

# ELK-M1XSP Serial Port Expander

## Supplementary Instructions & Release Notes for Firmware Version 20.X.X

This version provides M1 Integration to:  
**1st Generation Leviton Vizia rf (Z-Wave) Lighting  
& Thermostats (does not support Locks)**

\* The new ELK-M1XSLZW is required for Z-Wave Lock support.

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Firmware and/or bootware releases contain enhancements and/or resolutions for issues found in previous releases.  
For the latest Updates refer to the Elk Website. <http://www.elkproducts.com>

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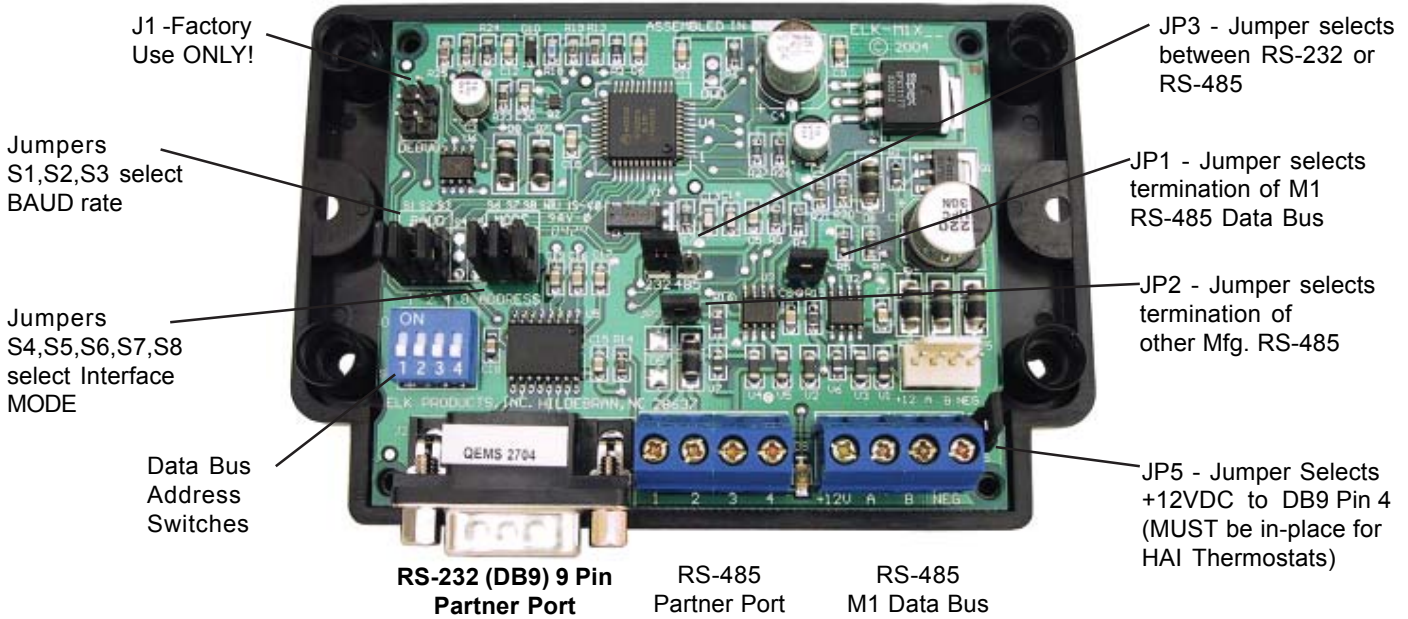


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# M1XSP Installation and Setup

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



### M1XSP Diagnostic LED indicator

Slow blink (1/2 sec.) = Normal communication with M1.

Fast flicker = Communicating with other equipment (Thermostat, Lighting Controller, PC, etc.)

No blink = No communication with M1. Unit might be unplugged or powered off.

1. The M1XSP operates on the M1 Keypad data bus and may therefore be remoted near the equipment being interfaced.
2. Before making any wiring connections, turn Off the M1 Master Power Switch.
3. Connect terminals +12V, A, B, and Neg from the M1XSP 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.**
4. There are 4 address switches, each with a position of OFF or ON (binary value 0 or 1) and a decimal equivalent value of (1, 2, 4, or 8). The total decimal value of the "ON" switches equates to the data bus address. As a rule, the first M1XSP should be set to address 1. If more than 1 M1XSP is installed, set each one to a unique (sequential) address (2, 3, etc).

Table 1: Data Bus Address Switch Settings				LEGEND	
<p><b>Address 1</b></p>	<p><b>Address 2</b></p>	<p><b>Address 3</b></p>	<p><b>Address 4</b></p>	<p><b>LEGEND</b></p> <p> ON</p> <p> OFF</p> <p><b>M1XSP Data Bus Terminating Jumper JP1</b> Used to engage a 120 Ohm resistor for terminating the M1 RS-485 Data Bus. See Data bus wiring instructions before use.</p>	
<p><b>Address 5</b></p>	<p><b>Address 6</b></p>	<p><b>Address 7</b></p>	<p><b>For an M1XSP the only valid Data Bus Addresses are 1 thru 7 since the max. number of M1XSPs is 7.</b></p>		

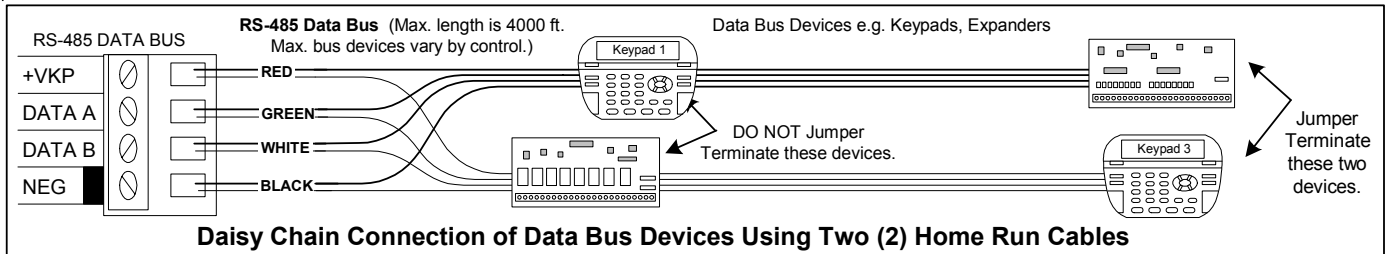
5. Set the "Mode", "Baud", and other necessary jumpers according to the Installation diagrams on previous pages.
6. After all connections are complete, turn On the M1 Master Power Switch.
7. Enroll the M1XSP into the M1 Control. From the Keypad access the Installer level programming and select Menu 01-Bus Module Enrollment. Press the right arrow key to start the enrollment. Once enrollment has completed, press the right arrow key to view results. Enrolled M1XSPs will show up as type 5 (T5) followed by the specific address number.

# ELK-M1 Data Bus E.O.L. Termination

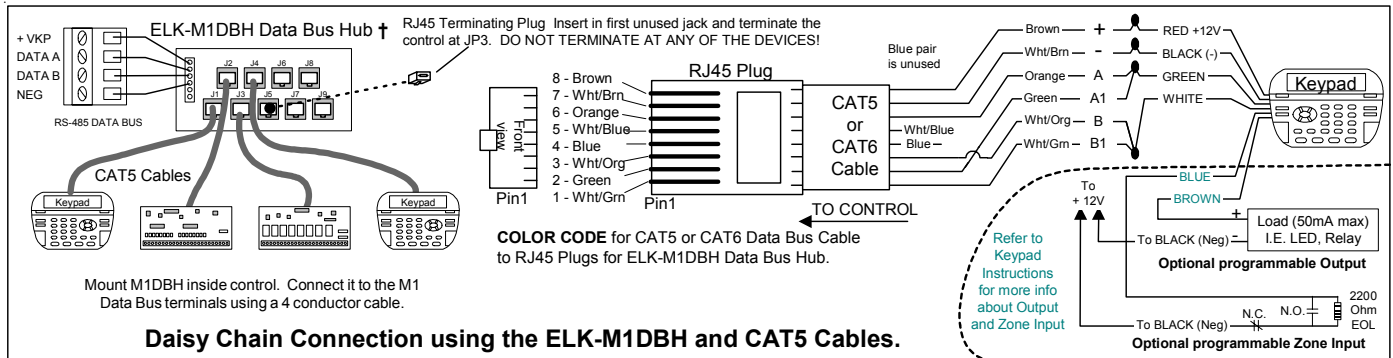
## VERY IMPORTANT!

The control uses a RS-485 “differential” data bus operating at 38,400 bits per second. This is relatively high speed by industry standards and ensures fast, accurate communications. EOL data bus terminating resistors are strongly suggested to eliminate the possibility of reflection errors due to varying cable lengths. Every device; keypad, expander, etc. and the control has a built-in bus terminating resistor (120 Ohm) which can be activated via a 2 pin jumper (2 Gold Pins). Two black shorting caps are included in the hardware pack. When one of the shorting caps is placed on the two gold pins, it activates the 120 Ohm terminating resistor across Data Lines A & B. Terminating resistors are marked JP2 on the keypads and JP1 on the expanders. From the factory, no terminating resistors are installed (activated).

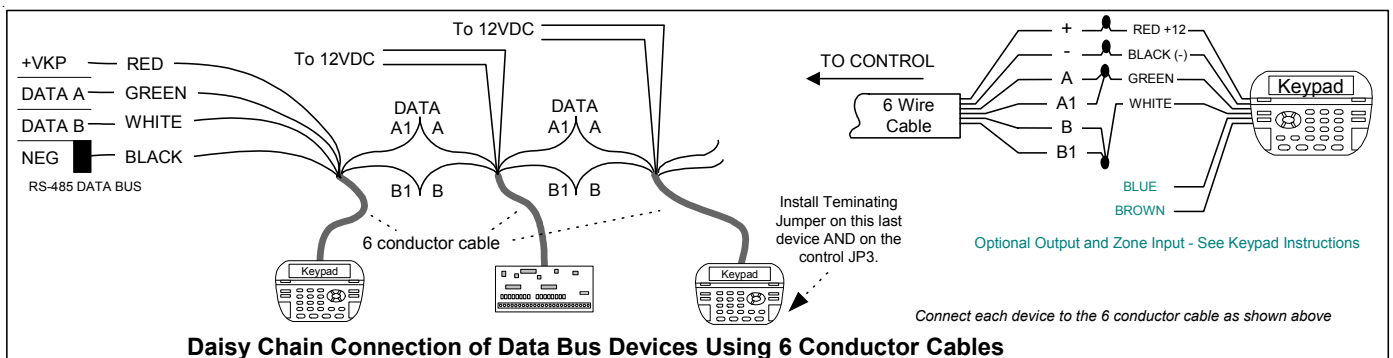
**WARNING! The RS-485 Data Bus must NEVER have more than 2 terminating resistors header/jumpers installed.**



The M1 should have no more than 2 home run cables but devices can be daisy chained along each. The last device on each home run SHOULD be terminated via the gold 2 pin terminating header/jumper. Placing a shorting cap on the pins will engage a 120 Ohm resistor across data lines A & B. If there is only 1 data bus home run cable then place shorting cap on JP3 of Main Board. See other hookups below.



The optional ELK-M1DBH † Data Bus Hub is suggested if the job must have more than 2 home runs. The M1DBH accepts CAT5 or CAT6 cable with RJ45 plugs. It keeps wires more organized while also providing easy bus termination. Essentially, the M1DBH circuit board daisy chains the devices by series connecting the DATA lines A & B. An plug-in RJ45 terminator is supplied for use in the first unused jack.



Another option for wiring multiple home runs is with 6 conductor cable. This allows devices to be daisy chained by making an in and out connection, basically a 3 way splice of the data A (Green) wire to 2 wires of the 6 conductor cable (designated A and A1). Do the same for the data B (White) wire. At the control splice the A1 and B1 wires to the A and B wires going to the next device. Terminate the last wired device and the control JP3 ONLY! The data wires will be in series, but the POS (+) and Neg (-) power wires should be parallel wired to the +VKP and Neg terminals or to an auxiliary Power Supply if the combined current draw exceeds the rated current available from the Control.

## 1st Generation Leviton Vizia rf (Z-Wave) Lights & Thermostats Only

This firmware supports the Leviton Vizia rf VRCOP (RS-232 Interface), which provides functional support for ZWave 2-Way Lighting and ZWave Thermostats ONLY. A Leviton VRCOP (RS-232 Serial Interface) and ElkM1XSP are required.

This is the first version of firmware released to support Leviton Vizia rf [ZWave].

### Components required:

- An ELK-M1 or ELK-M1EZ8 Controller.
- One (1) ELK-M1XSP Serial Port Expander. **Requires firmware version 20.0.4 to support Leviton Vizia rf (Z-Wave)**
- Leviton VRC0P RS232 Interface
- One or more Z-Wave Lighting devices and/or Thermostats.

### Setting up the M1XSP and the M1 to communicate with the Leviton VRC0P

1. Install the ELK-M1XSP and set its data bus address per instructions on page 2.
2. The MODE and BAUD Jumpers (S1 thru S7) on the M1XSP DO NOT require any special setting for this special firmware. However, Jumper S8 can be used to select whether or not a "request node status" (Poll) command is sent by the M1XSP. Set Jumper S8 to "0" if you want a request node status command to be sent whenever a "Hail" command is detected on the Z-Wave network. THIS WILL CREATE ADDITIONAL Z-WAVE TRAFFIC which could result in devices slowdown. Set Jumper S8 to "1" if you do not want to send the request node status. This is the recommended setting.
3. Set Jumper JP3 to the "232" position. If there is a shorting Jumper plug on JP5 then remove it and discard.
4. Connect the 9-pin serial cable between the M1XSP and serial connector on the Leviton VRC0P RS232 Interface.
5. Power up all the devices and enroll the M1XSP into the M1. VERY IMPORTANT!
6. Update the firmware in the M1XSP to version 20.0.4 (or the latest 20.x.x version). This can be downloaded from the Elk website.

### Leviton Vizia rf (Z-Wave) Configuration:

7. Physically install the ZWave nodes and program them into the network. This will require:
  - a. Handheld Primary Remote Controller Leviton model # VRCPG or equivalent.
  - b. Plug-In Serial Interface Module Leviton model # VRCOP.
8. Follow the steps listed in the VRCPG Remote's User Guide to create your ZWave Network (include devices).
9. Follow the steps listed in the VRCOP Serial Interface Installation Instructions.  
It is very IMPORTANT to implement each step in the VRCPG Remote consisting of:
  - a. Include Modules
  - b. Update Controller(s)
  - c. RS-232 Setup (this may show up as HAI SETUP in some older remotes)

For helpful information about the Vizia rf configuration use the following link to the Leviton web site:

[http://www.leviton.com/OA\\_HTML/ibeCCTpSctDspRte.jsp?section=25545&minisite=10024](http://www.leviton.com/OA_HTML/ibeCCTpSctDspRte.jsp?section=25545&minisite=10024)

10. Use the ELK-RP Software to program the M1 Lighting device attributes. Only the specific devices to be used for the Vizia rf (ZWave) Network need to be programmed.

M1 Lighting Devices Mapped to 1 <sup>st</sup> Generation Leviton Vizia rf (Z-Wave)											
ELK Light Device #	PLC (X-10) Ref.	Z-Wave Node	ELK Light Device #	PLC (X-10) Ref.	Z-Wave Node	ELK Light Device #	PLC (X-10) Ref.	Z-Wave Group	ELK Light Device #	PLC (X-10) Ref.	Z-Wave Group
1	A01	Device 1	65	E01	Device 65	129	I01	Group 1	193	M01	Group 65
2	A02	Device 2	66	E02	Device 66	130	I02	Group 2	194	M02	Group 66
3	A03	Device 3	67	E03	Device 67	131	I03	Group 3	195	M03	Group 67
4	A04	Device 4	68	E04	Device 68	132	I04	Group 4	196	M04	Group 68
5	A05	Device 5	69	E05	Device 69	133	I05	Group 5	197	M05	Group 69
6	A06	Device 6	70	E06	Device 70	134	I06	Group 6	198	M06	Group 70
7	A07	Device 7	71	E07	Device 71	135	I07	Group 7	199	M07	Group 71
8	A08	Device 8	72	E08	Device 72	136	I08	Group 8	200	M08	Group 72
9	A09	Device 9	73	E09	Device 73	137	I09	Group 9	201	M09	Group 73
10	A10	Device 10	74	E10	Device 74	138	I10	Group 10	202	M10	Group 74
11	A11	Device 11	75	E11	Device 75	139	I11	Group 11	203	M11	Group 75
12	A12	Device 12	76	E12	Device 76	140	I12	Group 12	204	M12	Group 76
13	A13	Device 13	77	E13	Device 77	141	I13	Group 13	205	M13	Group 77
14	A14	Device 14	78	E14	Device 78	142	I14	Group 14	206	M14	Group 78
15	A15	Device 15	79	E15	Device 79	143	I15	Group 15	207	M15	Group 79
16	A16	Device 16	80	E16	Device 80	144	I16	Group 16	208	M16	Group 80
17	B01	Device 17	81	F01	Device 81	145	J01	Group 17	209	N01	Group 81
18	B02	Device 18	82	F02	Device 82	146	J02	Group 18	210	N02	Group 82
19	B03	Device 19	83	F03	Device 83	147	J03	Group 19	211	N03	Group 83
20	B04	Device 20	84	F04	Device 84	148	J04	Group 20	212	N04	Group 84
21	B05	Device 21	85	F05	Device 85	149	J05	Group 21	213	N05	Group 85
22	B06	Device 22	86	F06	Device 86	150	J06	Group 22	214	N06	Group 86
23	B07	Device 23	87	F07	Device 87	151	J07	Group 23	215	N07	Group 87
24	B08	Device 24	88	F08	Device 88	152	J08	Group 24	216	N08	Group 88
25	B09	Device 25	89	F09	Device 89	153	J09	Group 25	217	N09	Group 89
26	B10	Device 26	90	F10	Device 90	154	J10	Group 26	218	N10	Group 90
27	B11	Device 27	91	F11	Device 91	155	J11	Group 27	219	N11	Group 91
28	B12	Device 28	92	F12	Device 92	156	J12	Group 28	220	N12	Group 92
29	B13	Device 29	93	F13	Device 93	157	J13	Group 29	221	N13	Group 93
30	B14	Device 30	94	F14	Device 94	158	J14	Group 30	222	N14	Group 94
31	B15	Device 31	95	F15	Device 95	159	J15	Group 31	223	N15	Group 95
32	B16	Device 32	96	F16	Device 96	160	J16	Group 32	224	N16	Group 96
33	C01	Device 33	97	G01	Device 97	161	K01	Group 33	225	O01	Group 97
34	C02	Device 34	98	G02	Device 98	162	K02	Group 34	226	O02	Group 98
35	C03	Device 35	99	G03	Device 99	163	K03	Group 35	227	O03	Group 99
36	C04	Device 36	100	G04	Device 100	164	K04	Group 36	228	O04	Group 100
37	C05	Device 37	101	G05	Device 101	165	K05	Group 37	229	O05	Group 101
38	C06	Device 38	102	G06	Device 102	166	K06	Group 38	230	O06	Group 102
39	C07	Device 39	103	G07	Device 103	167	K07	Group 39	231	O07	Group 103
40	C08	Device 30	104	G08	Device 104	168	K08	Group 40	232	O08	Group 104
41	C09	Device 31	105	G09	Device 105	169	K09	Group 41	233	O09	Group 105
42	C10	Device 32	106	G10	Device 106	170	K10	Group 42	234	O10	Group 106
43	C11	Device 33	107	G11	Device 107	171	K11	Group 43	235	O11	Group 107
44	C12	Device 34	108	G12	Device 108	172	K12	Group 44	236	O12	Group 108
45	C13	Device 35	109	G13	Device 109	173	K13	Group 45	237	O13	Group 109
46	C14	Device 36	110	G14	Device 110	174	K14	Group 46	238	O14	Group 110
47	C15	Device 37	111	G15	Device 111	175	K15	Group 47	239	O15	Group 111
48	C16	Device 38	112	G16	Device 112	176	K16	Group 48	240	O16	Group 112
49	D01	Device 39	113	H01	Device 113	177	L01	Group 49	241	P01	Group 113
50	D02	Device 40	114	H02	Device 114	178	L02	Group 50	242	P02	Group 114
51	D03	Device 41	115	H03	Device 115	179	L03	Group 51	243	P03	Group 115
52	D04	Device 42	116	H04	Device 116	180	L04	Group 52	244	P04	Group 116
53	D05	Device 43	117	H05	Device 117	181	L05	Group 53	245	P05	Group 117
54	D06	Device 44	118	H06	Device 118	182	L06	Group 54	246	P06	Group 118
55	D07	Device 45	119	H07	Device 119	183	L07	Group 55	247	P07	Group 119
56	D08	Device 46	120	H08	Device 120	184	L08	Group 56	248	P08	Group 120
57	D09	Device 47	121	H09	Device 121	185	L09	Group 57	249	P09	Group 121
58	D10	Device 48	122	H10	Device 122	186	L10	Group 58	250	P10	Group 122
59	D11	Device 49	123	H11	Device 123	187	L11	Group 59	251	P11	Group 123
60	D12	Device 50	124	H12	Device 124	188	L12	Group 60	252	P12	Group 124
61	D13	Device 51	125	H13	Device 125	189	L13	Group 61	253	P13	Group 125
62	D14	Device 52	126	H14	Device 126	190	L14	Group 62	254	P14	Group 126
63	D15	Device 53	127	H15	Device 127	191	L15	Group 63	255	P15	Group 127
64	D16	Device 54	128	H16	Device 128	192	L16	Group 64	256	P16	Group 128

The PLC column is for reference only.

Notes:

- The Zwave individual Devices/Nodes map to the ELK-M1 Lighting Device as numbers 001 to 128.
- The ZWave groups map to ELK-M1 Lighting Device numbers 129 to 256.
- If interfacing with ZWave Thermostats, each stat must be given a name in the ELK-RP "Thermostats" page. Thermostat # 1 is associated with the first stat listed in the list of Zwave devices/nodes.
- Upon power-up the M1XSP will instruct the VRC0P Serial Interface to broadcast the "Find" command. The VRC0P will notify the M1XSP of all devices that responded. This may take a few minutes and depends on the number of devices that are in the network.
- If ZWave thermostats exist on the network, they will be polled in a round-robin fashion for the current temperature, setpoints, mode, and fan settings (note: not all stats support all functions).
- If the RS-232 SETUP procedure was performed correctly in the VRC0P Handheld Remote, the lighting status updates should be reported by the VRC0P to the M1XSP whenever a switch is manually operated.
- There is a helpful third party software program titled LumenLink available from the following website: <http://johnnynine.com/wiki/LumenLink.ashx>. Among other features, this software can be used to define lighting groups for use by the VRC0P Serial Interface, and to export a file containing the node and group information of the network. This file can then be imported into ELK-RP's Lighting setup. For detailed instructions visit the website.

## Updating/Replacing Firmware in the ELK-M1XSP

The M1XSP stores its operating firmware 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 website found at [www.elkproducts.com](http://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:

1. Physically connect the Computer and Control using either the RS-232 Serial Port 0 or the M1XEP Ethernet Interface.
2. Open ElkRP and the account belonging to the control. Click on the Connection menu icon and establish a connection. Use either the **Direct using Com\_ OR Network** options.
3. On the Send/Rcv menu icon there is a selection that allows the firmware to be updated.
4. Select the device to be updated. In this case it is a Serial Expander. Select the update firmware option.
5. Display will show: Device name, current Firmware, Hardware, and Bootware version, and a pull down window for selecting the update firmware. NOTE: All update (.bin) files downloaded or received should be stored in a directory on your computer. Refer to the Options tab under the Setup menu in RP. It will indicate what directory is used for the update files.
6. Click on the check box for "Update". If "Reprogram" or "Rollback" is displayed the firmware file is the same as OR older than 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.

## Firmware Release Notes

**Version 20.0.4 released October 27th, 2008.**

This is the first version of firmware released to support Leviton Vizia rf [rZWave].

An ELK-M1XSP equipped with this firmware will provide support for Z-Wave Lights and Thermostats ONLY. Locks are not supported! A Leviton VRC0P RS232 Serial Interface is also required.