop:** Set as 2
	PIR Motion Detector - Part # 60-511-01-95, or equivalent **> Notes:** Transmitter does not send restores. Control automatically assumes restoral 8 seconds after violation **> Enroll Process:** Remove back cover to activate tamper switch **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop:** Set as 2
	Door & Window Transmitter - Part #'s 60-362-10-319.5, 60-641-95, or equiv. **> Notes:** Screw terminals allow external N/O switch to be used in place of the built-in reed. **> Enroll Process:** Remove back cover to activate tamper switch **> Options:** Set Opt1 & Opt2 to 0 (no) if using built-in reed **OR** Set Opt1 & Opt2 both to 1 (yes) to disable internal reed and use external N/O switch connected to screw terminals **> Loop:** Set as 2 if using built-in reed **OR** Set as 1 if external N/O switch is connected to the screw terminals. **DO NOT USE BOTH REED AND EXT. SWITCH AT SAME TIME.**
	Door & Window Transmitter - Part # 60-499-10-319.5, or equivalent **> Notes:** Screw terminals allow external N/O switch to be used in place of the built-in reed. **> Enroll Process:** Press Test button or Tamper Switch **> Options:** Set Opt1 & Opt2 to 0 (no) if using built-in reed **OR** Set Opt1 & Opt2 both to 1 (yes) to disable internal reed and use external N/O switch connected to screw terminals **> Loop:** Set as 2 if using built-in reed **OR** Set as 1 if external N/O switch is connected to the screw terminals. **DO NOT USE BOTH REED AND EXT. SWITCH AT SAME TIME**
	Door & Window Transmitter - Part # 60-688-95, or equivalent **> Notes:** Screw terminals allow external N/O switch to be used in place of the built-in reed. **> Enroll Process:** Press Test button or Tamper Switch **> Options:** Set Opt1 & Opt2 to 0 (no) if using built-in reed **OR** Set Opt1 & Opt2 both to 1 (yes) to disable internal reed and use external N/O switch connected to screw terminals **> Loop:** Set as 2 if using built-in reed **OR** Set as 1 if external N/O switch is connected to the screw terminals. **DO NOT USE BOTH REED AND EXT. SWITCH AT SAME TIME**
	Door & Window Transmitter - Part # 60-741-95, or equivalent **> Notes:** none **> Enroll Process:** Insert Battery to power up **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop:** Set as 2
	Heat 'Rate Of Rise' Transmitter - Part # 60-460-319.5, or equivalent **> Notes:** none **> Enroll Process:** Press Test Button located on circuit board inside unit next to battery **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop:** Set as 2
	Glass Break Transmitter - Part # 60-873-95, 60-834-95, or equivalent **> Notes:** Opt2 must be set to 1 (yes) **> Enroll Process:** Activate tamper switch **> Options:** Set Opt1 to 0 (no) and Opt2 to 1 (yes) **> Loop:** Set as 2
	Shock Sensor - Part # 60-886-95, or equivalent **> Notes:** Opt2 must be set to 1 (yes) **> Enroll Process:** Press Test button **> Options:** Set Opt1 to 0 (no) and Opt2 to 1 (yes) **> Loop:** Set as 2
	Single Button Panic Transmitter - Part # 60-458-10-319.5, or equivalent **> Notes:** none **> Enroll Process:** Press main button **> Options:** Set Opt1 to 0 (no) and Opt2 to 1 (yes) **> Loop:** Set as 2
	Glass Guard Transmitter - Part # 6046210319.5 **> Notes:** none **> Enroll Process:** Press tamper switch **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop:** Set as 2
	Freeze Sensor Transmitter - Part # 60-504-10-95R, or equivalent **> Notes:** none **> Enroll Process:** Press tamper switch **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop:** Set as 2
	Four Button Keyfob Transmitter - Part # 60-606-319.5, or equivalent **> Notes:** none **> Enroll Process:** Press and hold the Lock and Unlock Buttons (buttons 1 & 2) together at the same time. **> Options:** Setting Opt1 to 1 (yes) will swap the 4 button assignments from 1 thru 4 to 5 thru 8. Opt2 should be left as 0 (no). **> Loop:** N/A **Additional info:** Combo pressing the Lock and Unlock buttons at same time will trigger the event assigned to Key 7. Pressing the Light and Asterisk together will trigger the event assigned to Key 8.
	Carbon Monoxide Sensor - Part # 600-6520-95 **> Notes:** none **> Enroll Process:** TXID ID number printed on sensor label must be entered manually into the M1 Wireless Zone (Wzone) TXID programming field. This sensor cannot be learned in by the transmission trip or tamper methods. **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop:** Set as 0 **ElkRP programming of M1** – Set Zone Def as 17 = Carbon Monoxide and set Zone Type as 0 = EOL/Wireless. In the Wireless Setup set the Enabled box and set Supervision to 3 = Fire Supervision.

Resolution brand compatible 319.5MHz Transmitters

Elk makes no guarantee of compatibility for any transmitter model not listed. Elk shall not be responsible if a manufacturer changes or discontinues any listed model.

	These transmitters, when used with an Elk M1 Control, can be enrolled from either Keypad Installer Programming (Menu 14. Sub-Menu 3) via the "Lrn" method, OR by entering the TXID through Elk's RP Programming Software. Carefully follow the specific transmitter notes outlined below.
Image	**Part Number, Description, Notes, Enroll Process, Options and Loop ID**
	Four Button Keyfob Transmitter - Part # RE100 **> Notes:** none **> Enroll Process:** Press and hold Lock and Unlock Buttons (1&2) together at same time. **> Options:** Setting Opt1 to 1 (yes) will swap the 4 button assignments from 1 thru 4 to 5 thru 8. Opt2 should be left as 0 (no). **> Loop:** N/A **Additional info:** Combo pressing the Lock and Unlock buttons at same time will trigger the event assigned to Key 7. Pressing the Light and Asterisk together will trigger the event assigned to Key 8.
	Door & Window Transmitter - Part # RE101 **> Notes:** none **> Enroll Process:** Insert battery or press tamper switch **> Options:** Set Opt1 to 0 (no) to use internal reed switch. Set to 1 (yes) to disable internal reed switch and use external screw terminals instead. Set Opt2 to 0 (no) to configure ext. screw terminals for N/O (open circuit) switch. Set to 1 (yes) to configure screw terminals for N/C (closed circuit) switch. **> Loop:** Set as 2 **Add info:** TXID ID on transmitter can represent the internal reed or the external contacts (see Option 1) but not both at the same time. While not recommended, transmitter can be enrolled twice to use both inputs as 2 different M1 zones. 1st zone will be internal reed – Set Loop as 2. 2nd zone will be external contacts – Set Loop as 1. TXID number of the second zone must be manually edited to make it 1 digit greater. EG: If TXID of 1st zone is DL 106AA4, edit TXID of 2nd zone so that it is DL 106AA5.
	Pencil Door And Window Transmitter - Part # RE102 **> Notes:** none **> Enroll Process:** Insert battery or press tamper switch **> Options:** Set Opt1 & Opt2 to 0 (no) if using built-in reed **OR** Set Opt1 & Opt2 to 1 (yes) if an external N/O switch is connected to the screw terminals. **> Loop:** Set as 2 if using built-in reed **OR** Set as 1 if external N/O switch is connected to the screw terminals. **WE DO NO RECOMMEND USING BOTH REED AND EXT. SWITCH AT SAME TIME.**
	Wrist Panic Transmitter - Part # RE103 **> Notes:** none **> Enroll Process:** Press Main Button **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop:** Set as 2
	Driveway Motion Detector - Part # RE104 **> Notes:** none **> Enroll Process:** Press tamper switch **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop:** Set as 2
	Temperature Limit Detector - Part # RE105 **> Notes:** none **> Enroll Process:** Press tamper switch **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop:** Set as 2
	Tilt Sensor - Part # RE106 **> Notes:** none **> Enroll Process:** Press tamper switch **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop:** Set as 2
	PIR Motion Detector - Part # RE110P **> Notes:** This transmitter does not send restorals. Control automatically assumes restoral ~8 seconds after violation. **> Enroll Process:** Remove back cover to activate tamper switch. **> Options:** Set Opt1 & Opt2 to 0 (no) **> Loop:** Set as 2

Programming via Keypad

For Installer Level Programming press the ELK key followed by 9. Enter the installer programming code when prompted. Use Up/Down keys to Navigate to "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

Sets the expiration timeout value for supervision of zones assigned as Supervisory Type 1 (Non-Fire Zones). The range is 001 to 255 hours and the default is 024 hours. If a Type 1 sensor fails to check-in prior to this timeout it will be declared missing. The Type is assigned to each transmitter (sensor) under Transmitter Opt 02 (see below).

RO4:=004 Hours ▶ Fire Supervision

Sets the expiration timeout value for supervision of zones assigned as Supervisory Type 3 (Fire Zones). The range is 001 to 255 and the default is 004 hours. Should a Type 3 sensor fail to check-in prior to this timeout it will be declared missing.

RO5:= No   ▶ UL Wireless Jam

This submenu is not applicable to this Wireless Receiver model and should be left set to "No."

2:Xmit Sel⬍ Prg▶ Transmitter Opt ▶

This submenu is for specific transmitter options. Some options are not applicable to this Wireless Receiver model. 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 Transmitr

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

This sets the expected check-in (supervision) interval of a sensor. Burglar (non-fire) sensors should be set as "1"=Normal Supervision. Fire Sensors should be set as "3" = Fire Supervision. CAUTION! Keychain Remotes (Fobs) or sensors that leave the building MUST be set to "0" = non supervised. 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. **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. **See list of compatible Transmitters to determine which (if any) transmitters use this option.**

WZn017 05: = 001 ▶ Keyfob User ID

This location allows a number to be assigned as the User ID that will appear in the M1 event log whenever a Keychain Remote is used to arm/disarm. Valid range is 001 to 255. NOTE: Standard M1 User codes are 001 to 199.

WZn017 06: = No ▶ PIR Auto Restore

Not currently used. To conserve battery most Wireless PIRs transmit alarms but not restorals. It is up to the Control to presume that the PIR sensor has restored after a small time delay. NOTE: Wireless PIRs also conserve battery by permitting only 1 detect and transmission after which they sleep for several minutes. The sensor will appear to be dead during this times. For this reason wireless PIRs are not recommended for automation or occupancy detection applications.

WZn017 shown as an example only!   < continued on next page >

† Not evaluated by UL

```
┌─────────────────────────┐
│ 3:Learn Sel◆ Prg▶       │
│ WirelessTransmtr        │
└─────────────────────────┘
```
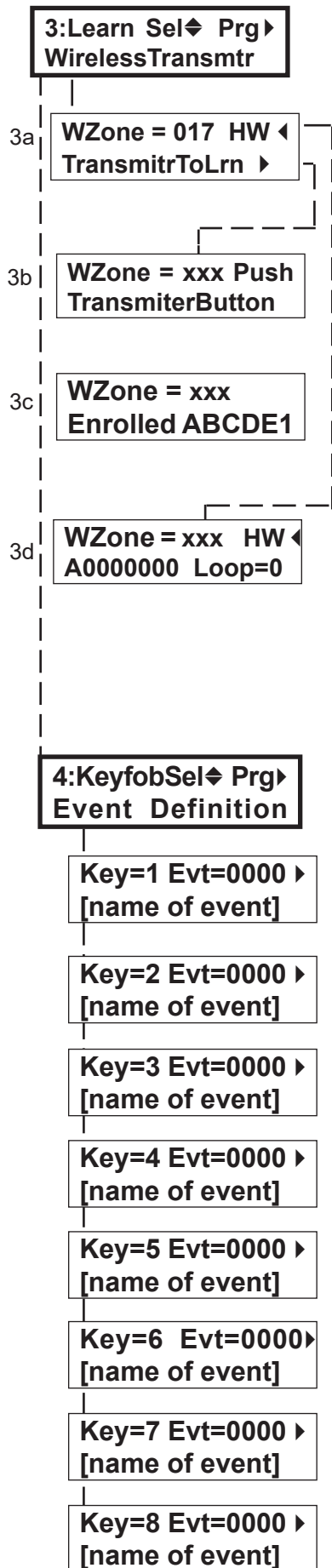
This submenu is used to manually enroll transmitters (sensors). Press the RIGHT arrow key to select this submenu or press the Up or Down arrow keys to scroll other submenus.

3a
```
┌─────────────────────────┐
│ WZone = 017  HW ◀       │
│ TransmitrToLrn  ▶       │
└─────────────────────────┘
```

The display will begin at the first wireless zone location. To select another location to enroll a transmitter enter a three (3) digit zone number OR use the UP / DOWN arrow keys to scroll. Zone locations that don't already have a transmitter enrolled will display "TransmitrToLrn" (3A). To program a transmitter into the zone location press the RIGHT arrow key.

WZone = 17 shown as example only

The next display (3b) informs you to Push Transmitter Button and if the M1 is equipped for speaking it will say: "Press Transmitter Button for Zone XXX". Proceed to the transmitter and execute the enroll process according the sensor instructions. This is generally done by inserting the battery or pressing the tamper button. Upon successful enrollment the keypad will chime and if equipped for speaking the M1 will say: "[Zone Number/Name] Enrollment."   Refer to step 3c below.

3b
```
┌─────────────────────────┐
│ WZone = xxx Push        │
│ TransmiterButton        │
└─────────────────────────┘
```

3c
```
┌─────────────────────────┐
│ WZone = xxx             │
│ Enrolled ABCDE1         │
└─────────────────────────┘
```

The TXID of the newly enrolled transmitter (sensor) will momentarily display. Rapid Enroll will then auto-advance to the next zone (step 3b) to permit sequential enrollment of transmitters. Press the ELK key twice to exit the enrollment after all new sensors have been enrolled.

3d
```
┌─────────────────────────┐
│ WZone = xxx   HW ◀      │
│ A0000000  Loop=0        │
└─────────────────────────┘
```

SETTING THE LOOP #. See the list of Elk 319.5MHz Transmitters chart for details on the loop setting of each transmitter type. It's VERY IMPORTANT to follow the directions outlined in the chart and set the Loop # correctly. To access submenu 3d you must press the LEFT arrow key "HW" while viewing submenu 3a. The lower left corner of 3d will display the TXID in decimal notation. Press the RIGHT arrow key once to move the cursor over to Loop =. Enter 1, 2, or 3 according to the sensor instructions.
Hint: For most single reed door/window transmitters the loop will be set to as #2

HOW TO DELETE A WIRELESS TRANSMITTER - Navigate to option "WZnxxx 01" and select "No" to delete an unwanted transmitter. Alternate: Setting the Loop to 0 will also delete a transmitter.

```
┌─────────────────────────┐
│ 4:KeyfobSel◆ Prg▶       │
│ Event  Definition       │
└─────────────────────────┘
```

This submenu is used to program the event operation (action) a keyfob button performs.
NOTE: ELK-319 Panic Buttons KF1 & PB1 do not behave as keyfobs. Their event operation is set by the definition of the zone to which they are enrolled.
Press the RIGHT arrow key. Press the UP or DOWN arrow keys to select a key (1 to 8).

```
┌─────────────────────────┐
│ Key=1 Evt=0000 ▶        │
│ [name of event]         │
└─────────────────────────┘
```

The M1 factory default programming treats the four (4) buttons on a keyfob as Key=1, Key=2, Key=3 and Key=4 respectively. Singularly pressing any one of these keys should cause the event action to be performed according to the programmed event action in this menu.

```
┌─────────────────────────┐
│ Key=2 Evt=0000 ▶        │
│ [name of event]         │
└─────────────────────────┘
```

Many four (4) button keyfobs support the pressing and holding of two (2) key combinations at the same time, making it possible to perform two (2) additional events, Key=7 & Key=8. See explanation below.

```
┌─────────────────────────┐
│ Key=3 Evt=0000 ▶        │
│ [name of event]         │
└─────────────────────────┘
```

Many four (4) button keyfobs also support an option (see Option 1) that swaps the assignment of keys 1 thru 4 so that M1 will recognize them as Key=5, Key=6, Key=7 and Key=8 respectively. Option 1 may be enable or disabled by individual transmitter TXID. An application for this might be 2 people who want their individual keyfobs to perform different event functions. EXCEPTION: The two (2) key combination press will not expand the events on a keyfob where the Option 1 has been enabled. That keyfob will ONLY perform Key Events 5, 6, 7 and 8.

```
┌─────────────────────────┐
│ Key=4 Evt=0000 ▶        │
│ [name of event]         │
└─────────────────────────┘
```

The event 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=5 Evt=0000 ▶        │
│ [name of event]         │
└─────────────────────────┘
```

The M1 default programming contains the following event (operation) assignments:

```
┌─────────────────────────┐
│ Key=6  Evt=0000▶        │
│ [name of event]         │
└─────────────────────────┘
```

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

```
┌─────────────────────────┐
│ Key=7 Evt=0000 ▶        │
│ [name of event]         │
└─────────────────────────┘
```

PRESS AND HOLD TWO KEYS AT SAME TIME
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".

```
┌─────────────────────────┐
│ Key=8 Evt=0000 ▶        │
│ [name of event]         │
└─────────────────────────┘
```

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 tables are intended to help visualize how Wireless Receiver Zone Expanders utilize Data Bus Addresses compared to Hardwired Zone Expanders. Observe and follow the Data Bus Addresses and their starting & ending Zone numbers to attain the total and best mix of wireless and hardwired zones. The left column shows the maximum total wireless zones that may be attained based on the data bus addresses consumed.

1. Each table has a bolded column showing the staring (1st) wireless zone ID at each associated 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 narrows down which table to concentrate on.

3. Consider existing or future 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 a 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. On the contrary if a job needs a lot of hardwired zones and very few wireless zones the Wireless Receiver could be assigned as high as Address 10.

4. Select any table below and start in the left column by choosing the total number of wireless zones required.   Follow the row 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 Wireless 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 Wireless Receiver can be installed.
    - Cells marked "H or RRF" indicate bus addresses where either a Hardwired Expander OR a redundant Wireless Receiver can be installed.

    NOTE: A Wireless Receiver 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	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	Data Bus Addr 10 Zn 145-160	Data Bus Addr 11 Zn 161-176	Data Bus Addr 12 Zn 177-192	Data Bus Addr 13 Zn 193-208
										No RF Zones Here		
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	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	Data Bus Addr 10 Zn 145-160	Data Bus Addr 11 Zn 161-176	Data Bus Addr 12 Zn 177-192	Data Bus Addr 13 Zn 193-208
										No RF Zones Here		
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	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	Data Bus Addr 11 Zn 161-176	Data Bus Addr 12 Zn 177-192	Data Bus Addr 13 Zn 193-208
										No RF Zones Here		
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 Wireless Receiver can be installed.
Cells marked " **H or RRF** " indicate bus addresses where either a Hardwired Expander OR a redundant Wireles 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	Data Bus Addr 11 Zn 161-176 (No RF Zones Here)	Data Bus Addr 12 Zn 177-192 (No RF Zones Here)	Data Bus Addr 13 Zn 193-208 (No RF Zones Here)
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	M1XRF	* *	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	M1XRF	* *	* *	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	M1XRF	* *	* *	* *	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	M1XRF	* *	* *	* *	* *	H or RRF	H or RRF	H or RRF	H or RRF
96	H or RRF	H or RRF	H or RRF	M1XRF	* *	* *	* *	* *	* *	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	Data Bus Addr 11 Zn 161-176 (No RF Zones Here)	Data Bus Addr 12 Zn 177-192 (No RF Zones Here)	Data Bus Addr 13 Zn 193-208 (No RF Zones Here)
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	M1XRF	* *	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	M1XRF	* *	* *	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	M1XRF	* *	* *	* *	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	M1XRF	* *	* *	* *	* *	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	Data Bus Addr 11 Zn 161-176 (No RF Zones Here)	Data Bus Addr 12 Zn 177-192 (No RF Zones Here)	Data Bus Addr 13 Zn 193-208 (No RF Zones Here)
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	M1XRF	* *	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	M1XRF	* *	* *	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	M1XRF	* *	* *	* *	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	Data Bus Addr 11 Zn 161-176 (No RF Zones Here)	Data Bus Addr 12 Zn 177-192 (No RF Zones Here)	Data Bus Addr 13 Zn 193-208 (No RF Zones Here)
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	M1XRF	* *	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	M1XRF	* *	* *	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	Data Bus Addr 11 Zn 161-176 (No RF Zones Here)	Data Bus Addr 12 Zn 177-192 (No RF Zones Here)	Data Bus Addr 13 Zn 193-208 (No RF Zones Here)
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	M1XRF	* *	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	Data Bus Addr 11 Zn 161-176 (No RF Zones Here)	Data Bus Addr 12 Zn 177-192 (No RF Zones Here)	Data Bus Addr 13 Zn 193-208 (No RF Zones Here)
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 Wireless Receiver can be installed.
Cells marked " **H or RRF** " indicate bus addresses where either a Hardwired Expander OR a redundant Wireless Receiver can be installed.

Appendix B - Examples of Zone Configurations

Zones 1-16	Bus Addr x	Inputs on Main Panel
Zones 17-32	Bus Addr 2	Hardwired Expander
Zones 33-48	Bus Addr 3	Hardwired Expander
Zones 49-64	Bus Addr 4	Hardwired Expander
Zones 65-80	Bus Addr 5	Hardwired Expander
Zones 81-96	Bus Addr 6	Hardwired Expander
Zones 97-112	Bus Addr 7	Hardwired Expander
Zones 113-128	Bus Addr 8	Hardwired Expander
Zones 129-144	Bus Addr 9	Hardwired Expander
Zones 145-160	Bus Addr 10	Hardwired Expander
Zones 161-176	Bus Addr 11	Hardwired Expander
Zones 177-192	Bus Addr 12	Hardwired Expander
Zones 193-208	Bus Addr 13	Hardwired Exp. or Keypad Zns
N/A	Bus Addr 14	N/A
N/A	Bus Addr 15	N/A

Example A — All 208 Zones as Hardwired

Zones 1-16	Bus Addr x	Inputs on Main Panel
Zones 17-32	Bus Addr 2	Wireless Receiver
Zones 33-48	Bus Addr 3	NO Hardwired Expanders on these addresses (Maximum of 144 Wireless Zones)
Zones 49-64	Bus Addr 4	
Zones 65-80	Bus Addr 5	
Zones 81-96	Bus Addr 6	
Zones 97-112	Bus Addr 7	
Zones 113-128	Bus Addr 8	
Zones 129-144	Bus Addr 9	
Zones 145-160	Bus Addr 10	
Zones 161-176	Bus Addr 11	Hardwired Expander or Redundant Wireless Rec. *
Zones 177-192	Bus Addr 12	
Zones 193-208	Bus Addr 13	Hardwired Exp. or Keypad Zns
N/A	Bus Addr 14	N/A
N/A	Bus Addr 15	N/A

Example B — 16 Hardwired Zones, 144 Wireless Zones

Zones 1-16	Bus Addr x	Inputs on Main Panel
Zones 17-32	Bus Addr 2	Hardwired Expander
Zones 33-48	Bus Addr 3	Hardwired Expander
Zones 49-64	Bus Addr 4	Wireless Receiver
Zones 65-80	Bus Addr 5	< ------- Redundant Wireless Receiver *
Zones 81-96	Bus Addr 6	< ------- Redundant Wireless Receiver *
Zones 97-112	Bus Addr 7	NO Hardwired Expanders on these addresses (Maximum of 112 Wireless Zones)
Zones 113-128	Bus Addr 8	
Zones 129-144	Bus Addr 9	
Zones 145-160	Bus Addr 10	
Zones 161-176	Bus Addr 11	Hardwired Expander or Redundant Wireless Rec. *
Zones 177-192	Bus Addr 12	
Zones 193-208	Bus Addr 13	Hardwired Exp. or Keypad Zns
N/A	Bus Addr 14	N/A
N/A	Bus Addr 15	N/A

Example C — 48 Hardwired Zones, 112 Wireless Zones, PLUS 2 Redundant Receivers

Appendix C - Installing Multiple Redundant Receivers

Once the first Wireless Receiver has been installed and operational additional receivers can be installed for redundancy or improved coverage and range. Each addtional Wireless Receiver must be assigned its own data bus address and must be enrolled into the control. The data bus address setting of any additional Wireless Receivers can be any unused data bus address from 2 to 10. ADDRESS 11, 12, 13, 14, 15, or 16 CANNOT BE USED.

NOTE: Wireless Receiver expanders MUST NEVER be assigned to addresses currently occupied by Hardwired Expanders, and vice versa. In the example below the first Wireless Receiver (in center) is assigned as Address 2. The additional Receivers are Addresses 3 and 4.   In theory it is possible to install up to 9 total Wireless Receivers on a single M1 Control provided none of those addresses are being used by a Hardwired Expander.

 * For large installations or added coverage in areas experiencing poor wireless conditions additional Wireless Receivers can be connected to the data bus. Each Receiver must be assigned its own Bus Address and be enrolled for proper supervision. Loss of any enrolled bus device causes a Missing Bus Device Trouble.
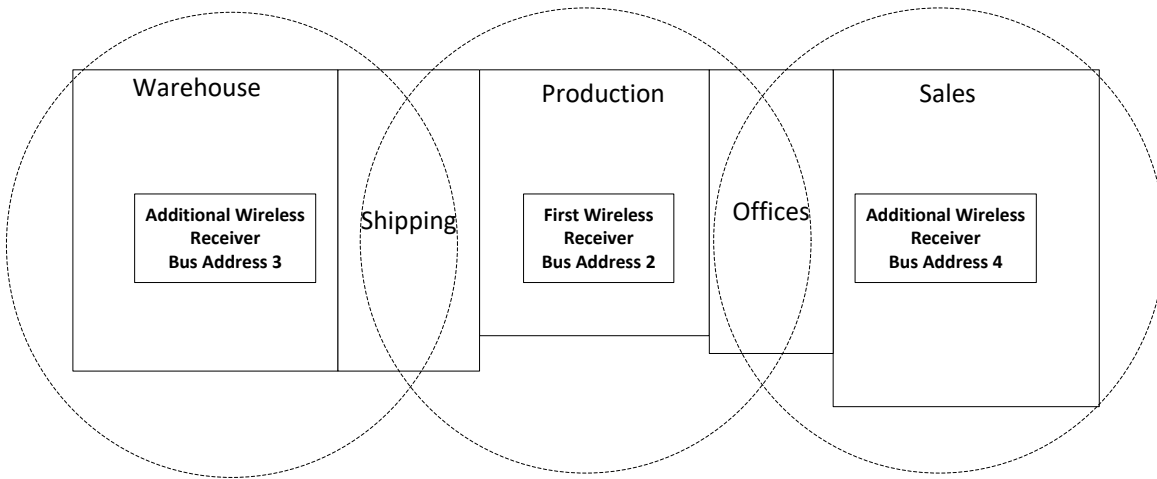
Example of larger Commercial Building with 3 Wireless Receivers