

# ELK-M1XSP Serial Port Expander

## Supplementary Instructions & Release Notes for Firmware Version 30.X.X

This version provides M1 Integration to:  
**Centralite JetStream Lighting**

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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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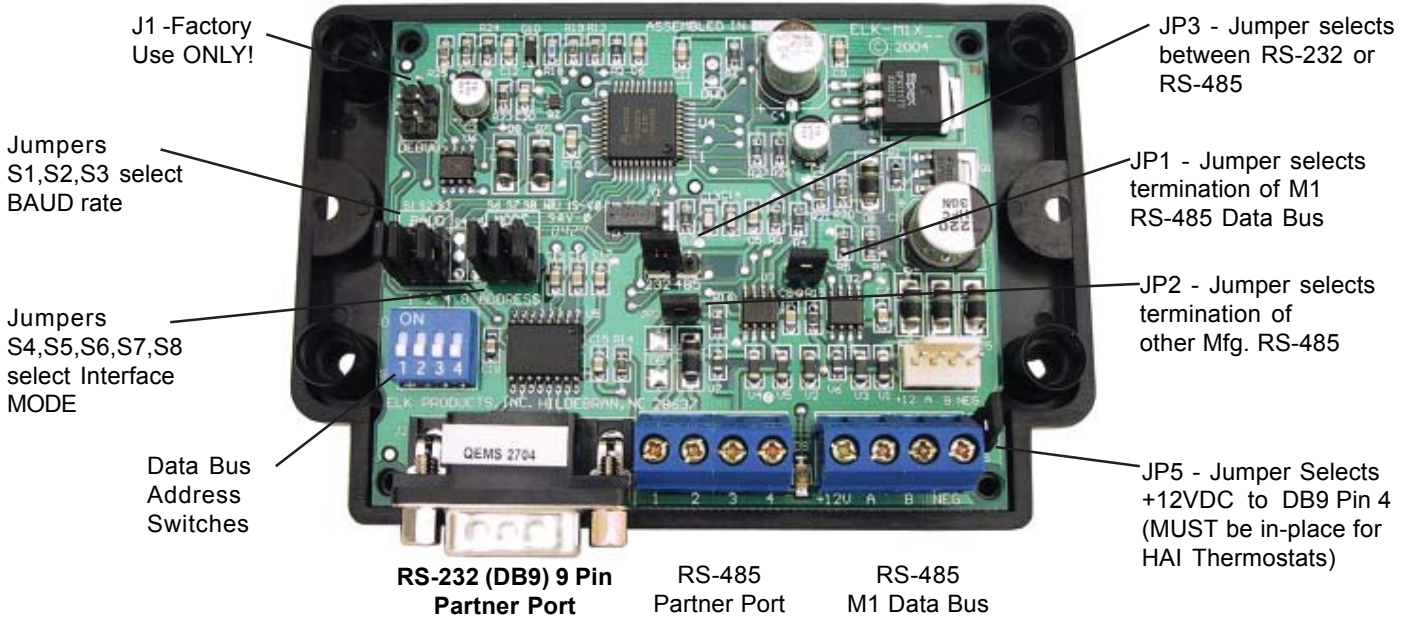


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2/8/2012

# 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				
<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><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>				

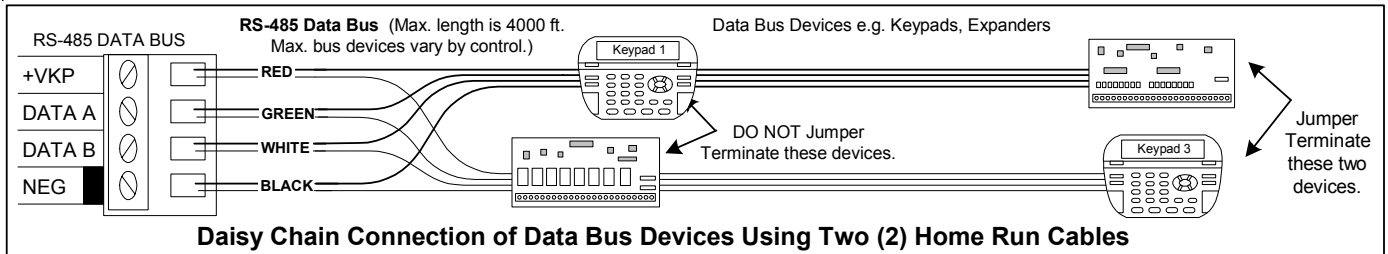
5. Set the "Mode", "Baud", and other necessary jumpers according to the Installation diagrams on previous pages.
6. After all connections are complete, turn On the M1 Master Power Switch.
7. Enroll the M1XSP into the M1 Control. From the Keypad access the Installer level programming and select Menu 01-Bus 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

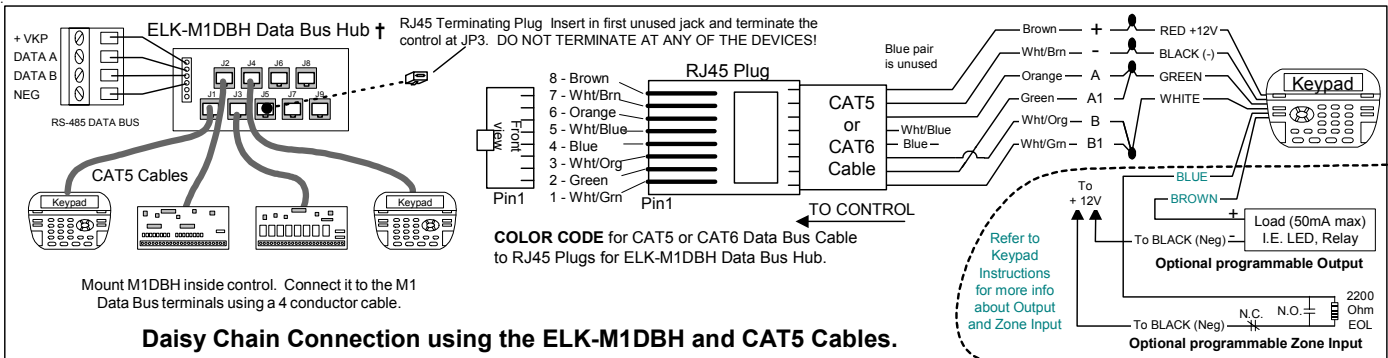
## VERY IMPORTANT!

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).

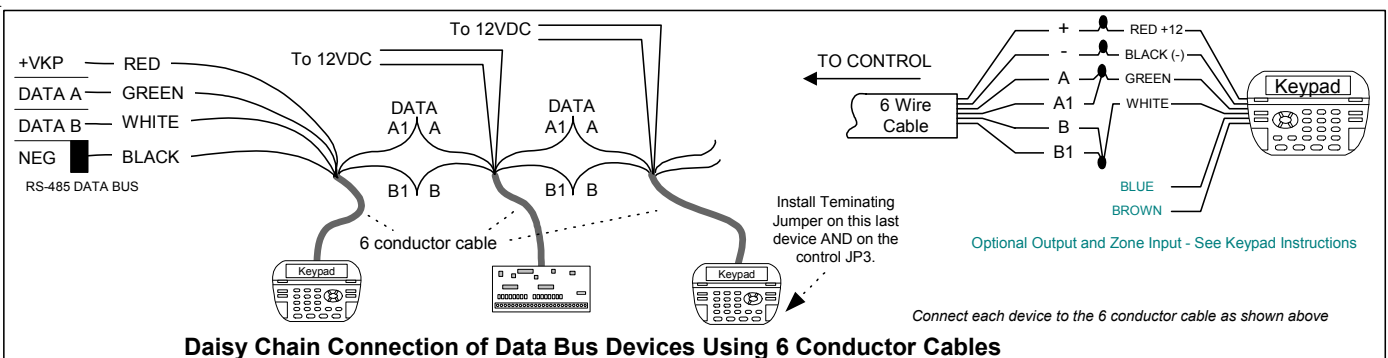
**WARNING! The RS-485 Data Bus must NEVER have more than 2 terminating resistors header/jumpers installed.**



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 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.

## Centralite JetStream

**JetStream** - A wireless lighting control system that utilizes the Zigbee communications protocol. For integration with an ELK-M1 and ELK-M1XSP a special JetStream RS232 Bridge is required. This bridge wirelessly communicates with the JetStream switches installed around the building and provides an RS232 integration protocol for the M1XSP. Up to 96 individual light devices (loads) and up to 64 lighting scenes can be controlled.

### Integration:

Integration with all Centralite Lighting products is accomplished by "mapping" the Centralite loads to M1 Lighting devices. For example: Centralite individual load 1 is mapped to M1 Lighting devices 1. Scenes start at M1 Lighting device 193 and go up. E.G. Scene 1 is mapped as M1 Lighting device 193. The chart shows the M1 Lighting devices and their corresponding Centralite Load/Scenes.

### Components required:

- An ELK-M1 or ELK-M1EZ8 Controller.
- One (1) ELK-M1XSP Serial Port Expander. **The M1XSP requires firmware version 30.x.x to support JetStream.**
- Centralite JetStream PC Programming Software
- Centralite JetStream USB Interface Stick
- Centralite JetStream RS232 to Zigbee Bridge.
- One or more Centralite JetStream lighting devices and/or switches.

### Setting up the M1XSP and the M1 to communicate with JetStream

1. Install the ELK-M1XSP and set its data bus address per instructions on page 2.
2. The MODE and BAUD Jumpers on the M1XSP DO NOT require any special setting for JetStream.
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 JetStream RS232 Bridge.
5. Power up all the devices and enroll the M1XSP into the M1. VERY IMPORTANT!
6. Update the firmware in the M1XSP to version 30.0.8 (or the latest 30.x.x version). This can be downloaded from the Elk website.
7. Using the ELK-RP Software program the M1 Lighting device attributes.

### Centralite JetStream Configuration:

8. Install all of the JetStream lighting devices into a "network" and program their operation using the JetStream PC Programming Software and USB interface stick. Refer to the User or Programming guide that came with the JetStream system.
9. Add the JetStream RS232 Bridge to the network. Refer to the Programming Guide sections titled: "Bringing the RS-232 Bridge into the Network", "Configuring the RS-232 Bridge for Your Area", and "Third Party Control". Make sure the baud rate of the RS232 bridge is set for 19200.
10. In order to get unsolicited status updates of devices from the JetStream RS-232 Bridge it must be setup and programmed using the following steps:
  - a. Select the RS-232 Bridge in the Device List on the left hand side of the JetStream Software.
  - b. Place a check mark in the box labeled "Update Third Party."
  - c. Step b will cause an option labeled "Send T-Party" to now be available on the setup page of each device. Place a check mark in the "Send T-Party" box for each device from which unsolicited status reporting is desired.
11. Along the bottom of the device display screen there will be options for "Send Device" or "Send All". Be sure to click these options so that all devices will be updated with the latest changes. THIS IS VERY IMPORTANT!

M1 Lighting Devices Mapped to Centralite											
ELK Light Device #	PLC (X-10) Ref.	Centralite	ELK Light Device #	PLC (X-10) Ref.	Centralite	ELK Light Device #	PLC (X-10) Ref.	Centralite	ELK Light Device #	PLC (X-10) Ref.	Centralite
1	A01	Load 1	65	E01	Load 65	129	I01	Load 129	193	M01	Scene 01 All On
2	A02	Load 2	66	E02	Load 66	130	I02	Load 130	194	M02	Scene 02 All Off
3	A03	Load 3	67	E03	Load 67	131	I03	Load 131	195	M03	Scene 03 Vacation
4	A04	Load 4	68	E04	Load 68	132	I04	Load 132	196	M04	Scene 04 Alarm Flash
5	A05	Load 5	69	E05	Load 69	133	I05	Load 133	197	M05	Scene 05 Pwr-up Override
6	A06	Load 6	70	E06	Load 70	134	I06	Load 134	198	M06	Scene 06
7	A07	Load 7	71	E07	Load 71	135	I07	Load 135	199	M07	Scene 07
8	A08	Load 8	72	E08	Load 72	136	I08	Load 136	200	M08	Scene 08
9	A09	Load 9	73	E09	Load 73	137	I09	Load 137	201	M09	Scene 09
10	A10	Load 10	74	E10	Load 74	138	I10	Load 138	202	M10	Scene 10
11	A11	Load 11	75	E11	Load 75	139	I11	Load 139	203	M11	Scene 11
12	A12	Load 12	76	E12	Load 76	140	I12	Load 140	204	M12	Scene 12
13	A13	Load 13	77	E13	Load 77	141	I13	Load 141	205	M13	Scene 13
14	A14	Load 14	78	E14	Load 78	142	I14	Load 142	206	M14	Scene 14
15	A15	Load 15	79	E15	Load 79	143	I15	Load 143	207	M15	Scene 15
16	A16	Load 16	80	E16	Load 80	144	I16	Load 144	208	M16	Scene 16
17	B01	Load 17	81	F01	Load 81	145	J01	Load 145	209	N01	Scene 17
18	B02	Load 18	82	F02	Load 82	146	J02	Load 146	210	N02	Scene 18
19	B03	Load 19	83	F03	Load 83	147	J03	Load 147	211	N03	Scene 19
20	B04	Load 20	84	F04	Load 84	148	J04	Load 148	212	N04	Scene 20
21	B05	Load 21	85	F05	Load 85	149	J05	Load 149	213	N05	Scene 21
22	B06	Load 22	86	F06	Load 86	150	J06	Load 150	214	N06	Scene 22
23	B07	Load 23	87	F07	Load 87	151	J07	Load 151	215	N07	Scene 23
24	B08	Load 24	88	F08	Load 88	152	J08	Load 152	216	N08	Scene 24
25	B09	Load 25	89	F09	Load 89	153	J09	Load 153	217	N09	Scene 25
26	B10	Load 26	90	F10	Load 90	154	J10	Load 154	218	N10	Scene 26
27	B11	Load 27	91	F11	Load 91	155	J11	Load 155	219	N11	Scene 27
28	B12	Load 28	92	F12	Load 92	156	J12	Load 156	220	N12	Scene 28
29	B13	Load 29	93	F13	Load 93	157	J13	Load 157	221	N13	Scene 29
30	B14	Load 30	94	F14	Load 94	158	J14	Load 158	222	N14	Scene 30
31	B15	Load 31	95	F15	Load 95	159	J15	Load 159	223	N15	Scene 31
32	B16	Load 32	96	F16	Load 96	160	J16	Load 160	224	N16	Scene 32
33	C01	Load 33	97	G01	Load 97	161	K01	Load 161	225	O01	Scene 33
34	C02	Load 34	98	G02	Load 98	162	K02	Load 162	226	O02	Scene 34
35	C03	Load 35	99	G03	Load 99	163	K03	Load 163	227	O03	Scene 35
36	C04	Load 36	100	G04	Load 100	164	K04	Load 164	228	O04	Scene 36
37	C05	Load 37	101	G05	Load 101	165	K05	Load 165	229	O05	Scene 37
38	C06	Load 38	102	G06	Load 102	166	K06	Load 166	230	O06	Scene 38
39	C07	Load 39	103	G07	Load 103	167	K07	Load 167	231	O07	Scene 39
40	C08	Load 40	104	G08	Load 104	168	K08	Load 168	232	O08	Scene 40
41	C09	Load 41	105	G09	Load 105	169	K09	Load 169	233	O09	Scene 41
42	C10	Load 42	106	G10	Load 106	170	K10	Load 170	234	O10	Scene 42
43	C11	Load 43	107	G11	Load 107	171	K11	Load 171	235	O11	Scene 43
44	C12	Load 44	108	G12	Load 108	172	K12	Load 172	236	O12	Scene 44
45	C13	Load 45	109	G13	Load 109	173	K13	Load 173	237	O13	Scene 45
46	C14	Load 46	110	G14	Load 110	174	K14	Load 174	238	O14	Scene 46
47	C15	Load 47	111	G15	Load 111	175	K15	Load 175	239	O15	Scene 47
48	C16	Load 48	112	G16	Load 112	176	K16	Load 176	240	O16	Scene 48
49	D01	Load 49	113	H01	Load 113	177	L01	Load 177	241	P01	Scene 49
50	D02	Load 50	114	H02	Load 114	178	L02	Load 178	242	P02	Scene 50
51	D03	Load 51	115	H03	Load 115	179	L03	Load 179	243	P03	Scene 51
52	D04	Load 52	116	H04	Load 116	180	L04	Load 180	244	P04	Scene 52
53	D05	Load 53	117	H05	Load 117	181	L05	Load 181	245	P05	Scene 53
54	D06	Load 54	118	H06	Load 118	182	L06	Load 182	246	P06	Scene 54
55	D07	Load 55	119	H07	Load 119	183	L07	Load 183	247	P07	Scene 55
56	D08	Load 56	120	H08	Load 120	184	L08	Load 184	248	P08	Scene 56
57	D09	Load 57	121	H09	Load 121	185	L09	Load 185	249	P09	Scene 57
58	D10	Load 58	122	H10	Load 122	186	L10	Load 186	250	P10	Scene 58
59	D11	Load 59	123	H11	Load 123	187	L11	Load 187	251	P11	Scene 59
60	D12	Load 60	124	H12	Load 124	188	L12	Load 188	252	P12	Scene 60
61	D13	Load 61	125	H13	Load 125	189	L13	Load 189	253	P13	Scene 61
62	D14	Load 62	126	H14	Load 126	190	L14	Load 190	254	P14	Scene 62
63	D15	Load 63	127	H15	Load 127	191	L15	Load 191	255	P15	Scene 63
64	D16	Load 64	128	H16	Load 128	192	L16	Load 192	256	P16	Scene 64

The PLC column is for reference only.

**Examples and partial listing of Centralite Commands sent from the M1XSP:**

^Annn<cr>=Load ON

^Bnnn<cr>=Load Off

^Cnnn<cr>=Scene On

^Dnnn<cr>=Scene Off

^Ennnllrr<cr>=Load, Level, & Ramp Rate. "nnn" is the load/scene 001-256, "ll" is the dim Level 00-99, and "rr" is the ramp rate 00-31.

## Centralite LiteJet, Elegance, and StarLite

This document covers the integration of Centralite JetStream Lighting with the ELK-M1 and M1XSP using Firmware Ver. 30.x.x. This page was added primarily for the convenience of someone wishing to integrate with one of the other Centralite lighting products. I.E. LiteJet, Elegance, or StarLite. These products can be integrated with the factory supplied M1XSP Firmware 1.0.48 (or later).

In addition to the JetStream lighting product Centralite produces several other lighting product families. These products can be interfaced with the ELK-M1 and ELK-M1XSP using the factory supplied firmware version 1.0.48 or later.

**Elegance and LiteJet** - Both of these are lighting control products employ high voltage dimmers and relays located at a central enclosure (head-end). High Voltage wired outputs from this enclosure are connected directly to the lighting fixtures themselves. The customer interface consists of low-voltage pushbutton wallplates and CAT5 wiring connected back to a Main Processor Board (MCP) in the central enclosure. The MCP provides a RS232 serial port to which the ELK-M1XSP is connected. Depending on the particular Centralite model, the M1XSP can support up to 192 individual light devices (loads) and up to 64 lighting scenes. **The M1XSP uses the factory supplied firmware version 1.0.48 or later to support Elegance and LiteJet.**

**StarLite** - An earlier version of a wireless lighting product that employs a hybrid Zigbee protocol. It consists of a Main Central Processor (MCP) base station around which all the devices are wirelessly enrolled in a "Star" configuration. In other words, all devices wirelessly communicate directly back to the MCP. The ELK-M1XSP interfaces to the MCP in RS232 format. **The M1XSP uses the factory supplied firmware version 1.0.48 or later to support StarLite. NOTE: DIP switch #7 on the StarLite MCP must be set to ON so that StarLite will know to emulate the LiteJet protocol.**

### Components required:

- An ELK-M1 or ELK-M1EZ8 Controller.
- One (1) ELK-M1XSP Serial Port Expander. **Factory supplied firmware version 1.0.48 or later.**
- Centralite LiteJet or Elegance with MCP processor board, or Starlite with MCP base unit.
- One or more compatible Centralite lighting devices and/or switches.

### Setting up the M1XSP and the M1 to communicate with Elegance, LiteJet, or Starlite

1. Install the ELK-M1XSP and set its data bus address per instructions on page 2.
2. Set the M1XSP **MODE** Jumpers to: **S4=1, S5=1, S6=1, S7=1, S8=0** NOTE: Some units do not have a jumper S4.
3. Set the M1XSP **BAUD** Jumpers to: **S1=0, S2=1, S3=1** (19,200 Baud)
4. Set the M1XSP Jumper JP3 to the "232" position. If there is a shorting Jumper plug on JP5 then remove it and discard.
5. Connect the 9-pin serial cable between the M1XSP and serial connector on the Elegance, LiteJet, or StarLite MCP. On some of these devices the connector will be marked "RS232-2".
6. Power up all the devices and enroll the M1XSP into the M1. VERY IMPORTANT!
7. Program the M1 Lighting device attributes utilizing the ElkRP software. Only the specific devices to be used for Centralite need to be programmed. For individual addresses program M1 Lighting devices: **1-192 "Format=Serial Expander" and "Type= Dimmer" (Type may also be programmed as "On/Off Switch" if the device isn't dimmable)**. For the scene addresses program M1 Lighting devices: **193-256 as "Format= Serial Expander", "Type=On/Off Switch"**.

### Load Status and/or Limitations with Elegance, LiteJet, and StarLite

- The wallplate "button press" feature with LiteJet & Elegance is not usable with M1. However, by assigning a button to a load (even a phantom or non-physical load) it may be possible to use the status change of that load as a trigger with M1.
- To receive load status changes from Centralite the **M1XSP MUST have firmware ver 1.0.14 or later** and the Centralite Main Processor **MCP MUST have firmware ver 5.5 or later**. And there is a status Dipswitch that must be set on the MCP.  
On the Elegance MCP Dipswitch #5 must be set to ON.  
On the LiteJet MCP Dipswitch #6 must be set to ON.

DO NOT program the Centralite software option to "send changes". Use ONLY the dipswitches to control this feature.

**NOTE: Version 5.5 or later of the Centralite MCP firmware places a 1 second delay between each load change transmission. The result is that multiple load changes can and will take several seconds to reach the M1. Depending on the number of lighting loads an ALL ON command could take well over a minute for all loads to report in.**

- Please note that under certain conditions it may not be possible to obtain instantaneous lighting status updates.

## 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 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.

## Firmware Release Notes

### Version 30.0.12 released Sept 19, 2011

#### Changes effective with this firmware release:

1. Made a change to ignore the device reply from the RS-232 Bridge after a command from the M1XSP has been sent. This reply was updating the M1's lighting status but also causing the associated light's timer value (if set) to clear.
2. Added the "K" command for LiteJet and Elegance systems.
3. Change made to ignore the Scene reply. Same reason as #1 above.

### Version 30.0.8 released Oct 27, 2008

**This was the initial version of firmware released to support Centralite JetStream:**