ELK-M1XSP

Lighting Interface, Thermostat Interface, and Serial Port Expander

This manual details the applications & partners products supported by the standard factory shipped firmware. Other special firmware versions are available via download. See page 2.

INSTALLATION MANUAL

IMPORTANT NOTICE: Every effort has been made to assure the accuracy of the information contained in this document as of the date printed.

The extent of integration between Elk Products and other Partner Mfgs varies from product to product. Some integration is more powerful or feature rich than others. In some cases there are variables or limitations not within Elk's control which may render certain desirable features unavailable or unusable. Certain Partner Mfgs products and/or protocols, including Elk's may not contain the capabilities or data definitions to permit additional integration beyond what is currently available. In addition, Partner Mfgs may, at their option, add, modify, or discontinued features or support with little or no notification.

Drawings, illustrations, diagrams, part numbers, etc. contained and shown in this document are provided as reference only. All information is based on equipment available from or provided by the Partner Mfg. at the time the information was created. A Partner Mfg may in fact offer similar or alternative equipment in their line that Elk has not evaluated, and therefore Elk cannot guarantee operational compatibility.

For reasons stated herein, Elk Products makes no warranty that it will be able to integrate all available features or operations, nor does it make any express or implied warranties of fitness for a particular purpose or of merchantability. Refer to Elk's Limited Warranty.

Specifications are Subject to Change without notice.

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APPLICATION:

The **ELK-M1XSP** is a "3 in 1" product. It can be used for interfacing with Lighting Control Products, Thermostat (HVAC) Products, or to add a remote Serial Port for generaly purpose communications. Jumpers on the M1XSP select the appropriate application, connection, and protocol. The M1XSP operates from the 4-wire (RS-485) M1 Keypad data bus which allows RS-232 ports to be located long distances from the control. The M1G and M1EZ8 Controls will support up to 7 M1XSPs.

FEATURES:

- Adapts the M1 to Lighting Controls and Thermostats.
- Expands the M1 or M1EZ8 RS-232 Serial Ports
- Connect to and RS485 Keypad Data Bus
- Address Settings via DIP Switches
- Jumper Options and LED Diagnostic indicator
- On-Board EOL Bus Termination Jumper
- Flash Memory for Firmware Updating

SPECIFICATIONS:

- Maximum of Expandable Ports (Units): 7 with M1G or M1EZ8
- Operating Voltage: 12 Volts D.C.
- Current Draw: 31mA
- Housing Dimensions: 4.375" x 3.0" x 1.125"
- Circuit Board Dimensions: 3.5" x 2.75

M1XSP Special Firmware Versions vs. Factory Firmware

The M1XSP factory supplied Firmware 1.x.x supports numerous partner manufacturer products. This manual only contains installation and setup details for the partner products supported by the factory supplied firmware.

1.x.x Factory supplied Firmware: **Aprilaire,RCS,OnQ-ALC,UPB,Centralite,EDT,Dynalite,W800RF32,LutronRA ****

To support additional partner products the M1XSP can be flash programmed in the field with special firmware versions. These special firmware versions must be downloaded from the ELK Products Website: **www.elkproducts.com** Release notes are also available for each firmware version to help with installation and setup. Below is a listing of special firmware versions currently available.

10.x.x Special Firmware for: **Uplink "AnyNet" and AES Intellinet Radio.** (Download from Elk Website)
20.x.x Special Firmware for: **1st Generation Vizia RF ZWave interface (No Locks)** (Download from Elk Website) ******
30.x.x Special Firmware for: **Centralite "JetStream" only.** (Download from Elk Website)
40.x.x Special Firmware for: **Carrier "Infinity" HVAC only.** (Download from Elk Website)
50.x.x Special Firmware for: **INSTEON "Lighting" only**. (Download from Elk Website)
60.x.x Special Firmware for: **Advantage Air HVAC only. {Australia}** (Download from Elk Website)
70.x.x Special Firmware for: **HAI OmniStat and OmniStat 2 Thermostats** (Download from Elk Website)
The 1st digit (1,25,50,etc) denotes the partner or volume identifier. The 2nd and 3rd digits are used for revision levels.

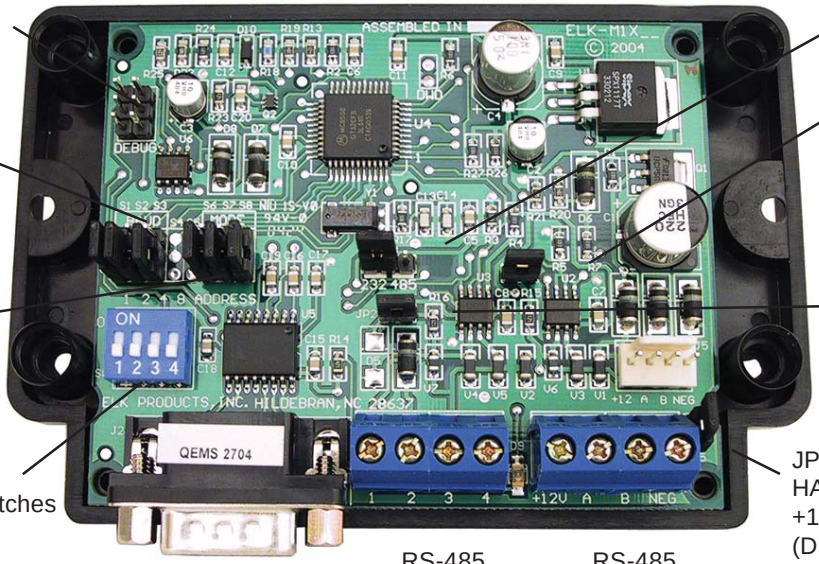
VERY IMPORTANT:

**** Interfacing with Lutron RadioRA2 requires a special product called the ELK-M1XSLU Interface. The ELK-M1XSP can only support the older Lutron RA products using the factory firmware.**

Interfacing with newer Z-Wave products, including locks, requires a special product called the ELK-M1XSLZW. This device works in conjunction with a Leviton Vizia RF+ VRCOP serial interface to control locks as well as lights. The ELK-M1XSP and its special 20.x.x firmware cannot support all the newer Z-Wave products.

M1XSP Installation and Setup

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

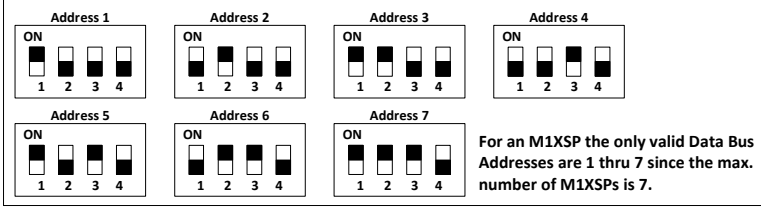


M1XSP Diagnostic LED indicator

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



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. Onceenrollment 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.

DATA BUS ENROLLMENT PERFORMED FROM A KEYPAD:

1. Press the ELK key, then 9 (or scroll up) to display 9 - Installation Programming. Press the RIGHT arrow key to select this menu. The Installer Program Code 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. After a few seconds the display will show 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 ▸

Steps 6 & 7 may be skipped when using the M1XSP as a Lighting or Themostat interface.

6. If the M1XSP is being used as a general purpose serial port expander then you will definetly need to set the BAUD Rate Jumpers to the desired speed. Refer to the jumper settings table on the back of this manual.

7. As a serial port expander, the M1XSP can be connected to a PC or other communication equipment using a standard 9 pin RS-232 serial cable. Distance for an RS-232 serial cable is 10 ft. nominal, 50 ft. maximum. Since the M1XSP operates on the M1's 4-wire Keypad Data Bus, it can be located a great distance from the M1 and thereby closer to the other equipment so that the RS-232 length limits are not such an issue.

8. Set the RS232 or RS485 communications format jumper (JP3) according to the equipment being interfaced. In most cases this jumper will be set to the "232" position. Refer to the jumper settings table on the back of this manual.

9. Refer to the equipment wiring diagrams on the following pages.

10. After all connections are complete, turn On the M1 Master Power Switch.

11. 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. Onceenrollment 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.

    NOTE: To replace a defective M1XSP set the new unit to the same address as the old unit and repeat the enrollment process. If a device is permanently removed from a system then perform the enrollment process after removal else a "missing" device trouble condition will appear.

Updating/Replacing Firmware in the ELK-M1XSP

The M1XSP "Flash" memory allows field updating without any need to change IC chips or return to the factory. As firmware updates become available, they are posted on the ELK Website: www.elkproducts.com. **NOTE: Firmware updating can only be done from ElkRP using a Direct to PC Com port connection or an optional Ethernet Network connection to the M1 Control. Dial-up connections over the telephone network 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.
3. Start ElkRP and open the account belonging to the control. Click on the Connection menu icon and establish a connection. Again, use the appropriate **Direct using Com**_ OR **Network** options.
4. On the Send/Rcv menu icon there is a selection that allows the firmware to be updated.
5. Select the device to be updated. In this case it is a Serial Expander. Select the update firmware option.
6. 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.
7. Click on the check box for “Update”. If “Reprogram” or “Rollback” is displayed the firmware file is the same as OR older that what is in the control. Reprogramming with the same firmware is a waste of time but was included for factory testing purposes. Rollback is not recommended except under the guidance of Elk Technical Support.

General Installation and Setup

M1XSP options are set by the placement of black shorting plugs on gold plated jumper pins. Some jumpers have 3 pins with a selection of "0" or "1", while others have only 2 pins with a selection of Off or On. Jumper options vary by Partner Manufacturer Product. Refer to detailed installation and hookup diagrams.

Partner Manufacturer Product	FIRMWARE VERSION	MODE Jumpers S4	S5	S6	S7	S8	BAUD Rate	Notes, Comments, Special Setup
Serial Port Exp.	Std. Factory 1.x.x	-	1	0	0	0	- Selectable -	Select BAUD Rate according to Partner Equip. required speed
RCS Thermostat	Std. Factory 1.x.x	-	1	0	0	1	9,600	Set Jumper JP3 to either 232 or 485 depending on RCS model
Aprilaire Thermostat	Std. Factory 1.x.x	-	1	0	1	1	9,600	
OnQ-ALC	Std. Factory 1.x.x	-	1	1	0	0	9,600	
UPB	Std. Factory 1.x.x	-	1	1	0	1	4,800	Jumper JP5 must to "ON"
Centralite LiteJet	Std. Factory 1.x.x	-	1	1	1	0	19,200	
Centralite Elegance	Std. Factory 1.x.x	-	1	1	1	0	19,200	
EDT - iLine	Std. Factory 1.x.x	-	1	1	1	1	9,600	Supported ONLY by firmware 1.0.26 or earlier
HPM (Australia)	Std. Factory 1.x.x	-	0	1	0	0	4,800	Used in Australia
Dynalite (Australia)	Std. Factory 1.x.x	-	0	1	0	1	9,600	Used in Australia – RS485, One (1) way communications, No Status
Lutron Radio RA	Std. Factory 1.x.x	-	0	1	1	0	9,600	Original RadioRA only. - For Lutron RadioRA2 use the ELK-M1XSLU
WGL W800RF32	Std. Factory 1.x.x	-	0	1	1	1	4,800	W800RF32 receives X10 RF devices
Uplink 2500/AnyNET	Req. Version 10.x.x	-	0	0	0	0	9,600	Download firmware and Release Notes/Instructions from Elk Website
Leviton Vizia rf Z-Wave 1st Gen. (No Locks)	Req. Version 20.x.x	-	-	-	-	-	N/A	Download firmware and Release Notes/Instructions from ELK Website. For Lock support use the newer ELK-M1XSLZW Interface
Centralite JetStream	Req. Version 30.x.x	-	1	1	1	0	19,200	Download firmware and Release Notes/Instructions from Elk Website
Carrier Infinity HVAC	Req. Version 40.x.x	-	1	1	1	1	38,400	Download firmware and Release Notes/Instructions from Elk Website
INSTEON	Req. Version 50.x.x	-	0	0	1	1		Download firmware and Release Notes/Instructions from Elk Website
Advantage Air (AUS)	Req. Version 60.x.x	-	1	0	0	0		Used in Australia - Contact Ness Products for additional details
HAI OmniStat Series1	Req. Version 70.x.x	-	1	0	1	0	300	Download firmware and Release Notes/Instructions from Elk Website
HAI OmniStat Series 2	Req. Version 70.x.x	-	1	0	1	0	2,400	Download firmware and Release Notes/Instructions from Elk Website

IMPORTANT! Several Partner interfaces require special firmware and Instructions which must be downloaded from the ELK Website: www.elkproducts.com This chart may not represent the most information regarding M1 Partners. Please refer to the website or contact your local Elk Representative for current information. Information subject to change without notice.

Jumper S4 is shown for reference only. Current M1XSPs do not have this jumper. The equivalent value of no jumper in S4 is a 1.
Jumper S5 may not be found on older M1XSP (very early production units).

BAUD Rate	Jumper Settings S1	S2	S3
110	0	0	0
300	1	0	0
1200	0	1	0
2400	1	1	0
4800	0	0	1
9600	1	0	1
19,200	0	1	1
38,400	1	1	1

Other Jumper Settings

Jumper JP1 – Engages a 120 Ohm resistor for terminating the M1 RS-485 Data Bus. See M1 Data bus wiring instructions before use.
Jumper JP2 - Engages a 120 Ohm resistor for terminating the 'Outbound' (External) RS-485 Data Bus if required by other manufacturer.
Jumper JP3 - Selects the format of the "Outbound" Partner connection Left = RS232, Right = RS485
Jumper JP4 - Not used
Jumper JP5 - Used to supply +12V to pin 4 (DTR) of the DB9 Female connector for certain modes. DO NOT LEAVE ON except where noted.

ELK-WO46A Cable Pin-out and Color Coding

DB9F female Connector	Wire Color
Pin 2 connects to	RED
Pin 3 connects to	GREEN
Pin 4 connects to	WHITE (alt. Yellow)
Pin 5 connects to	BLACK

Pins 1, 4, and 6 (DCD, DTR, and DSR) jump together.
Pins 7 & 8 (RTS and CTS) jump together.

Pin-out requirements for RS232 9 Pin Serial (DB9M male to DB9F female) Cable

The M1XSP requires only 3 wires to be connected:

Connector DB9M male	Wire Color	Connector DB9F female
Pin 2 connects to	N/A	Pin 2
Pin 3 connects to	N/A	Pin 3
Pin 5 connects to	N/A	Pin 5

THERMOSTAT COMPATIBILITY CHART

Brand & Model	Format	Baud Rate	Max. Units	Comments, Equipment Required, Firmware, etc.
RCS TR-16/TR40/TR60	RS-485	9600	16	1 M1XSP for all 16 Thermostats - Factory Firmware
RCS TR-16	RS-232	9600	7	RCS232 requires 1 M1XSP per Thermostat - Factory Firmware
Aprilaire 8870	RS-485	9600	16	1 M1XSP + 8811 Adapter + 8818 Dist. Panel - Factory Firmware
HAI RC Series	RS-232	300	16	1 M1XSP for every 4 thermostats **** - Special 70.x.x Firmware**
Carrier Infinity	RS-232	38,400	16	1 M1XSP for all thermostats - **Special 40.x.x Firmware**
Z-Wave TStats	Z-Wave		16	1 M1XSP + Leviton VRC0P Interface - Factory Firmware OR 1 **M1XSLZW Special Interface + Leviton VRC0P +3**
Lutron RadioRA2	RadioRA2	9,600	16	1 **M1XSLU Special Interface + Lutron Main Repeater**

**** With HAI Thermostats only M1 data bus addresses 1, 2, 3, or 4 are used. Data bus address 1 is used for Thermostats 1 thru 4, address 2 is used for Thermostats 5 to 8, address 3 for Thermostats 9 to 12, and address 4 is for Thermostats 13 to 16.**

Aprilaire 8870 & 8800 Thermostats

1. Install and wire the Aprilaire 8811 Protocol Adapter, 8818 Distribution Panel (optional), and the 8870 or 8800 Thermostat using instructions from Aprilaire.
2. Install the ELK-M1XSP per the instructions on page 3. Be sure to enroll the device into the M1.
3. Set the MODE jumpers S5=**1**, S6=**0**, S7=**1**, & S8=**1** for Aprilaire. If the M1XSP has a jumper S4, set it to =**1**. Set Jumper JP3 to the "**232**" position. The BAUD jumpers S1,S2, & S3 do not matter as the Aprilaire baud rate is preset internally.
4. Plug the Aprilaire supplied 6 ft RJ to DB9 Cable between the 8811 Protocol Adapter and the ELK-M1XSP. DO NOT USE THE ELK-WO37A CABLE.
5. Power up the Aprilaire Thermostat and Protocol Adapter.
6. Program the unit address and any other options in the Thermostat per its instructions. The unit address must match the Thermostat number in the M1 Control. The first Thermostat should be Address 1.
7. Using the ELK-RP Software, program the M1 using steps A,B, and C. Test and verify operation using steps D and E.

7a. Click on the Automation Tab in the ELK-RP software. Click on Thermostat icon and program a name for Thermostat 1.

7b. Click on the Task icon and program at least two tasks. Name the 1st Task "Economy Mode" and the 2nd "Comfort Mode".

7c. Click on the Rules icon and create the following 4 rules.

Whenever [Area Name] Armed State Becomes Armed Away
Then Activate [Economy Mode] (Task 1)

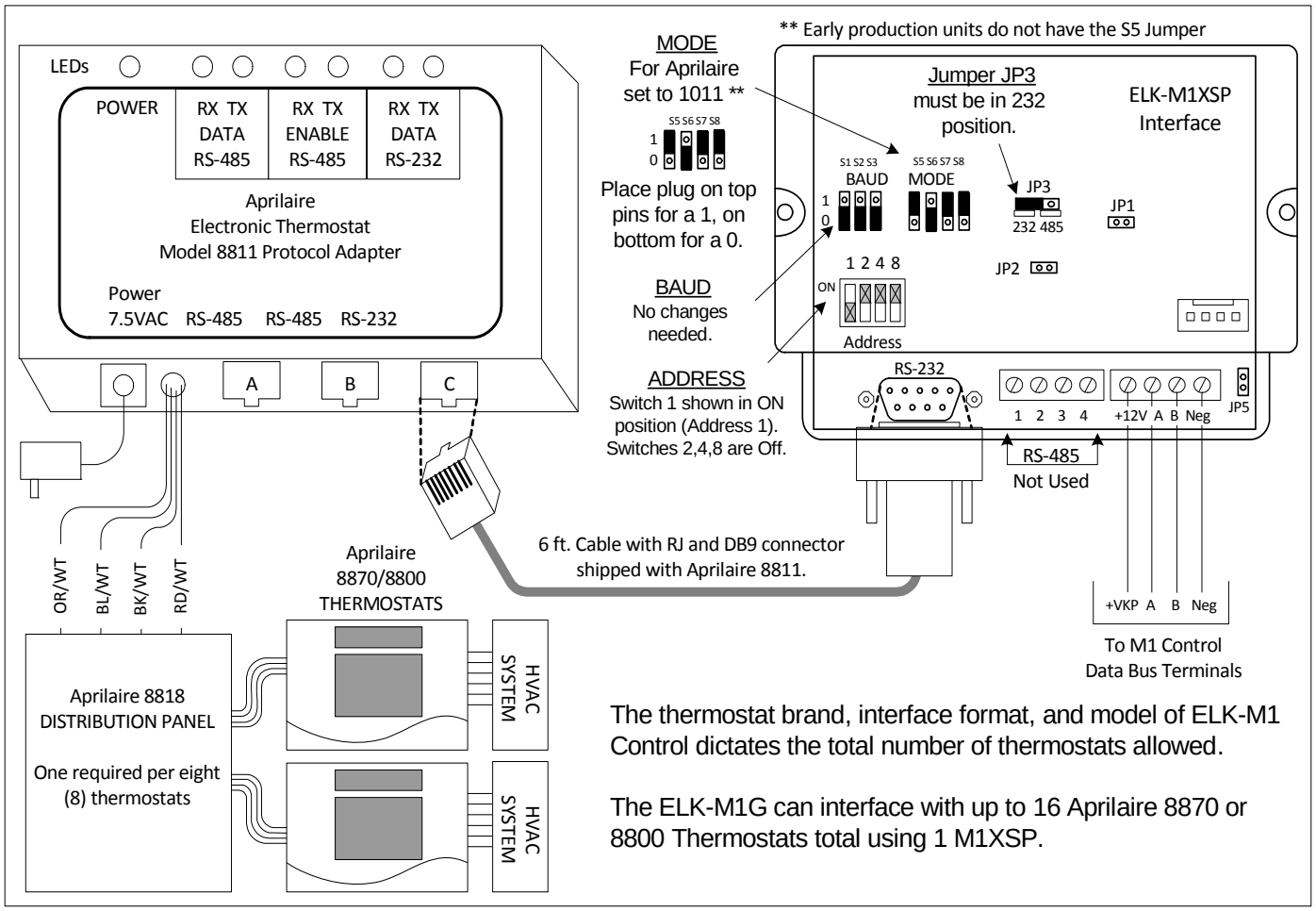
Whenever [Area] Armed State Becomes Disarmed
Then Activate [Comfort Mode] (Task 2)

Whenever [Task Name] (Task 1) Is Activated
Then Set [Thermostat 1] (TStat 1) Cooling Desired Temp to 85 degrees

Whenever [Task Name] (Task 2) Is Activated
Then Set [Thermostat 1] (TStat 1) Cooling Desired Temp to 70 degrees

7d. Use the M1 Keypad to verify the M1XSP & Thermostat operation. Press the ELK key followed by the Right arrow key to access Menu 1-View/Control Automation Fncts. Press 6 for the Thermostat Temperature sub-menu, followed by Right arrow key. The Keypad should display the first Thermostat (T01) along with its name and current temperature reading.

7e. Go into the Tasks sub-menu and select Economy Mode (Task 1). Press the # key to activate. When this task is activated the thermostat cooling setpoint should go to 85 degrees. Confirm this on the display.



RCS TR16 (RS-232 Format) Thermostat

1. Install, and wire the RCS Control Unit and Wall Display Unit to the HVAC system per the RCS instructions.
2. Install the ELK-M1XSP per the instructions on page 3. Be sure to enroll the device into the M1.
3. Set the MODE jumpers S5=**1**, S6=**0**, S7=**0**, & S8=**1** for RCS mode. If the M1XSP has jumper S4, set it to =**1**. Set Jumper JP3 to the "**232**" position. The BAUD jumpers S1,S2, & S3 do not matter as the RCS baud rate is preset internally.
4. Connect the Black, Red, and Green wires from the ELK-WO37A cable to the RS-232 terminals on the RCS Thermostat Control unit. The White (Yellow) wire is optional. It may be used to supply +12VDC from the M1XSP to the Thermostat in lieu of the HVAC power. Consult the RCS manual for details. Plug the other end of the ELK-WO37A cable into the 9 pin serial connector on the M1XSP.
5. Power up the RCS Thermostat Control Unit.
6. Program the Unit Address and any other options in the RCS Unit per its instructions. The unit address must match the Thermostat number in the M1 Control. The first Thermostat should be Address 1.
7. Using the ELK-RP Software, program the M1 using the following steps. Test and verify operation using steps d and e.

7a. Click on the Automation Tab in the ELK-RP software. Click on Thermostat icon and program a name for Thermostat 1.

7b. Click on the Task icon and program at least two tasks. Name the 1st Task "Economy Mode" and the 2nd "Comfort Mode".

7c. Click on the Rules icon and create the following 4 rules.

Whenever [Area Name] Armed State Becomes Armed Away
Then Activate [Economy Mode] (Task 1)

Whenever [Area] Armed State Becomes Disarmed
Then Activate [Comfort Mode] (Task 2)

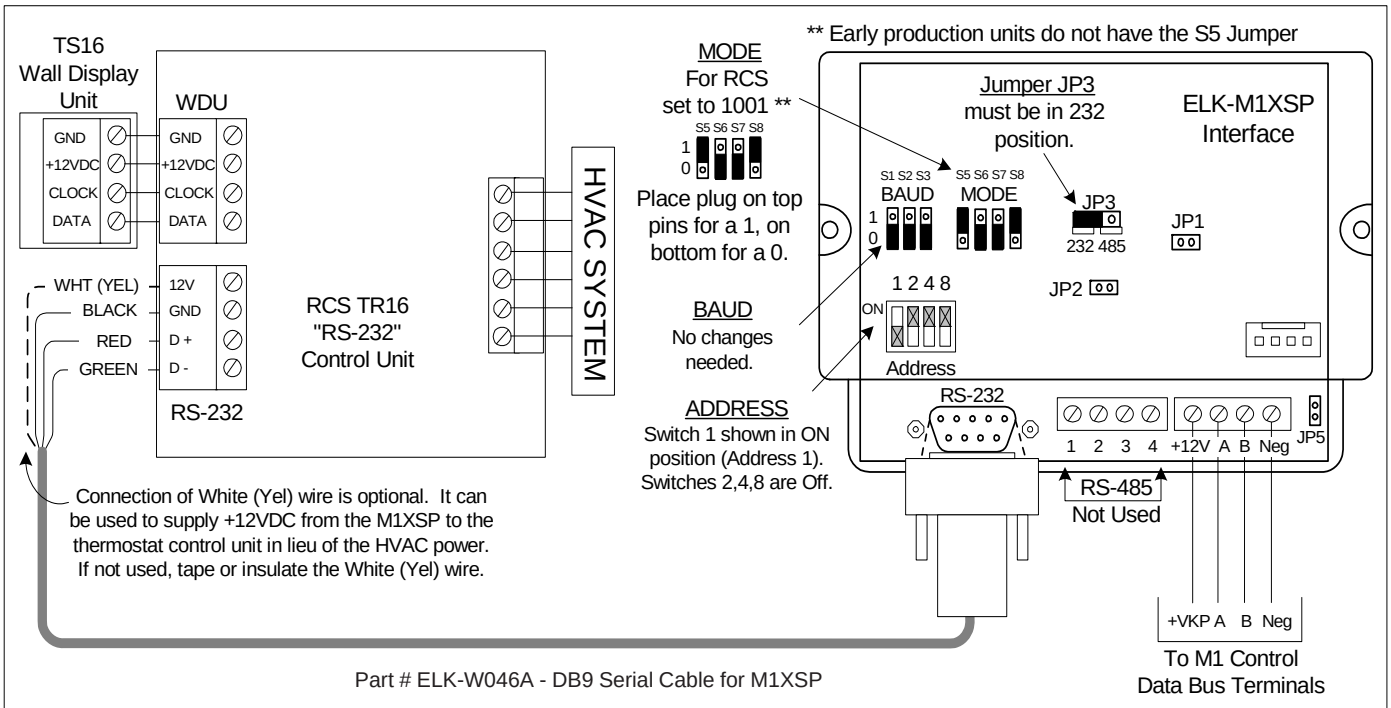
Whenever [Task Name] (Task 1) Is Activated
Then Set [Thermostat 1] (TStat 1) Cooling Desired Temp to 85 degrees

Whenever [Task Name] (Task 2) Is Activated
Then Set [Thermostat 1] (TStat 1) Cooling Desired Temp to 70 degrees

7d. Use the M1 Keypad to verify the M1XSP & Thermostat operation. Press the ELK key followed by the Right arrow key to access Menu 1-View/Control Automation Fncts. Press 6 for the Thermostat Temperature sub-menu, followed by Right arrow key. The Keypad should display the first Thermostat (T01) along with its name and current temperature reading.

7e. Go into the Tasks sub-menu and select Economy Mode (Task 1). Press the # key to activate. When this task is activated the thermostat cooling setpoint should go to 85 degrees. Confirm this on the Thermostat display.

<u>The RCS TR16 (RS-232 Format) is rare and is replaced by the TR16/TR40 (RS485 Format) models.</u>



Part # ELK-W046A - DB9 Serial Cable for M1XSP

Thermostat brand, interface format, and model of ELK-M1 Control dictates the total number of thermostats allowed.

The M1G supports 7 RCS-TR16 (RS-232 models). However, each thermostat requires a dedicated M1XSP.
NOTE: The ELK-M1G can support up to 16 of the RCS-TR16/TR40 (RS-485 models) using a single (1) M1XSP.
* The ELK-M1 (Std) can only support 2 RCS thermostats.

RCS TR16/TR40/TR60 (RS-485 Format) Thermostats

1. Install, and wire the RCS Control Unit and Wall Display Unit to the HVAC system per the RCS instructions.
2. Install the ELK-M1XSP per the instructions on page 3. Be sure to enroll the device into the M1.
3. Set the MODE jumpers S5=**1**, S6=**0**, S7=**0**, & S8=**1** for RCS mode. If the M1XSP has jumper S4, set it to =**1**. Set Jumper JP3 to the "**485**" position. The BAUD jumpers S1,S2, & S3 do not matter as the RCS baud rate is preset internally.
4. Using a 3 conductor cable and the diagram below, connect the GND, D+, and D- wires from the RS-485 terminals on the RCS Thermostat Control unit to the RS-485 terminals on the M1XSP. The supplied WO37A cable (RS-232) is not used.
5. Power up the RCS Thermostat Control Unit.
6. Program the Unit Address and any other options in the RCS Unit per its instructions. The unit address must match the Thermostat number in the M1 Control. The first Thermostat should be Address 1.
7. Using the ELK-RP Software, program the M1 using the following steps. Test and verify operation using steps d and e.

7a. Click on the Automation Tab in the ELK-RP software. Click on Thermostat icon and program a name for Thermostat 1.

7b. Click on the Task icon and program at least two tasks. Name the 1st Task "Economy Mode" and the 2nd "Comfort Mode".

7c. Click on the Rules icon and create the following 4 rules.

Whenever [Area Name] Armed State Becomes Armed Away
Then Activate [Economy Mode] (Task 1)

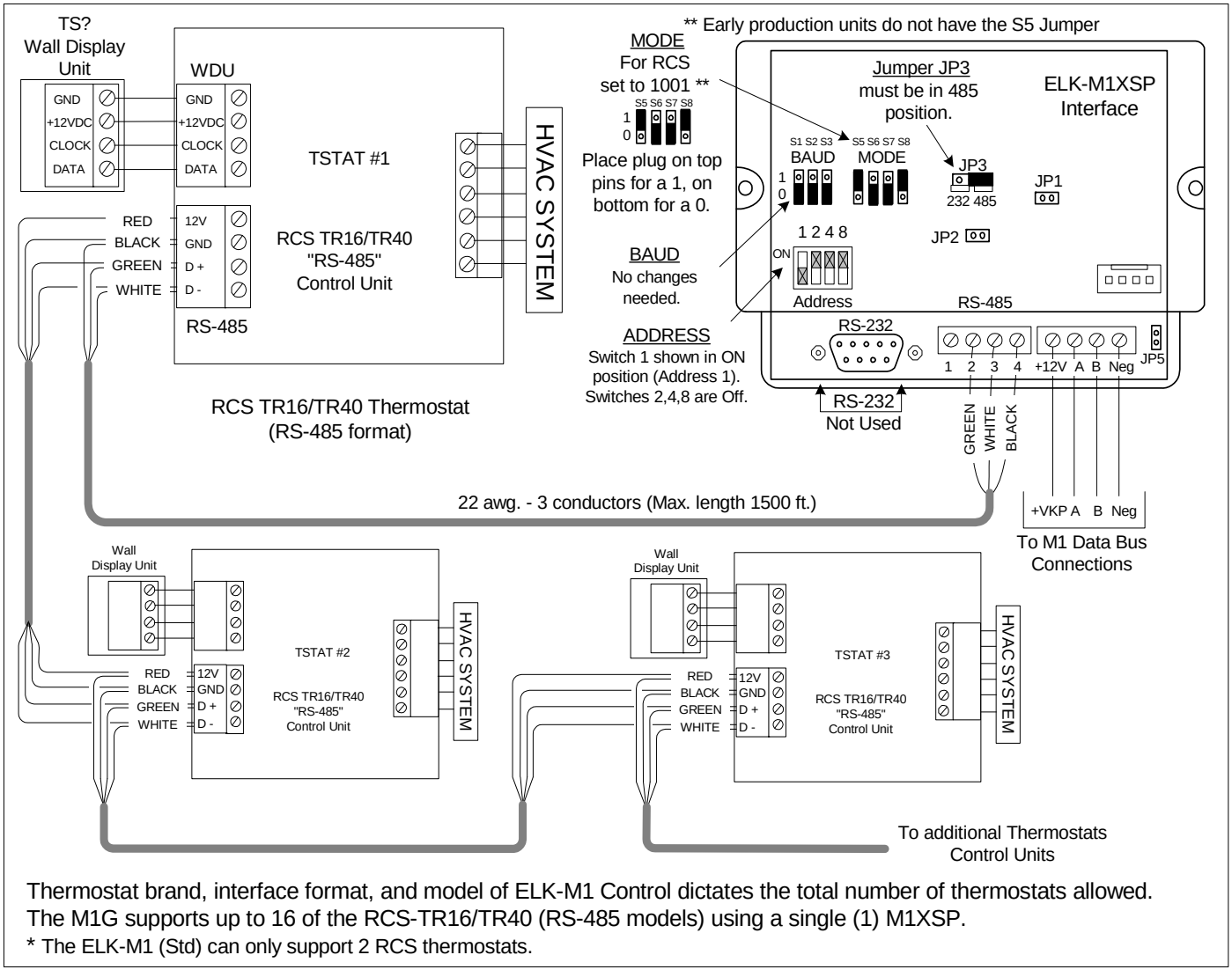
Whenever [Area] Armed State Becomes Disarmed
Then Activate [Comfort Mode] (Task 2)

Whenever [Task Name] (Task 1) Is Activated
Then Set [Thermostat 1] (TStat 1) Cooling Desired Temp to 85 degrees

Whenever [Task Name] (Task 2) Is Activated
Then Set [Thermostat 1] (TStat 1) Cooling Desired Temp to 70 degrees

7d. Use the M1 Keypad to verify the M1XSP & Thermostat operation. Press the ELK key followed by the Right arrow key to access Menu 1-View/Control Automation Fncts. Press 6 for the Thermostat Temperature sub-menu, followed by Right arrow key. The Keypad should display the first Thermostat (T01) along with its name and current temperature reading.

7e. Go into the Tasks sub-menu and select Economy Mode (Task 1). Press the # key to activate. When this task is activated the thermostat cooling setpoint should go to 85 degrees. Confirm this on the thermostat display.



Thermostat brand, interface format, and model of ELK-M1 Control dictates the total number of thermostats allowed. The M1G supports up to 16 of the RCS-TR16/TR40 (RS-485 models) using a single (1) M1XSP.

* The ELK-M1 (Std) can only support 2 RCS thermostats.

Lighting Controllers with RS-232 "Serial" Interfaces

Examples: OnQ-ALC, PCS-UPB, Centralite, Lutron, EDT-iLine, etc.

1. Install Lighting Controller using the instructions provided by the manufacturer. If the Lighting Controller's interface has an address setting then set it to address 1. Most controllers do not require an address setting.
3. Install the ELK-M1XSP per the instructions on page 3.
4. Set Jumper JP3 to the "232" position.
5. Set the MODE jumpers to match the particular brand of lighting controller. See chart on page 10.
6. Set the BAUD rate jumpers to **000**. (The M1XSP automatically sets the baud rate based on the MODE Jumper setting)
7. Connect a 9-pin serial cable from the Lighting Controller's serial port to the 9 pin connector on the M1XSP.
8. Apply power to the Lighting Controller and the M1XSP. DON'T FORGET TO ENROLL THE M1XSP INTO THE M1.
9. Program and test at least one light device using the ELK-RP Software and the following steps:

9a. Click on the Automation icon, then on the Lighting icon.

9b. Click on Lighting Device 1 and program the Name (1 to 16 characters), Format (manufacturer), and Type (switch, dimmer, appliance). The "Show" box may be left blank or checked ("X"). If this box is checked, the light will be included in the scroll list of the Keypad and Telephone remote View/Control Automation menus. If not selected for "Show" the light will be available ONLY by manually entering the 3 digit number. Click on the Voice Description to program a 1 to 6 word voice description for this light. Right click on Light 1 and select "Send Lighting 1" to send this programming to the M1.

9c. Click on the Rules icon and create the following 2 test rules.

Test Rule 1: WHENEVER 'Name' (Area 1) IS ARMED AWAY
THEN TURN 'Name' [1 [A1]] ON

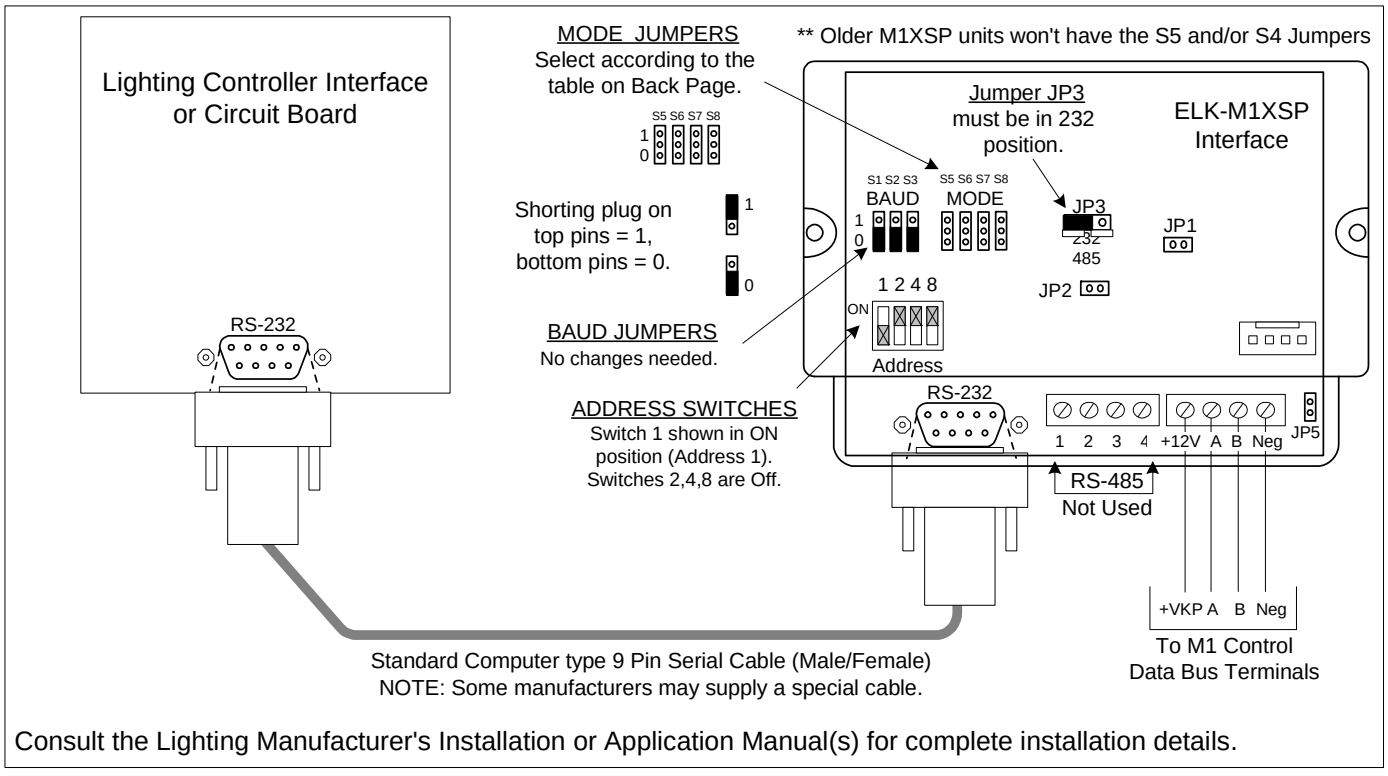
Test Rule 2: WHENEVER 'Name' (Area 1) IS DISARMED
THEN TURN 'Name' [1 [A1]] OFF

9d. Click "Send" to transmit these rules to the M1.

9e. Test the manual activation of this light by pressing the ELK key on the M1 Keypad followed by the Right arrow key to select "Menu 1-View/Control Automation Fncts. Press 2 for the Lighting submenu, followed by the Right arrow key. The keypad will display the first Light name and number along with its On or Off status. Note: The status will not be correct if the M1 is powered off. To change the light from On to Off or from Off to On, press the # key.

9f. Test the two automation rules by arming the control to the Away mode. The light should come On. Disarming the M1 should cause the light to turn Off.

10. This confirms the operation. Continue to add or test additional lights as required.



Consult the Lighting Manufacturer's Installation or Application Manual(s) for complete installation details.

OnQ-ALC - (Individual Lighting Switches)

OnQ ALC is a low voltage "wired" lighting technology utilizing a central ALC Master Controller Interface communicating to light switches and scene switches over a RS-485 proprietary network. An OnQ ALC Serial interface is required for interfacing the Master Controller Interface with the ELK-M1XSP, and then into the M1 line of controls. The M1XSP supports 31 ALC modules (dimmers, switches on each of 4 branches for a total of 124 individually addressable ALC devices. The M1XSP also supports ALC 4 button scene switches, provided they are wired and connected on ALC branch 1.

Integration with the M1 is accomplished by "mapping" the ALC addresses and operation to M1 Lighting devices. For example: ALC devices 1-31 on ALC branch 1 are mapped to M1 Lighting devices 1-31. Additional ALC devices may be added by the additional of an ALC "branch" expander board in which case..... ALC devices 1-31 on ALC branch 2 are mapped to M1 Lighting devices 33-63. ALC devices 1-31 on ALC branch 3 are mapped to M1 Lighting devices 65-95. ALC devices 1-31 on ALC branch 4 are mapped to M1 Lighting devices 97-127. M1 Lighting devices 32, 64, 96, and 128 are reserved for activation of the ALC "Virtual Scenes" 1 thru 4 respectively. The chart on the next page shows the M1 Lighting devices and their corresponding ALC device mapping.

Components required for OnQ ALC integration:

- An ELK-M1 or ELK-M1EZ8 Controller.
- One (1) ELK-M1XSP Serial Port Expander. NOTE: Firmware updates may be downloaded from the ELK M1 Dealer Web site.
- One (1) OnQ ALC Master Controller #**364644-0**1 and one (1) ALC Serial Interface #**364698-01**. ** See NOTE below.
- One or more ALC Lighting devices.

Limitations:

The M1XSP can only support ALC 4 button scene switches wired and connected on ALC branch 1.

Setting up the M1XSP and the M1 to communicate with OnQ ALC

1. Install the ELK-M1XSP per the instructions on page 3. Be sure to enroll the device into the M1.
2. Connect the RJ45 modular to 9-pin female serial cable supplied with the OnQ ALC Serial Interface to the male DB9 9 pin serial connector (J2) on the ELK-M1XSP. The OnQ Lighting Controller is then connected to the OnQ Serial Interface. Note: An optional expansion module OnQ part #**364726-01** is required to obtain the full capacity of 124 Switches.
3. Set the **MODE** Jumpers on the M1XSP as follows: **S4*="1" (UP), S5="1" (UP), S6="1" (UP), S7="0" (DN), S8="0" (DN).** NOTE: Some units do not have jumper S4.
4. Set the M1XSP Jumper **JP3="232"**. The position of BAUD jumpers S1,S2,S3 does not matter.
5. Be sure to set the address switches on the ALC switches and use the OnQ Software to program the features.
6. Power up all the devices.
7. Program the M1 Lighting device attributes utilizing the ElkRP software. Only the specific devices to be used for ALC need to be programmed. For each individual address program the M1 Lighting device as: **"Format=Serial Expander" and "Type= Dimmer" (Type may also be programmed as "On/Off Switch" if the device isn't dimmable)**.

When a M1 Light device is activated from a rule or from the M1 Keypad "Automation" menu, the corresponding device command will be sent from the M1XSP to the ALC Serial Interface.

** NOTE: As of the release date of this manual OnQ had announced plans to produce a single module designated the "Elk Interface". While not yet officially released the OnQ part number is believed to be **364864-01**. This new part combines the OnQ ALC Interface, the ALC Serial Interface, and the ELK-M1XSP, essentially replacing three components with a single component. More information will be released once this product is available.

M1 Lighting Devices Mapped to OnQ ALC

The PLC column is for reference only.

ELK Light Device #	PLC (X-10) Ref.	OnQ-ALC Branch / Switch	ELK Light Device #	PLC (X-10) Ref.	OnQ-ALC Branch / Switch	ELK Light Device #	PLC (X-10) Ref.	OnQ-ALC Branch/Node/SS Scene Switch	ELK Light Device #	PLC (X-10) Ref.	OnQ-ALC Branch/Node/SS Scene Switch
1	A01	B1 Switch 1	65	E01	B3 Switch 1	129	I01	B1/Node1/SS 2	193	M01	B1/Node22/SS 3
2	A02	B1 Switch 2	66	E02	B3 Switch 2	130	I02	B1/Node1/SS 3	194	M02	B1/Node22/SS 4
3	A03	B1 Switch 3	67	E03	B3 Switch 3	131	I03	B1/Node1/SS 4	195	M03	B1/Node23/SS 2
4	A04	B1 Switch 4	68	E04	B3 Switch 4	132	I04	B1/Node2/SS 2	196	M04	B1/Node23/SS 3
5	A05	B1 Switch 5	69	E05	B3 Switch 5	133	I05	B1/Node2/SS 3	197	M05	B1/Node23/SS 4
6	A06	B1 Switch 6	70	E06	B3 Switch 6	134	I06	B1/Node2/SS 4	198	M06	B1/Node24/SS 2
7	A07	B1 Switch 7	71	E07	B3 Switch 7	135	I07	B1/Node3/SS 2	199	M07	B1/Node24/SS 3
8	A08	B1 Switch 8	72	E08	B3 Switch 8	136	I08	B1/Node3/SS 3	200	M08	B1/Node24/SS 4
9	A09	B1 Switch 9	73	E09	B3 Switch 9	137	I09	B1/Node3/SS 4	201	M09	B1/Node25/SS 2
10	A10	B1 Switch 10	74	E10	B3 Switch 10	138	I10	B1/Node4/SS 2	202	M10	B1/Node25/SS 3
11	A11	B1 Switch 11	75	E11	B3 Switch 11	139	I11	B1/Node4/SS 3	203	M11	B1/Node25/SS 4
12	A12	B1 Switch 12	76	E12	B3 Switch 12	140	I12	B1/Node4/SS 4	204	M12	B1/Node26/SS 2
13	A13	B1 Switch 13	77	E13	B3 Switch 13	141	I13	B1/Node5/SS 2	205	M13	B1/Node26/SS 3
14	A14	B1 Switch 14	78	E14	B3 Switch 14	142	I14	B1/Node5/SS 3	206	M14	B1/Node26/SS 4
15	A15	B1 Switch 15	79	E15	B3 Switch 15	143	I15	B1/Node5/SS 4	207	M15	B1/Node27/SS 2
16	A16	B1 Switch 16	80	E16	B3 Switch 16	144	I16	B1/Node6/SS 2	208	M16	B1/Node27/SS 3
17	B01	B1 Switch 17	81	F01	B3 Switch 17	145	J01	B1/Node6/SS 3	209	N01	B1/Node27/SS 4
18	B02	B1 Switch 18	82	F02	B3 Switch 18	146	J02	B1/Node6/SS 4	210	N02	B1/Node28/SS 2
19	B03	B1 Switch 19	83	F03	B3 Switch 19	147	J03	B1/Node7/SS 2	211	N03	B1/Node28/SS 3
20	B04	B1 Switch 20	84	F04	B3 Switch 20	148	J04	B1/Node7/SS 3	212	N04	B1/Node28/SS 4
21	B05	B1 Switch 21	85	F05	B3 Switch 21	149	J05	B1/Node7/SS 4	213	N05	B1/Node29/SS 2
22	B06	B1 Switch 22	86	F06	B3 Switch 22	150	J06	B1/Node8/SS 2	214	N06	B1/Node29/SS 3
23	B07	B1 Switch 23	87	F07	B3 Switch 23	151	J07	B1/Node8/SS 3	215	N07	B1/Node29/SS 4
24	B08	B1 Switch 24	88	F08	B3 Switch 24	152	J08	B1/Node8/SS 4	216	N08	B1/Node30/SS 2
25	B09	B1 Switch 25	89	F09	B3 Switch 25	153	J09	B1/Node9/SS 2	217	N09	B1/Node30/SS 3
26	B10	B1 Switch 26	90	F10	B3 Switch 26	154	J10	B1/Node9/SS 3	218	N10	B1/Node30/SS 4
27	B11	B1 Switch 27	91	F11	B3 Switch 27	155	J11	B1/Node9/SS 4	219	N11	B1/Node31/SS 2
28	B12	B1 Switch 28	92	F12	B3 Switch 28	156	J12	B1/Node10/SS 2	220	N12	B1/Node31/SS 3
29	B13	B1 Switch 29	93	F13	B3 Switch 29	157	J13	B1/Node10/SS 3	221	N13	B1/Node31/SS 4
30	B14	B1 Switch 30	94	F14	B3 Switch 30	158	J14	B1/Node10/SS 4	222	N14	
31	B15	B1 Switch 31	95	F15	B3 Switch 31	159	J15	B1/Node11/SS 2	223	N15	
32	B16	Virtual Scene 1	96	F16	Virtual Scene 3	160	J16	B1/Node11/SS 3	224	N16	
33	C01	B2 Switch 1	97	G01	B4 Switch 1	161	K01	B1/Node11/SS 4	225	O01	
34	C02	B2 Switch 2	98	G02	B4 Switch 2	162	K02	B1/Node12/SS 2	226	O02	
35	C03	B2 Switch 3	99	G03	B4 Switch 3	163	K03	B1/Node12/SS 3	227	O03	
36	C04	B2 Switch 4	100	G04	B4 Switch 4	164	K04	B1/Node12/SS 4	228	O04	
37	C05	B2 Switch 5	101	G05	B4 Switch 5	165	K05	B1/Node13/SS 2	229	O05	
38	C06	B2 Switch 6	102	G06	B4 Switch 6	166	K06	B1/Node13/SS 3	230	O06	
39	C07	B2 Switch 7	103	G07	B4 Switch 7	167	K07	B1/Node13/SS 4	231	O07	
40	C08	B2 Switch 8	104	G08	B4 Switch 8	168	K08	B1/Node14/SS 2	232	O08	
41	C09	B2 Switch 9	105	G09	B4 Switch 9	169	K09	B1/Node14/SS 3	233	O09	
42	C10	B2 Switch 10	106	G10	B4 Switch 10	170	K10	B1/Node14/SS 4	234	O10	
43	C11	B2 Switch 11	107	G11	B4 Switch 11	171	K11	B1/Node15/SS 2	235	O11	
44	C12	B2 Switch 12	108	G12	B4 Switch 12	172	K12	B1/Node15/SS 3	236	O12	
45	C13	B2 Switch 13	109	G13	B4 Switch 13	173	K13	B1/Node15/SS 4	237	O13	
46	C14	B2 Switch 14	110	G14	B4 Switch 14	174	K14	B1/Node16/SS 2	238	O14	
47	C15	B2 Switch 15	111	G15	B4 Switch 15	175	K15	B1/Node16/SS 3	239	O15	
48	C16	B2 Switch 16	112	G16	B4 Switch 16	176	K16	B1/Node16/SS 4	240	016	
49	D01	B2 Switch 17	113	H01	B4 Switch 17	177	L01	B1/Node17/SS 2	241	P01	
50	D02	B2 Switch 18	114	H02	B4 Switch 18	178	L02	B1/Node17/SS 3	242	P02	
51	D03	B2 Switch 19	115	H03	B4 Switch 19	179	L03	B1/Node17/SS 4	243	P03	
52	D04	B2 Switch 20	116	H04	B4 Switch 20	180	L04	B1/Node18/SS 2	244	P04	
53	D05	B2 Switch 21	117	H05	B4 Switch 21	181	L05	B1/Node18/SS 3	245	P05	
54	D06	B2 Switch 22	118	H06	B4 Switch 22	182	L06	B1/Node18/SS 4	246	P06	
55	D07	B2 Switch 23	119	H07	B4 Switch 23	183	L07	B1/Node19/SS 2	247	P07	
56	D08	B2 Switch 24	120	H08	B4 Switch 24	184	L08	B1/Node19/SS 3	248	P08	
57	D09	B2 Switch 25	121	H09	B4 Switch 25	185	L09	B1/Node19/SS 4	249	P09	
58	D10	B2 Switch 26	122	H10	B4 Switch 26	186	L10	B1/Node20/SS 2	250	P10	
59	D11	B2 Switch 27	123	H11	B4 Switch 27	187	L11	B1/Node20/SS 3	251	P11	
60	D12	B2 Switch 28	124	H12	B4 Switch 28	188	L12	B1/Node20/SS 4	252	P12	
61	D13	B2 Switch 29	125	H13	B4 Switch 29	189	L13	B1/Node21/SS 2	253	P13	
62	D14	B2 Switch 30	126	H14	B4 Switch 30	190	L14	B1/Node21/SS 3	254	P14	
63	D15	B2 Switch 31	127	H15	B4 Switch 31	191	L15	B1/Node21/SS 4	255	P15	
64	D16	Virtual Scene 2	128	H16	Virtual Scene 4	192	L16	B1/Node22/SS 2	256	P16	

UPB - (Individual Lighting Loads and Links)

UPB is a lighting control technology that uses Powerline Communications (PLC) over the existing AC power grid. UPB can be integrated with the ELK-M1 using an M1XSP connected to a UPB PIM "S" (RS232 Serial Interface Module), or a new All-In-One interface called a ELKM1PCSPIM (or PCSPIM "E"). The new interface resembles a PIM and makes for a cleaner and easier installation. NOTE: The M1PCSPIM is internally fixed to M1 Bus Address #7, meaning that NO other M1XSP's on the bus may be set to that address. M1 supports up to 192 UPB individual addresses (dimmers, switches) and 64 UPB Links (scenes).

Integration is accomplished by "mapping" the UPB addresses and operation to M1 Lighting device entities. UPB device addresses 1-192 map to M1 Lighting devices 1-192. UPB Links 1-64 map to M1 Lighting devices 193-256. NOTE: Links require M1XSP firmware version 1.0.14 or higher. The chart on the next page shows the M1 Light devices and UPB mappinig.

Components required for UPB integration:

- ELK-M1 or ELK-M1EZ8 Controller and the ElkRP Programming Software.
- ELK-M1XSP Serial Port Expander. Firmware updating may be required and may be downloaded from the ELK Web site.
- UPB PIM (Programming Interface Module) { or ELKM1PCSPIM which is internally fixed to M1 Bus Address #7}
- One or more UPB Lighting devices plus the UPB PC Programming Software called "UPStart."

Setting up to communicate with UPB { Skip steps 1 - 4 if you are using the new ELKM1PCSPIM }

1. Install the ELK-M1XSP per the instructions on page 3. Be sure to enroll the device into the M1.
2. Connect the female end of the supplied 9-pin serial cable to the M1XSP and the male end to the UPB PIM Module.
3. Set the **MODE** Jumpers on the M1XSP as follows: **S4*="1" (UP), S5="1" (UP), S6="1" (UP), S7="0" (DN), S8="1" (UP).** NOTE: Some units do not have jumper S4.
4. Set the M1XSP Jumper **JP3="232"**. Set **JP5** to **ON**. The position of BAUD jumpers S1,S2,S3 does not matter.
5. Power up all the devices.
6. Using the ElkRP software, open the "Globals" folder. Then go to the "G29-G42 Special" tab and program the same unique UPB NETWORK ID into the M1 that is stored in the UPB switches.
   DO NOT USE NETWORK ID 0 OR 255 AS THESE ID HAVE SPECIAL PURPOSE RESERVED BY UPB.
7. In the ElkRP software open the Automation > Lighting folder and program the M1 Lighting devices. Only the devices specifically for UPB use will need to be programmed. For UPB individual addresses program M1 Lighting devices: **1-192 as: Format=Serial Expander, Type= Dimmer (or "On/Off Switch" if the device isn't dimmable)**. For UPB link addresses program M1 Lighting devices: **193-256 as: Format= Serial Expander, Type=On/Off Switch.**

When an M1 Lighting device is activated from a rule or from the M1 Keypad "Automation" menu, the corresponding device command will be sent onto the powerline network to the UPB Devices.

Programming the UPB devices:

The UPB UPStart Software must be used to program each UPB module with an address, a network ID, and any other options.
IMPORTANT: The UPB NETWORK ID programmed into the UPB switches MUST MATCH the UPB NETWORK ID programming into the ElkRP software. [ElkRP Globals folder > G29-G42 Special tab. DO NOT USE NETWORK ID 0 or Network ID 255.

UPB Device Status Broadcasts:

UPB devices contain a programmable option called "Transmit Changes" or "Report light level after rocker switch is pressed." Enabling this option in a UPB device allows the M1XSP and M1 to receive "Load Status Change" broadcasts from the device. This UPB UPStart PC Software is required for enabling this option. Look under the "Rocker Switch" tab. SEE LIMITATIONS.

LIMITATIONS - UPB Devices DO NOT BROADCAST their change after a UPB LINK Command

UPB LINKs are powerful commands, capable of simultaneously affecting from 1 to 256 devices on the network. LINKs can provide some impressive visual lighting affects, but they also have one undesireable negative trait. UPB devices DO NOT Broadcast their current status when changed by a LINK command. The principle reason is if a lot of devices attempted to broadcast all at once the network could be overwhelmed. This could result in traffic collisions, slow network response, and/or lost communications. Basically the UPB protocol does not allow devices to broadcast their status following LINK commands. And if the UPB devices aren't broadcasting their status after LINK commnands then M1 cannot accurately display the lighting status. This is a UPB protocol limitation and there is no workaround of solution that ELK can offer to resolve this limitation. The bottom line is: UPB devices DO NOT and CANNOT be programmed to broadcast (report) their status when changed by a LINK command.

PC software programs with harddrive memory are able to store which UPB devices belong to each LINK along with the expected response. When the PC program detects a LINK command it can display status according to the stored LINK information. A PC software program can also selectively poll individual devices based on the membership in a particular LINK. Polling is often not a desireable option since it can take 5 minutes or longer to poll all 256 potential devices on a network. But since the PC might only need to poll specific devices the undesirable traits aren't as much of a problem. Unfortunately the M1 Control does not have storage to remember the membership of devices in LINKS.

UPB - (continued)

M1 Lighting Devices Mapped to UPB

The PLC column is for reference only.

ELK Light Device #	PLC (X-10) Ref.	UPB	ELK Light Device #	PLC (X-10) Ref.	UPB	ELK Light Device #	PLC (X-10) Ref.	UPB	ELK Light Device #	PLC (X-10) Ref.	UPB
1	A01	Switch 1	65	E01	Switch 65	129	I01	Switch 129	193	M01	Link (Scene) 01
2	A02	Switch 2	66	E02	Switch 66	130	I02	Switch 130	194	M02	Link (Scene) 02
3	A03	Switch 3	67	E03	Switch 67	131	I03	Switch 131	195	M03	Link (Scene) 03
4	A04	Switch 4	68	E04	Switch 68	132	I04	Switch 132	196	M04	Link (Scene) 04
5	A05	Switch 5	69	E05	Switch 69	133	I05	Switch 133	197	M05	Link (Scene) 05
6	A06	Switch 6	70	E06	Switch 70	134	I06	Switch 134	198	M06	Link (Scene) 06
7	A07	Switch 7	71	E07	Switch 71	135	I07	Switch 135	199	M07	Link (Scene) 07
8	A08	Switch 8	72	E08	Switch 72	136	I08	Switch 136	200	M08	Link (Scene) 08
9	A09	Switch 9	73	E09	Switch 73	137	I09	Switch 137	201	M09	Link (Scene) 09
10	A10	Switch 10	74	E10	Switch 74	138	I10	Switch 138	202	M10	Link (Scene) 10
11	A11	Switch 11	75	E11	Switch 75	139	I11	Switch 139	203	M11	Link (Scene) 11
12	A12	Switch 12	76	E12	Switch 76	140	I12	Switch 140	204	M12	Link (Scene) 12
13	A13	Switch 13	77	E13	Switch 77	141	I13	Switch 141	205	M13	Link (Scene) 13
14	A14	Switch 14	78	E14	Switch 78	142	I14	Switch 142	206	M14	Link (Scene) 14
15	A15	Switch 15	79	E15	Switch 79	143	I15	Switch 143	207	M15	Link (Scene) 15
16	A16	Switch 16	80	E16	Switch 80	144	I16	Switch 144	208	M16	Link (Scene) 16
17	B01	Switch 17	81	F01	Switch 81	145	J01	Switch 145	209	N01	Link (Scene) 17
18	B02	Switch 18	82	F02	Switch 82	146	J02	Switch 146	210	N02	Link (Scene) 18
19	B03	Switch 19	83	F03	Switch 83	147	J03	Switch 147	211	N03	Link (Scene) 19
20	B04	Switch 20	84	F04	Switch 84	148	J04	Switch 148	212	N04	Link (Scene) 20
21	B05	Switch 21	85	F05	Switch 85	149	J05	Switch 149	213	N05	Link (Scene) 21
22	B06	Switch 22	86	F06	Switch 86	150	J06	Switch 150	214	N06	Link (Scene) 22
23	B07	Switch 23	87	F07	Switch 87	151	J07	Switch 151	215	N07	Link (Scene) 23
24	B08	Switch 24	88	F08	Switch 88	152	J08	Switch 152	216	N08	Link (Scene) 24
25	B09	Switch 25	89	F09	Switch 89	153	J09	Switch 153	217	N09	Link (Scene) 25
26	B10	Switch 26	90	F10	Switch 90	154	J10	Switch 154	218	N10	Link (Scene) 26
27	B11	Switch 27	91	F11	Switch 91	155	J11	Switch 155	219	N11	Link (Scene) 27
28	B12	Switch 28	92	F12	Switch 92	156	J12	Switch 156	220	N12	Link (Scene) 28
29	B13	Switch 29	93	F13	Switch 93	157	J13	Switch 157	221	N13	Link (Scene) 29
30	B14	Switch 30	94	F14	Switch 94	158	J14	Switch 158	222	N14	Link (Scene) 30
31	B15	Switch 31	95	F15	Switch 95	159	J15	Switch 159	223	N15	Link (Scene) 31
32	B16	Switch 32	96	F16	Switch 96	160	J16	Switch 160	224	N16	Link (Scene) 32
33	C01	Switch 33	97	G01	Switch 97	161	K01	Switch 161	225	O01	Link (Scene) 33
34	C02	Switch 34	98	G02	Switch 98	162	K02	Switch 162	226	O02	Link (Scene) 34
35	C03	Switch 35	99	G03	Switch 99	163	K03	Switch 163	227	O03	Link (Scene) 35
36	C04	Switch 36	100	G04	Switch 100	164	K04	Switch 164	228	O04	Link (Scene) 36
37	C05	Switch 37	101	G05	Switch 101	165	K05	Switch 165	229	O05	Link (Scene) 37
38	C06	Switch 38	102	G06	Switch 102	166	K06	Switch 166	230	O06	Link (Scene) 38
39	C07	Switch 39	103	G07	Switch 103	167	K07	Switch 167	231	O07	Link (Scene) 39
40	C08	Switch 40	104	G08	Switch 104	168	K08	Switch 168	232	O08	Link (Scene) 40
41	C09	Switch 41	105	G09	Switch 105	169	K09	Switch 169	233	O09	Link (Scene) 41
42	C10	Switch 42	106	G10	Switch 106	170	K10	Switch 170	234	O10	Link (Scene) 42
43	C11	Switch 43	107	G11	Switch 107	171	K11	Switch 171	235	O11	Link (Scene) 43
44	C12	Switch 44	108	G12	Switch 108	172	K12	Switch 172	236	O12	Link (Scene) 44
45	C13	Switch 45	109	G13	Switch 109	173	K13	Switch 173	237	O13	Link (Scene) 45
46	C14	Switch 46	110	G14	Switch 110	174	K14	Switch 174	238	O14	Link (Scene) 46
47	C15	Switch 47	111	G15	Switch 111	175	K15	Switch 175	239	O15	Link (Scene) 47
48	C16	Switch 48	112	G16	Switch 112	176	K16	Switch 176	240	016	Link (Scene) 48
49	D01	Switch 49	113	H01	Switch 113	177	L01	Switch 177	241	P01	Link (Scene) 49
50	D02	Switch 50	114	H02	Switch 114	178	L02	Switch 178	242	P02	Link (Scene) 50
51	D03	Switch 51	115	H03	Switch 115	179	L03	Switch 179	243	P03	Link (Scene) 51
52	D04	Switch 52	116	H04	Switch 116	180	L04	Switch 180	244	P04	Link (Scene) 52
53	D05	Switch 53	117	H05	Switch 117	181	L05	Switch 181	245	P05	Link (Scene) 53
54	D06	Switch 54	118	H06	Switch 118	182	L06	Switch 182	246	P06	Link (Scene) 54
55	D07	Switch 55	119	H07	Switch 119	183	L07	Switch 183	247	P07	Link (Scene) 55
56	D08	Switch 56	120	H08	Load 120	184	L08	Switch 184	248	P08	Link (Scene) 56
57	D09	Switch 57	121	H09	Load 121	185	L09	Switch 185	249	P09	Link (Scene) 57
58	D10	Switch 58	122	H10	Load 122	186	L10	Switch 186	250	P10	Link (Scene) 58
59	D11	Switch 59	123	H11	Load 123	187	L11	Switch 187	251	P11	Link (Scene) 59
60	D12	Switch 60	124	H12	Load 124	188	L12	Switch 188	252	P12	Link (Scene) 60
61	D13	Switch 61	125	H13	Load 125	189	L13	Switch 189	253	P13	Link (Scene) 61
62	D14	Switch 62	126	H14	Load 126	190	L14	Switch 190	254	P14	Link (Scene) 62
63	D15	Switch 63	127	H15	Load 127	191	L15	Switch 191	255	P15	Link (Scene) 63
64	D16	Switch 64	128	H16	Load 128	192	L16	Switch 192	256	P16	**** Link (Scene) 64 Alarm Flash**

** Link (Scene) 64: When this link is activated from the M1, the M1 will automatically send a special "flash" command. All devices are programmed to respond to Link 64 will immediately begin flashing until the link is de-activated (turned off) from the M1.

Centralite LiteJet, Elegance, or StarLite (Individual Lights and Scenes)

This page covers the integration of Centralite's LiteJet, Elegance, and StarLite lighting control products with the ELK-M1 using an M1XSP with the factory supplied Firmware Ver. 1.0.48 or later. **To integrate with Centralite's JetStream lighting control product the M1XSP must be upgraded with a special Firmware Version 30.x.x**

LiteJet and Elegance - 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 Dipswich 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.

M1 Lighting Devices Mapped to Centralite

The PLC column is for reference only.

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	016	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

Partial Recap 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.

Lutron RadioRA - (1st Generation only, not applicable to RA2)

Requirements: ELK-M1XSP Interface with **firmware 1.0.14 or greater**, 9 pin Serial Cable, Lutron (1st Generation) RA-RS232 Serial Interface, Dimmers, Keypads, etc. Operation limited to Phantoms, Zones, Security Flash/Solid, & Master Ctrl Buttons.

1. Install the ELK-M1XSP per the instructions on page 3. Be sure to enroll the device into the M1.
2. The M1XSP jumper settings should be: **JP3=232** position and **JP5=ON**, Mode Jumper **S4=1** (not all boards have S4 jumper) **S5=0**, **S6=1**,**S7=1**, and **S8=0**. BAUD jumpers S1,S2, & S3 do not matter as the Lutron baud rate is preset internally.
3. Plug a standard 9-pin Serial Cable (not included) between the Lutron RA-RS232 DB-9F (female) connector and the M1XSP DB-9M (male) connector.
4. Follow the instructions in the Lutron RA-RS232 "Setup and Installation Guide". Activate the RS232 interface (pages 8 & 9). Assign Phantom Buttons as Rooms or Scenes (pages 12 to 25). Assign Zone Numbers if direct control or feedback of an individual zone (device) is desired (pages 26 to 28). Turn Hardware Handshaking OFF by following the instructions on pages 33 and 34. Test the Phantom Button On or Off function locally from the RA-RS232 interface (page 42).
5. Use the ELK-RP software to configure the LIGHTING setup for the M1 to control the Lutron Radio RA devices.

Operation with Lutron RadioRA

Operation with Lutron RadioRA is based on "mapped" assignments to M1 Lighting Devices 1 to 256. Commands to Lutron include: Phantom Button Presses, Direct Zone Control, and Security Mode activation. An M1 rule OR the Keypad "Automation-Lighting" menu can be used to: A) Turn On or Off any of the phantom buttons 1-15 via M1 Lights 1-15. All Phantoms may be turned On or Off at once via M1 Light 16. B) Turn On or Off any individual Lutron zone 1 to 32 (+32 additional zones with a Lutron "bridged" system). C) Set dimmers to specific levels (via rules only). D) Activate the 5 minute timed Security Flash or Security Solid modes assigned to the 15 phantoms. As for received "status" messages from Lutron zones, they can be used to trigger M1 rules. Received state changes from unused Lutron Master Control unit buttons (limited to 7 button models) can be used to trigger M1 rules, provided they are not assigned to any other function. The chart on the next page and the following paragraphs explain how the M1 Light Devices correspond to various Lutron capablities.

M1 Light Devices 1 to 15 correspond to Lutron RA **Phantom Buttons 1 to 15** (Rooms / Scenes) respectively. Whenever one of these 15 M1 Lighting Devices is turned On or Off its corresponding Lutron phantom button is turned On or Off. For each of these devices program the Format to "Serial Expander", the Type to "On/Off Switch", and the Name to describe each phantom button. Each Lutron phantom button (maximum of 15) can control multiple lights.

M1 Light Device 16 corresponds to Lutron RA **Phantom Buttons 16 and 17** (All On / All Off) respectively. Program the name for light device 16 as "All On/Off". Set the Format to "Serial Expander" and Type to "On/Off Switch". Activating M1 lighting 16 'On' it will send Phantom 16. Activating M1 Lighting 16 'Off" will send Phantom 17.

M1 Light Devices 17 to 31 correspond to Lutron RA **Security Flash Mode for Phantom Button 1 to 15** respectively. M1 Light 17 can be be used to Flash (for 5 minutes) any light(s) assigned to phantom button 1. Phantom 1 will continue flashing for 5 minutes. Program the Format to "Serial Expander", the Type to "On/Off Switch", and the Name describing each phantom.

M1 Light Device 32 corresponds to Lutron RA **Security Flash Mode All On / All Off** (Phantom Buttons 16 and 17). Activating M1 Light 32 'On" will Flash (for 5 minutes) ALL LIGHTS that are assigned to phantom buttons. Activating M1 Light 32 'Off' will turn off Flash mode and return ALL LIGHTS assigned to phantom buttons to their previous levels. Program the Format to "Serial Expander", the Type to "On/Off Switch", and the Name as "Flash On/Off"..

M1 Light Devices 33 to 64 correspond to the first 32 Lutron RA **Lighting Dimmer/switch Zones (1 to 32)** in an single "unbridged" system (S1). It is possible to expand Lutron RA with a second system (S2) using a term call "bridging". Consult Lutron for more information. In a "**bridged**" environment, **M1 Light Devices 65 to 96** correspond to the second 32 Lutron RA **Lighting Dimmer/Switch Zones (1 to 32)**. For each zone to be utilized, program the Format to "Serial Expander", the Type to "Dimmer", and the Name to represent the zone being controlled. NOTE: While Lutron does not specifically recommend or require zone number assignment, the advantage of zoning is that it provides direct individual control including On, Off, and Dim, as well as status respond/feedback which can be also be used by M1 to trigger rules.

M1 Light Devices 97 to 111 correspond to Lutron RA **Security Solid Mode for Phantom Buttons 1 to 15** respectively. M1 Light 97 can be used to turn On Solid (for 5 minutes) any light(s) assigned to phantom buttom 1. They remain On for 5 minutes. Program the Format to "Serial Expander", the Type to "On/Off Switch", and the Name describing each phantom.

M1 Light Device 112 corresponds to Lutron RA **Security Solid Mode All On / All Off** (Phantom Buttons 16 and 17). Activating M1 Light 112 'On' turns On Solid (for 5 minutes) ALL LIGHTS that are assigned to phantom buttons. Activating M1 Light 112 'Off' turns Off Solid mode and returns ALL LIGHTS assigned to phantom buttons to their previous levels. Program the Format to "Serial Expander", the Type to "On/Off Switch", and the name as "Solid On/Off".

M1 Light Devices 113 thru 144 correspond to the first 32 Lutron RA **Window Treatment Zones (1 to 32)** in an single "unbridged" system (S1). In a "**bridged**" environment, **M1 Light Devices 145 to 176** correspond to the second 32 Lutron RA **Window Treatment Zones (1 to 32)**. For each zone to be utilized, program the Format to "Serial Expander", the Type to "Dimmer", and the Name to represent the zone being controlled.

M1 Light Devices 177 thru 248 correspond to Lutron RA **buttons on Master Control units 1 thru 12.** Unused (unassigned) buttons can be used, with restrictions, to initiate rule triggers in the M1. Buttons that are already assigned to activate or display phantoms or zones SHOULD NOT BE USED as rule triggers simply because the state of the button can be out-of-sync with the M1, preventing a transition change from occurring. NOTE: Master Control units buttons are Receive ONLY. The M1 cannot directly activate or control any of the Master Control unit buttons.

M1 Lighting Devices Mapped to Lutron Radio RA

ELK Light Device	PLC (X-10) Ref.	Lutron Phantom Buttons	ELK Light Device	PLC (X-10) Ref.	Expanded Zones 2nd Sys as Lights (S2)	ELK Light Device	PLC (X-10) Ref.	Zones 1st Sys as Shades (S1)	ELK Light Device	PLC (X-10) Ref.	Lutron Master Ctrl Buttons
1	A01	Phantom 1	65	E01	Lighting Z1 (S2)	129	I01	Shade Z17 (S1)	193	M01	MC3 Btn 5
2	A02	Phantom 2	66	E02	Lighting Z2 (S2)	130	I02	Shade Z18 (S1)	194	M02	MC3 All On/Off
3	A03	Phantom 3	67	E03	Lighting Z3 (S2)	131	I03	Shade Z19 (S1)	195	M03	MC4 Btn 1
4	A04	Phantom 4	68	E04	Lighting Z4 (S2)	132	I04	Shade Z20 (S1)	196	M04	MC4 Btn 2
5	A05	Phantom 5	69	E05	Lighting Z5 (S2)	133	I05	Shade Z21 (S1)	197	M05	MC4 Btn 3
6	A06	Phantom 6	70	E06	Lighting Z6 (S2)	134	I06	Shade Z22 (S1)	198	M06	MC4 Btn 4
7	A07	Phantom 7	71	E07	Lighting Z7 (S2)	135	I07	Shade Z23 (S1)	199	M07	MC4 Btn 5
8	A08	Phantom 8	72	E08	Lighting Z8 (S2)	136	I08	Shade Z24 (S1)	200	M08	MC4 All On/Off
9	A09	Phantom 9	73	E09	Lighting Z9 (S2)	137	I09	Shade Z25 (S1)	201	M09	MC5 Btn 1
10	A10	Phantom 10	74	E10	Lighting Z10 (S2)	138	I10	Shade Z26 (S1)	202	M10	MC5 Btn 2
11	A11	Phantom 11	75	E11	Lighting Z11 (S2)	139	I11	Shade Z27 (S1)	203	M11	MC5 Btn 3
12	A12	Phantom 12	76	E12	Lighting Z12 (S2)	140	I12	Shade Z28 (S1)	204	M12	MC5 Btn 4
13	A13	Phantom 13	77	E13	Lighting Z13 (S2)	141	I13	Shade Z29 (S1)	205	M13	MC5 Btn 5
14	A14	Phantom 14	78	E14	Lighting Z14 (S2)	142	I14	Shade Z30 (S1)	206	M14	MC5 All On/Off
15	A15	Phantom 15	79	E15	Lighting Z15 (S2)	143	I15	Shade Z31 (S1)	207	M15	MC6 Btn 1
16	A16	B16/17 All On/Off	80	E16	Lighting Z16 (S2)	144	I16	Shade Z32 (S1)	208	M16	MC6 Btn 2
		Security	81	F01	Lighting Z17 (S2)			**Zones 2nd Sys**	209	N01	MC6 Btn 3
		Flash Mode	82	F02	Lighting Z18 (S2)			**as Shades (S2)**	210	N02	MC6 Btn 4
17	B01	Phantom 1	83	F03	Lighting Z19 (S2)	145	J01	Shade Z1 (S2)	211	N03	MC6 Btn 5
18	B02	Phantom 2	84	F04	Lighting Z20 (S2)	146	J02	Shade Z2 (S2)	212	N04	MC6 All On/Off
19	B03	Phantom 3	85	F05	Lighting Z21 (S2)	147	J03	Shade Z3 (S2)	213	N05	MC7 Btn 1
20	B04	Phantom 4	86	F06	Lighting Z22 (S2)	148	J04	Shade Z4 (S2)	214	N06	MC7 Btn 2
21	B05	Phantom 5	87	F07	Lighting Z23 (S2)	149	J05	Shade Z5 (S2)	215	N07	MC7 Btn 3
22	B06	Phantom 6	88	F08	Lighting Z24 (S2)	150	J06	Shade Z6 (S2)	216	N08	MC7 Btn 4
23	B07	Phantom 7	89	F09	Lighting Z25 (S2)	151	J07	Shade Z7 (S2)	217	N09	MC7 Btn 5
24	B08	Phantom 8	90	F10	Lighting Z26 (S2)	152	J08	Shade Z8 (S2)	218	N10	MC7 All On/Off
25	B09	Phantom 9	91	F11	Lighting Z27 (S2)	153	J09	Shade Z9 (S2)	219	N11	MC8 Btn 1
26	B10	Phantom 10	92	F12	Lighting Z28 (S2)	154	J10	Shade Z10 (S2)	220	N12	MC8 Btn 2
27	B11	Phantom 11	93	F13	Lighting Z29 (S2)	155	J11	Shade Z11 (S2)	221	N13	MC8 Btn 3
28	B12	Phantom 12	94	F14	Lighting Z30 (S2)	156	J12	Shade Z12 (S2)	222	N14	MC8 Btn 4
29	B13	Phantom 13	95	F15	Lighting Z31 (S2)	157	J13	Shade Z13 (S2)	223	N15	MC8 Btn 5
30	B14	Phantom 14	96	F16	Lighting Z32 (S2)	158	J14	Shade Z14 (S2)	224	N16	MC8 All On/Off
31	B15	Phantom 15			**Security**	159	J15	Shade Z15 (S2)	225	O01	MC9 Btn 1
32	B16	B16 All On/Off			**Solid Mode**	160	J16	Shade Z16 (S2)	226	O02	MC9 Btn 2
		Zones 1st Sys	97	G01	Phantom 1	161	K01	Shade Z17 (S2)	227	O03	MC9 Btn 3
		as Lights (S1)	98	G02	Phantom 2	162	K02	Shade Z18 (S2)	228	O04	MC9 Btn 4
33	C01	Lighting Zn1 (S1)	99	G03	Phantom 3	163	K03	Shade Z19 (S2)	229	O05	MC9 Btn 5
34	C02	Lighting Zn2 (S1)	100	G04	Phantom 4	164	K04	Shade Z20 (S2)	230	O06	MC9 All On/Off
35	C03	Lighting Zn3 (S1)	101	G05	Phantom 5	165	K05	Shade Z21 (S2)	231	O07	MC10 Btn 1
36	C04	Lighting Zn4 (S1)	102	G06	Phantom 6	166	K06	Shade Z22 (S2)	232	O08	MC10 Btn 2
37	C05	Lighting Zn5 (S1)	103	G07	Phantom 7	167	K07	Shade Z23 (S2)	233	O09	MC10 Btn 3
38	C06	Lighting Zn6 (S1)	104	G08	Phantom 8	168	K08	Shade Z24 (S2)	234	O10	MC10 Btn 4
39	C07	Lighting Zn7 (S1)	105	G09	Phantom 9	169	K09	Shade Z25 (S2)	235	O11	MC10 Btn 5
40	C08	Lighting Zn8 (S1)	106	G10	Phantom 10	170	K10	Shade Z26 (S2)	236	O12	MC10 All On/Off
41	C09	Lighting Zn9 (S1)	107	G11	Phantom 11	171	K11	Shade Z27 (S2)	237	O13	MC11 Btn 1
42	C10	Lighting Zn10 (S1)	108	G12	Phantom 12	172	K12	Shade Z28 (S2)	238	O14	MC11 Btn 2
43	C11	Lighting Zn11 (S1)	109	G13	Phantom 13	173	K13	Shade Z29 (S2)	239	O15	MC11 Btn 3
44	C12	Lighting Zn12 (S1)	110	G14	Phantom 14	174	K14	Shade Z30 (S2)	240	016	MC11 Btn 4
45	C13	Lighting Zn13 (S1)	111	G15	Phantom 15	175	K15	Shade Z31 (S2)	241	P01	MC11 Btn 5
46	C14	Lighting Zn14 (S1)	112	G16	B16 All On/Off	176	K16	Shade Z32 (S2)	242	P02	MC11 All On/Off
47	C15	Lighting Zn15 (S1)			**Zones 1st Sys**			**Master Control**	243	P03	MC12 Btn 1
48	C16	Lighting Zn16 (S1)			**as Shades (S1)**			**Buttons**	244	P04	MC12 Btn 2
49	D01	Lighting Zn17 (S1)	113	H01	Shade Z1 (S1)	177	L01	MC1 Btn 1	245	P05	MC12 Btn 3
50	D02	Lighting Zn18 (S1)	114	H02	Shade Z2 (S1)	178	L02	MC1 Btn 2	246	P06	MC12 Btn 4
51	D03	Lighting Zn19 (S1)	115	H03	Shade Z3 (S1)	179	L03	MC1 Btn 3	247	P07	MC12 Btn 5
52	D04	Lighting Zn20 (S1)	116	H04	Shade Z4 (S1)	180	L04	MC1 Btn 4	248	P08	MC12 All On/Off
53	D05	Lighting Zn21 (S1)	117	H05	Shade Z5 (S1)	181	L05	MC1 Btn 5	249	P09	
54	D06	Lighting Zn22 (S1)	118	H06	Shade Z6 (S1)	182	L06	MC1 All On/Off	250	P10	
55	D07	Lighting Zn23 (S1)	119	H07	Shade Z7 (S1)	183	L07	MC2 Btn 1	251	P11	
56	D08	Lighting Zn24 (S1)	120	H08	Shade Z8 (S1)	184	L08	MC2 Btn 2	252	P12	
57	D09	Lighting Zn25 (S1)	121	H09	Shade Z9 (S1)	185	L09	MC2 Btn 3	253	P13	
58	D10	Lighting Zn26 (S1)	122	H10	Shade Z10 (S1)	186	L10	MC2 Btn 4	254	P14	
59	D11	Lighting Zn27 (S1)	123	H11	Shade Z11 (S1)	187	L11	MC2 Btn 5	255	P15	
60	D12	Lighting Zn28 (S1)	124	H12	Shade Z12 (S1)	188	L12	MC2 All On/Off	256	P16	
61	D13	Lighting Zn29 (S1)	125	H13	Shade Z13 (S1)	189	L13	MC3 Btn 1			
62	D14	Lighting Zn30 (S1)	126	H14	Shade Z14 (S1)	190	L14	MC3 Btn 2			
63	D15	Lighting Zn31 (S1)	127	H15	Shade Z15 (S1)	191	L15	MC3 Btn 3			
64	D16	Lighting Zn32 (S1)	128	H16	Shade Z16 (S1)	192	L16	MC3 Btn 4			

W800RF32 X-10 RF Receiver

WGL Associates manufacturers a product called the W800RF32. It is basically an RF receiver device that accepts radio signals from X-10 Radio Transmitters and then transmits ASCII messages out a RS232 serial port. When connected to an M1XSP, the W800RF32 can become a general purpose, short range RF interface between X-10 Radio transmitters and the M1 or M1EZ8 Controller. These text strings can then be used to activate rules, etc.

- Connect the ELK-M1XSP to the W800RF32 using a 9 pin Serial Cable.
- Set the M1XSP Jumpers to: **JP3="232"**, Mode Jumper **S4*="1" (UP), S5="0" (DN), S6="1" (UP), S7="1" (UP), S8="1" (UP).**
  *Some boards MAY NOT have the S4 jumper. The position of BAUD jumpers S1,S2,S3 does not matter.

IMPORTANT NOTE: Software and firmware revisions required are: ELK-M1XSP at version 1.0.14 or greater.

The following X-10 Radio Transmitters have been tested with the W800RF32 into an M1XSP:

Model HR12A, Home Automation Remote Control.
Model KC674, Keychain Remote
Model MS12A, Occupancy Sensor/Motion Detector
Model KR15A, Panic Button Remote Control

The above X-10 RF devices transmit standard House code/Unit code and On/Off, Dim/Bright codes using radio signals. Upon receipt of these RF commands, the W800 passes the information to the M1XSP which then sends them on to the M1 or M1EZ8 Controller. The Controller can utilze these signals to activate rules and it can additionally retransmit these signals onto the AC powerline if equipped with a PSC05 PLC interface. Please note that M1 rules can only be activated by ON or OFF commands from these devices. There is no rule activation support for DIM or BRIGHT commands received from these RF devices.

ADVANCED OPERATION

Model DS10A, Wireless Door/Window Security Transmitter Sensors:

For these security transmitters, the W800RF32 and M1XSP only send the Controller a text string. No House code/Unit code or other PLC style command is sent from these units. The text string consists of four ASCII characters plus a carriage return character at the end. The W800RF32 32Bit Data Decoder program is required to determine the DS10A transmitter's appropriate text string. Once this is done, the ElkRP programming software must be used to create a matching text string in the Controller. The text string must match exactly with the string sent by the W800RF32. An M1 rule can then be written to be activated whenever this particular text string is received from the W800RF32.

Example of data shown in the W800RF32 32 Bit Data Decoder Window

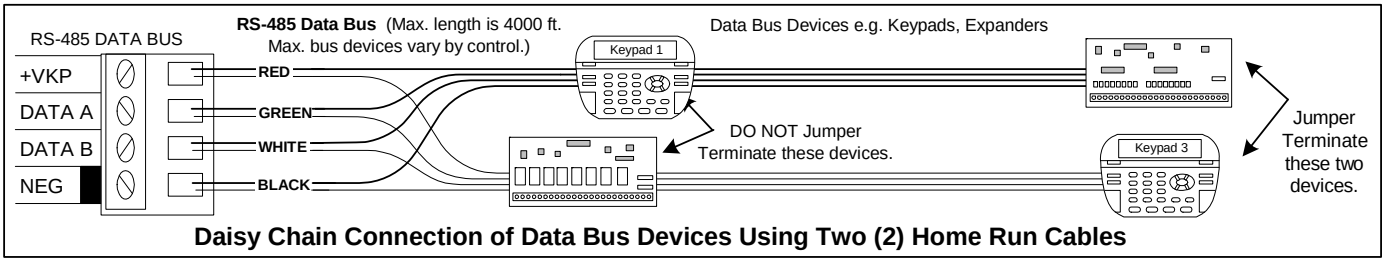
Last Byte 1	**21:** 00100001
Last Byte 2	**DE:** 11011110
Last Byte 3	**D2:** 11010010
Last Byte 4	**22:** 00100010

One string of data is sent when the transmiiter's reed switch becomes open (magnet moved out of range). Another string of data is sent when the transmitter's reed switch closes. The keys bytes that are utilized in the ASCII string are Byte 3 and Byte 1 respectively. From the example shown above, the string to be matched by an M1 Text String would be D221 with a carriage return character at the end.

Data Bus E.O.L. Termination - VERY IMPORTANT!

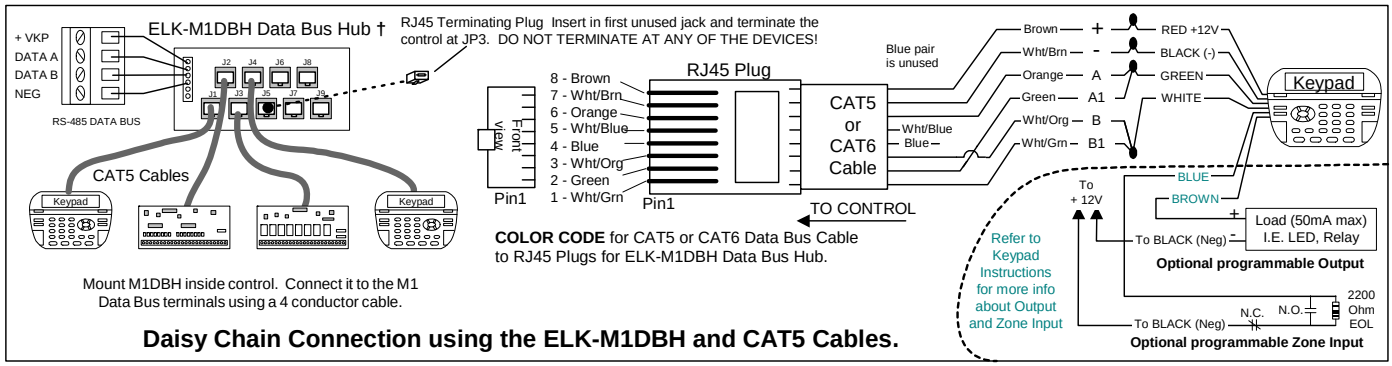
The control uses a RS-485 “differential” data bus operating at 38,400 bits per second. This is relatively high speed by industry standards and ensures fast, accurate communications. EOL data bus terminating resistors are strongly suggested to eliminate the possibility of reflection errors due to varying 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.



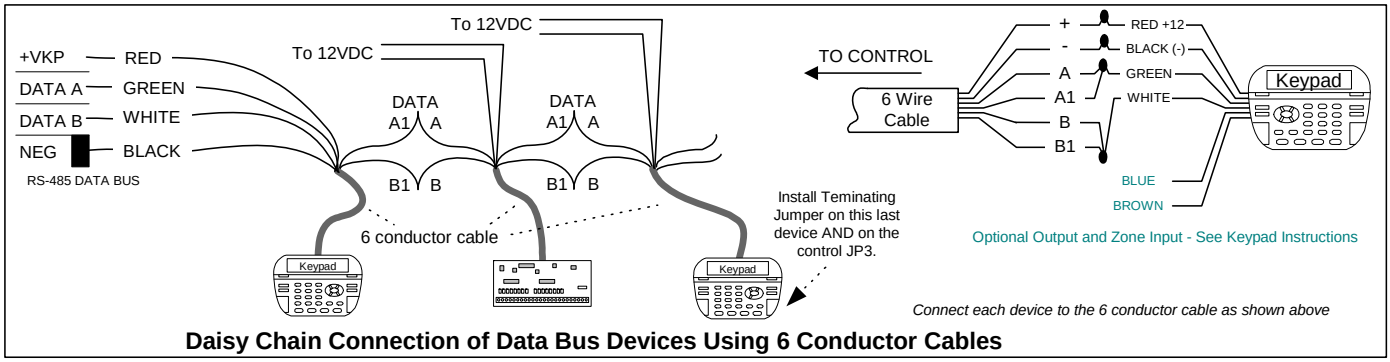
Daisy Chain Connection of Data Bus Devices Using Two (2) Home Run Cables

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.



Daisy Chain Connection using the ELK-M1DBH and CAT5 Cables.

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.



Daisy Chain Connection of Data Bus Devices Using 6 Conductor Cables

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.