ELK-M1XSP

Lighting Interface, Thermostat Interface, and Serial Port Expander

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.

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Specifications are Subject to Change without notice.

ELK
PRODUCTS, INC.

Printed in USA

Table of Contents

NOTICE: Some product interfaces require the M1XSP to contain a specific firmware version by "flash" updating in the field. Updates can be downloaded from the M1 Dealer Website. See list of Firmware versions on page 4.

APPLICATION:

The **ELK-M1XSP** is a "3 in 1" product. As a lighting interface, it adapts the M1 Control to many brands of Lighting control products which use "serial" communications. As a thermostat interface, it adapts the M1 Control to HVAC Serial Communicating Thermostats. As a serial port expander, it expands the RS-232 communication ports of the M1 to allow serial communications with many types and brands of equipment which communicate using serial ASCII commands. i.e., Personal Computers, etc. Jumpers on the M1XSP select the appropriate application, connection, and protocol. Most importantly, the M1XSP operates from the 4-wire (RS-485) M1 Keypad data bus, allowing RS-232 ports to be located long distances from the control.   The M1G and M1EZ8 Controls will support up to 7 M1XSPs. The communications baud rate is adjustable from 300 to 38,400 baud. The unit comes complete with cable and a black surface mountable housing.

FEATURES:

- Adapts the M1 and M1EZ8 to specific Lighting control products which use "serial" communications.
- Adapts the M1 and M1EZ8 to specific HVAC Communicating Thermostats from RCS, Aprilaire, and HAI
- Expands the M1 and M1EZ8 RS-232 Serial Ports
- Connect to and Operates from the RS485 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

General Installation and Setup

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

J1 - Factory Use ONLY!

Jumpers S1,S2,S3 select BAUD rate

Jumpers S4,S5,S6,S7,S8 select Interface MODE

Data Bus Address Switches

JP3 - Jumper selects between RS-232 or RS-485

JP1 - Jumper selects termination of M1 RS-485 Data Bus

JP2 - Jumper selects termination of other Mfg. RS-485

JP5 - Jumper Selects +12VDC to DB9 Pin 4 (MUST be in-place for HAI Thermostats)

"DB9" 9 Pin RS-232 Connection to other Mfg.

RS-485 Connection to other Mfg.

RS-485 M1 Data Bus Connection

1. The M1XSP operates on the M1's Keypad data bus and may be remotely located near the equipment to which it is interfacing.   Two (2) #6 x 1/2" screws (not provided), one on each side of the black box should be used. It can also be mounted inside the M1 cabinet using the same method OR by removing the board from the black box and installing the board into a pair of ELK-SWG Plastic Glide brackets.

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 Switches

Data Bus Address	Switch Settings			
	S1	S2	S3	S4
1	On	Off	Off	Off
2	Off	On	Off	Off
3	On	On	Off	Off
4	Off	Off	On	Off
5	On	Off	On	Off
6	Off	On	On	Off
7	On	On	On	Off

The only valid Data Bus Addresses for an M1XSP are 1 thru 7. The maximum number of M1XSPs is 7.

Other Jumper Settings
JP1   Used to engage a 120 Ohm resistor for terminating the M1 RS-485 Data BuS. See Data bus wiring instructions before use.

IMPORTANT: When interfacing with HAI Thermostats, only data bus addresses 1, 2, 3, or 4 are used. Data bus address 1 is used for HAI Thermostats numbered 1 thru 4. Data bus address 2 for HAI Thermostats numbered 5 to 8. Data bus address 3 for HAI Thermostats numbered 9 to 12. Data bus address 4 for HAI Thermostats numbered 13 to 16.

5. Set the "Mode" and "Baud" jumpers according to the desired application. Refer to the jumper settings table on the back of this manual for a complete listing of these jumpers. In some cases the baud rate is not required as it is internally fixed according to the mode/protocol.

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 an defective M1XSP, set the new unit to the same address as the old unit and repeat the enrollment process. If a device needs to be permanently removed, perform the enrollment process after removing the device, otherwise a "missing" trouble condition will appear.

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.

FIRMWARE VERSIONS:

The factory "default" firmware shipped with the M1XSP supports several partner products. However, some specific partner products require a special version of Firmware to be flashed into the M1XSP. Please refer to the firmware versions below:

The 1st digit (1,25,50,etc) denotes the partner or volume identifier. The 2nd and 3rd digits are used for revision levels.

1.x.x Factory "Out-of-the-box" Firmware: **Aprilaire,RCS,HAI,OnQ-ALC,UPB,Centralite,EDT,Dynalite,LutronRA,W800RF32, etc.**
10.x.x Field Installable Firmware: **Uplink "AnyNet" and AES Intellinet Radio.**
20.x.x Field Installable Firmware: **Vizia "RZCOP" ZWave interface.** (Downloadable from Elk M1 Dealer Website)
25.x.x Field Installable Firmware: **Elk-M1XZW Z-Wave Module**. (Used only in the M1XZW, a subset of the M1XSP)
30.x.x Field Installable Firmware: **Centralite "JetStream" only.** (Downloadable from Elk M1 Dealer Website)
40.x.x Field Installable Firmware: **Carrier "Infinity" HVAC only.** (Downloadable from Elk M1 Dealer Website)
50.x.x Field Installable Firmware: **INSTEON "Lighting" only**.
60.x.x Field Installable Firmware: **Advantage Air HVAC only. {Australia}** (Downloadable from Elk M1 Dealer Website)
70.x.x Field Installable Firmware: **HAI OmniStat and OmniStat 2 Thermostats** (Downloadable from Elk M1 Dealer Website)

Updating/Replacing Firmware in the ELK-M1XSP

The M1XSP stores it's 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 Dealer ONLY restricted website found at www.elkproducts.com. **NOTE: Firmware updating can only be done through the M1 Control using a Direct to PC Com port connection or an optional Ethernet Network connection. Dial-up connections cannot be used to perform firmware updates.**

How to Update Firmware:

1. Physically connect the Computer and Control using either the RS-232 Serial 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 th4 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.

Aprilaire 8870 Thermostat

1. Install and wire the Aprilaire 8811 Protocol Adapter, 8818 Distribution Panel (optional), and the 8870 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.

** Early production units do not have the S5 Jumper

MODE
For Aprilaire set to 1011 **
S5 S6 S7 S8
Place plug on top pins for a 1, on bottom for a 0.

BAUD
No changes needed.

ADDRESS
Switch 1 shown in ON position (Address 1). Switches 2,4,8 are Off.

Jumper JP3 must be in 232 position.

ELK-M1XSP Interface

LEDs

POWER | RX TX DATA RS-485 | RX TX ENABLE RS-485 | RX TX DATA RS-232

Aprilaire
Electronic Thermostat
Model 8811 Protocol Adapter

Power
7.5VAC   RS-485   RS-485   RS-232

A   B   C

OR/WT   BL/WT   BK/WT   RD/WT

Aprilaire 8870 THERMOSTATS

Aprilaire 8818 DISTRIBUTION PANEL

One required per eight (8) thermostats

HVAC SYSTEM

HVAC SYSTEM

6 ft. Cable with RJ and DB9 connector shipped with Aprilaire 8811.

RS-232

RS-485
Not Used

1 2 3 4   +12V A B Neg

+VKP A B Neg

To M1 Control
Data Bus Terminals

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

The ELK-M1G can interface with up to 16 Aprilaire 8870 Thermostats total using 1 M1XSP.
The ELK-M1 (Std) can only interface with 2 Aprilaire 8870 Thermostats.

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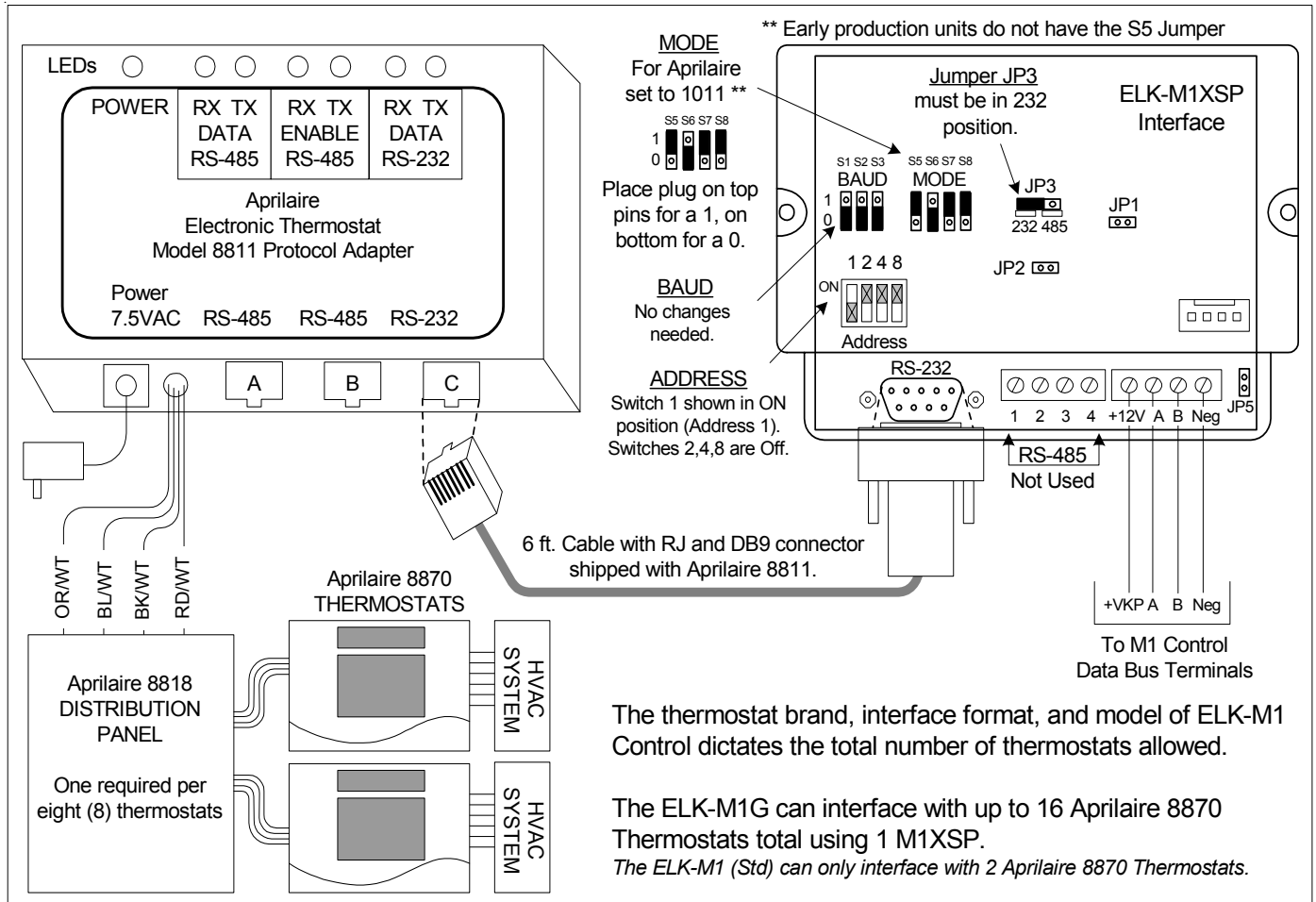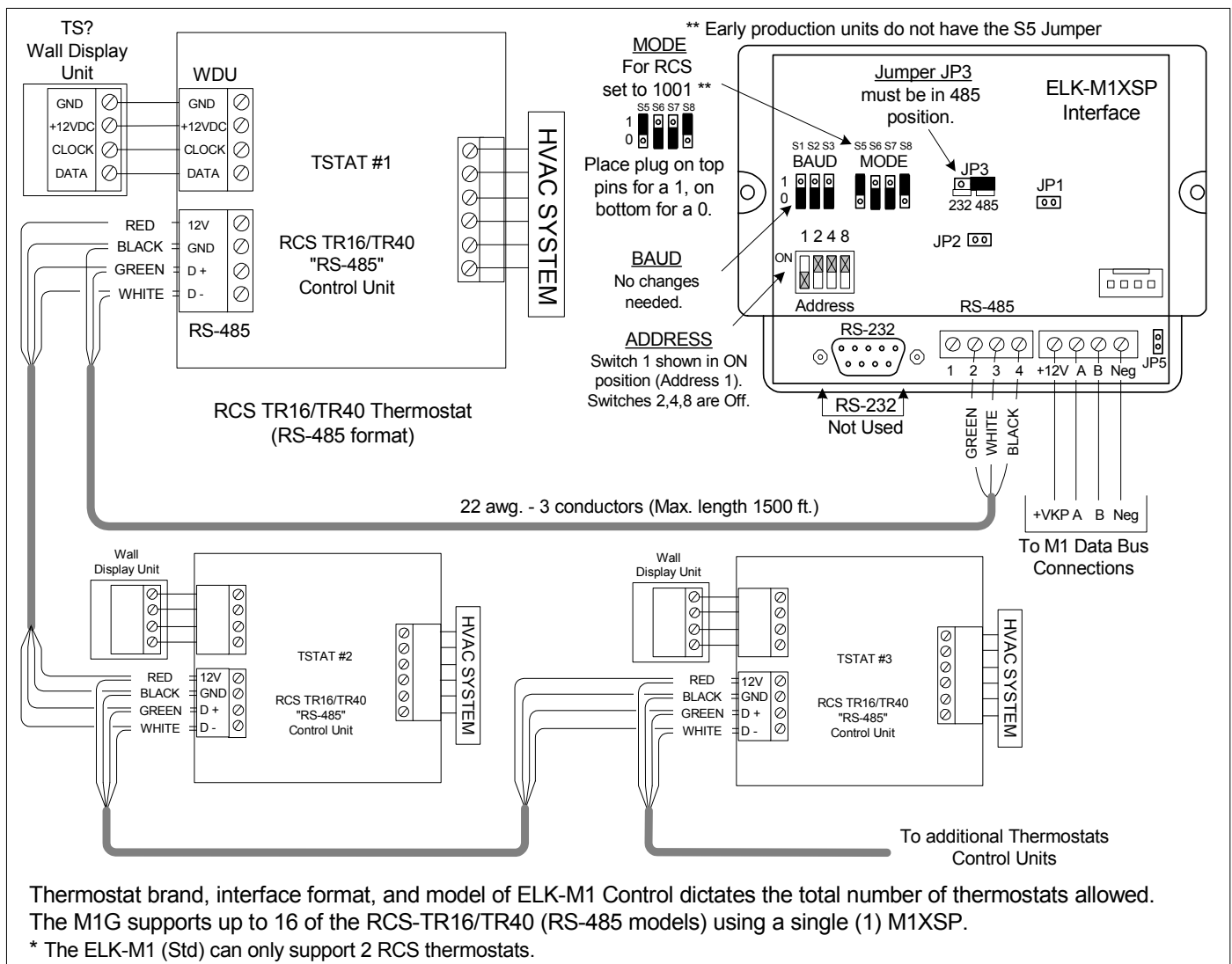7c. Click on the Rules icon and create the following 4 rules.

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.

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

Part # WO37A - 10 ft. Cable with 4 flying leads and DB9 connector

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 (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.

HAI OmniStat 1 (RC) Series (RS-232 Format) Thermostat

HAI OmniStat 2 Series (RS-232 Format) Thermostat

1. Install, and wire the HAI Thermostat(s) to the HVAC system per the instructions that came with the thermostat.
2. Install the ELK-M1XSP as per instructions on page 3. Enroll into the M1 after setting the data bus address switches.

    IMPORTANT: A max. of four (4) OmniStats may be connected to a single M1XSP. Up to sixteen (16) may be connected by using four (4) M1XSPs. Each Stat must be set to a unique address from 1 to 16. IMPORTANT: Stats addressed as 1, 2, 3, 4 MAY ONLY be connected to an M1XSP set to data bus address 1. Stats 5, 6, 7, 8 MAY ONLY be connected to an M1XSP set to data bus address 2. Stats 9, 10, 11, 12 MAY ONLY be connected to an M1XSP set to data bus address 3. Stats 13, 14, 15, 16 MAY ONLY be connected to an M1XSP set to data bus address 4. Max. wire distance = 500 ft Total.

3. Set the MODE jumpers S5=**1**, S6=**0**, S7=**1**, & S8=**0** for HAI. If the M1XSP has jumper S4, set it to =**1**.
4. Set Jumper JP3 to the "**232**" position.
5. Set the BAUD jumpers S1,S2, & S3 according to the type of Omnistat being installed.
    OmniStat series 1 thermostats use a 300 Baud setting.   S1=**1**, S2=**0**, S3=**0**
    OmniStat series 2 thermostats can use various Baud settings. We recommended 2400 Baud. S1=**1**, S2=**1**, S3=**0**
6. Splice a four conductor cable to the wires of the ELK-WO37A cable supplied with the ELK-M1XSP. Connect the other end of this four conductor cable to the HAI thermostat according to the appropriate wiring diagram on the opposite page.
    OmniStat series 1 thermostats are supplied with a Black, Red, Green, and Yellow four pin flying lead cable.
    OmniStat series 2 thermostats are supplied with four comm terminals. Remove the jumper between terminals N/C and Black, then connect the four conductor cable coming from the M1XSP according to the wiring diagram.
7. Plug the ELK-WO37A cable into the 9 pin connector on the M1XSP.
8. Power up the HAI Thermostat and enter the Installer Setup Mode (see the HAI manual).

    For HAI OmniStat series 1 thermostats program the following:
    A. Set the "Thermostat Address" to a value from 1 to 16. The first unit should be address 1. If multiple thermostats are installed, each should be set to a consecutive address, starting at 1.
    B. Set the "Communications Mode" to match the Baud Rate settings selected in step 5 above.
    C. Set the "Display Options" to one of the options designated as "non-programmable" (4 thru 7). This is to disable the thermostat's internal setback time schedules so they do not override the M1 Automation commands from the M1XSP.
    An alternate method is to disable specific schedules by setting their times values to "----" (1 step past the 11:45pm time set).
    D. Set the "Cool Setpoint Limit" and "Heat Setpoint Limit" if desired. Effectively, the thermostat will ignore any setpoint commands sent to it that are outside these limits.

    For HAI OmniStat series 2 thermostats program the following:
    A. Set the "Thermostat Address" to a value from 1 to 16. The first unit should be address 1. If multiple thermostats are installed, each should be set to a consecutive address, starting at 1.
    B. Set the "Communications Mode" to match the Baud Rate settings selected in step 5 above.
    C. Set the "System Options" to the option appropriate to the type of heat/cool system being connected.
    D. Set the "Program Options" to either "None" or "Occupancy". This disables the thermostat's internal setback time schedules so they do not override the M1 Automation commands from the M1XSP.
    E. Set the "Cool Setpoint Limit" and "Heat Setpoint Limit" if desired. Effectively, the thermostat will ignore any setpoint commands sent to it that are outside these limits.

9. Using the ELK-RP Software, program steps A,B, and C. Test and verify operation using steps D and E.

9a. Click on the Automation Tab in the ELK-RP software. Click on Thermostat icon and program a name for Thermostat 1.
9b. Click on the Task icon and program at least two tasks. Name the 1st Task "Economy Mode" and the 2nd "Comfort Mode".
9c. 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 [Economy Mode] (Task 1) Is Activated
   Then Set [Thermostat 1] (TStat 1) Cooling Desired Temp to 85 degrees
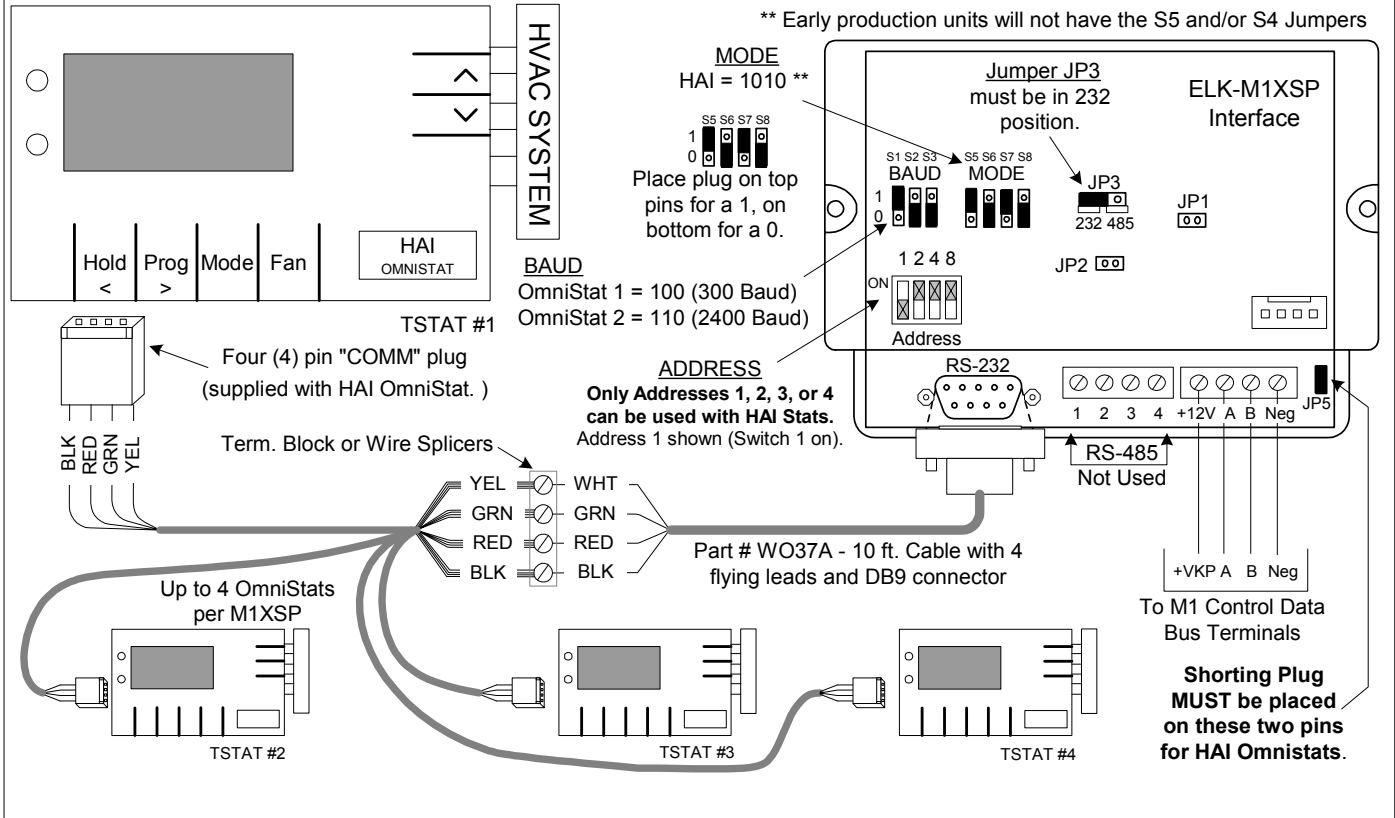
Whenever [Area] Armed State Becomes Disarmed
   Then Activate [Comfort Mode] (Task 2)

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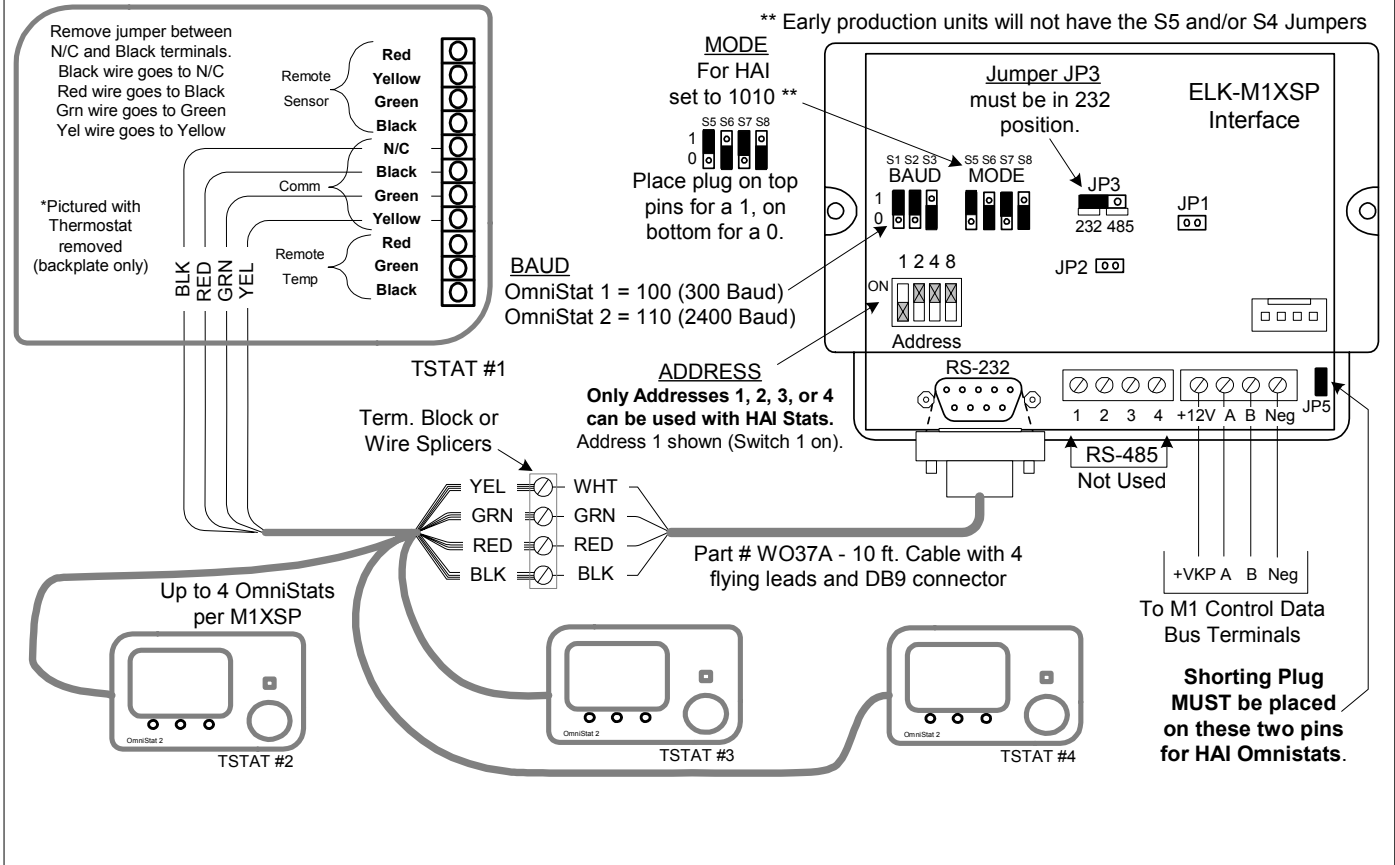   Then Set [Thermostat 1] (TStat 1) Cooling Desired Temp to 70 degrees

9d. 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.
9e. 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.

Wiring Diagram for OmniStat 1 Series

HVAC SYSTEM

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Hold < | Prog > | Mode | Fan | HAI OMNISTAT

TSTAT #1

Four (4) pin "COMM" plug (supplied with HAI OmniStat.)

BLK RED GRN YEL

Term. Block or Wire Splicers

YEL — WHT
GRN — GRN
RED — RED
BLK — BLK

Part # WO37A - 10 ft. Cable with 4 flying leads and DB9 connector

Up to 4 OmniStats per M1XSP

TSTAT #2   TSTAT #3   TSTAT #4

** Early production units will not have the S5 and/or S4 Jumpers

MODE
HAI = 1010 **

S5 S6 S7 S8
1
0

Place plug on top pins for a 1, on bottom for a 0.

BAUD
OmniStat 1 = 100 (300 Baud)
OmniStat 2 = 110 (2400 Baud)

S1 S2 S3   S5 S6 S7 S8
1
0
BAUD   MODE

Jumper JP3 must be in 232 position.

JP3
232 485

JP2

JP1

ON
1 2 4 8
Address

ADDRESS
Only Addresses 1, 2, 3, or 4 can be used with HAI Stats.
Address 1 shown (Switch 1 on).

ELK-M1XSP Interface

RS-232

1 2 3 4   +12V A B Neg
RS-485
Not Used

JP5

+VKP A B Neg

To M1 Control Data Bus Terminals

Shorting Plug MUST be placed on these two pins for HAI Omnistats.

Wiring Diagram for OmniStat 2 Series

Remove jumper between N/C and Black terminals.
Black wire goes to N/C
Red wire goes to Black
Grn wire goes to Green
Yel wire goes to Yellow

*Pictured with Thermostat removed (backplate only)

Remote Sensor
Red
Yellow
Green
Black

N/C
Black
Comm   Green
Yellow

Remote Temp
Red
Green
Black

BLK RED GRN YEL

TSTAT #1

Term. Block or Wire Splicers

YEL — WHT
GRN — GRN
RED — RED
BLK — BLK

Part # WO37A - 10 ft. Cable with 4 flying leads and DB9 connector

Up to 4 OmniStats per M1XSP

OmniStat 2   OmniStat 2   OmniStat 2
TSTAT #2   TSTAT #3   TSTAT #4

** Early production units will not have the S5 and/or S4 Jumpers

MODE
For HAI set to 1010 **

S5 S6 S7 S8
1
0

Place plug on top pins for a 1, on bottom for a 0.

BAUD
OmniStat 1 = 100 (300 Baud)
OmniStat 2 = 110 (2400 Baud)

S1 S2 S3   S5 S6 S7 S8
1
0
BAUD   MODE

Jumper JP3 must be in 232 position.

JP3
232 485

JP2

JP1

ON
1 2 4 8
Address

ADDRESS
Only Addresses 1, 2, 3, or 4 can be used with HAI Stats.
Address 1 shown (Switch 1 on).

ELK-M1XSP Interface

RS-232

1 2 3 4   +12V A B Neg
RS-485
Not Used

JP5

+VKP A B Neg

To M1 Control Data Bus Terminals

Shorting Plug MUST be placed on these two pins for HAI Omnistats.

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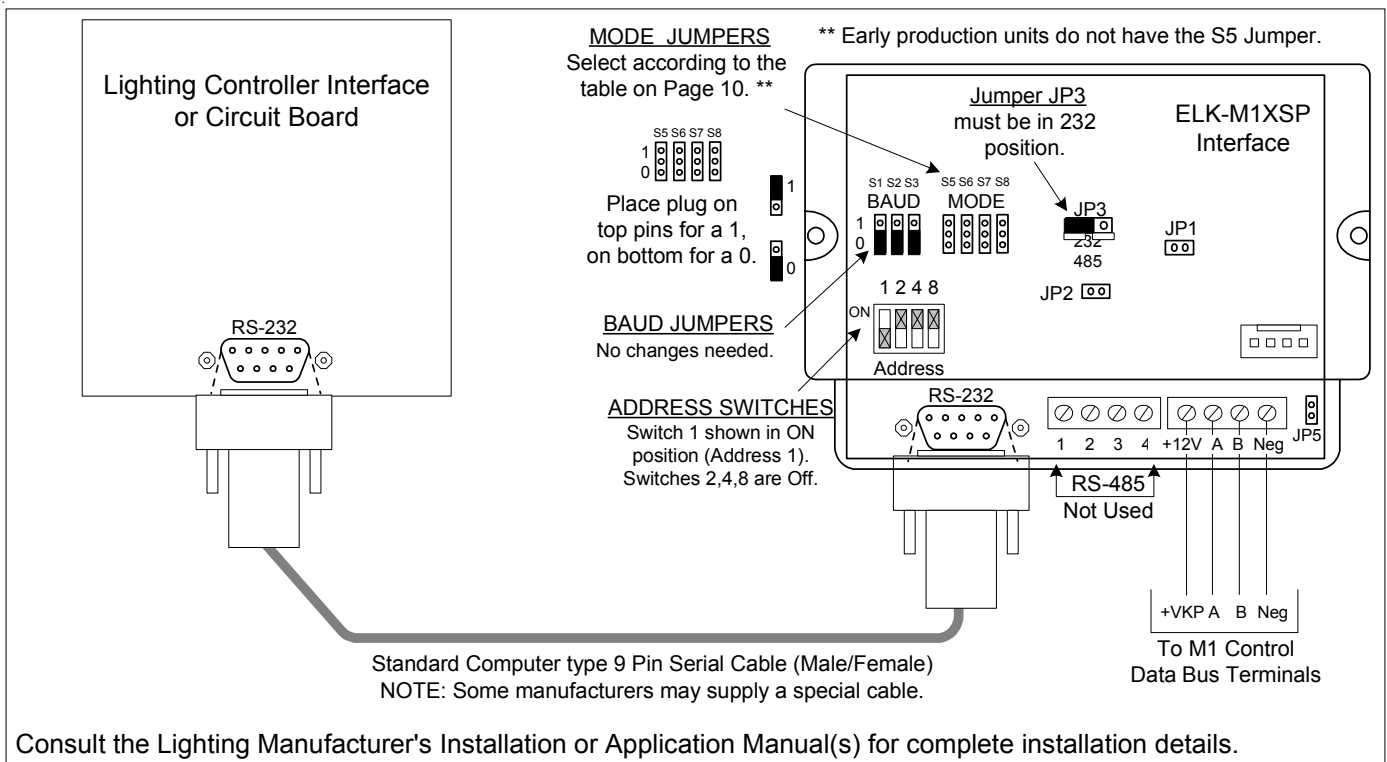
Consult the Lighting Manufacturer's Installation or Application Manual(s) for complete installation details.

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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 <u>individual address</u> 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 form of Powerline Communications "PLC" technology for communicating to light switches and scene switches. A UPB Communications Interface Module "CIM" is required for interfacing with the ELK-M1XSP, and then into the M1 line of controls. The M1XSP supports 192 UPB individual addresses (dimmers, switches) and 64 UPB Links (scenes).

Integration with the M1 is accomplished by "mapping" the UPB addresses and operation to M1 Lighting devices. For example: UPB individual addresses 1-192 are mapped to M1 Lighting devices 1-192. UPB Links 1-64 are mapped to M1 Lighting devices 193-256. <u>NOTE: Links require M1XSP firmware version 1.0.14 or higher.</u> The chart on the next page shows the M1 Lighting devices and their corresponding UPB device mapping.

Components required for UPB 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) UPB Computer Interface Module "CIM".
- One or more UPB Lighting devices.

Limitations:
UPB modules will not send their recent status changes in response to link commands. Therefore, the status displayed by the M1 Controller may not always match the true status of UPB devices if they have been controlled by a Link command.

Setting up the M1XSP and the M1 to communicate with UPB
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 Computer Interface Module "CIM".
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 <u>0</u> OR <u>255</u> AS THESE ID HAVE SPECIAL PURPOSE RESERVED BY UPB.
7. Using the ElkRP software, open the "Automation/Lighting" folder and program the M1 Lighting device attributes. Only the specific devices to be used for UPB need to be programmed. For <u>individual addresses</u> 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 link addresses program M1 Lighting devices: **193-256 as "Format= Serial Expander", "Type=On/Off Switch"**.

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 UPB CIM.

Programming the UPB devices:
Use the UPB UPStart Software to program the UPB modules with an address, network ID, and any other options. In order to receive "Load Status" changes from the UPB devices, make sure to program their option bit "Transmit Changes".

IMPORTANT: The same unique UPB NETWORK ID programmed and stored in the UPB switches must also be programmed into the M1 using the ElkRP software. DO NOT USE NETWORK ID <u>0</u> or Network ID <u>255</u>. Refer to the ElkRP software, "Globals" folder, "G29-G42 Special" tab.

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.

M1XSP Installation Manual

Centralite   (Individual Lighting Loads and Scenes)

Centralite LiteJet and Elegance are low voltage, centrally controlled, whole-house lighting products. All lights to be controlled are home run (high voltage) back through a dimmer/relay enclosure. This enclosure contains a processor board with an on-board RS232 serial port for interfacing with the M1XSP. Depending on the Centralite system selected, the M1XSP can support up to 192 individual light devices (loads) and up to 64 lighting scenes.

Centralite StarLite and JetStream are wireless lighting control systems.   The M1XSP interfaces to the Centralite Master Interface which then controls wireless switches installed around the building. Up to 96 individual light devices (loads) and up to 64 lighting scenes can be controlled throught the M1XSP.

> Note: JetStream support requires firmware version 30.x.x which is currently only available upon request. Contact Elk for information. **On a Starlite Master Control Station DIP switch #7 must be set to ON.** This tells the StarLite MCS to emulate the LiteJet system, allowing the M1XSP to communicate to it just as it would the LiteJet or Elegance systems.

Integration:
Integration with the M1 is accomplished by "mapping" the Centralite loads to M1 Lighting devices. For example: Centralite individual loads 1-192 are mapped to M1 Lighting devices 1-192. Centralite Scenes 1-64 are mapped to M1 Lighting devices 193-256. The attached 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. NOTE: Firmware updates may be downloaded from the ELK M1 Dealer Web site.
- One (1) Centralite System with integrated processor board.
- One or more Centralite wall switches.

Limitations:
- Button presses from a Centralite keypad have no direct integration with the M1. However, it could be possible to assign a button to a non physical (phantom) load and then use the status change of that load to cause an M1 action.
- Load status changes from Centralite to the M1 requires special firmware in both products. See paragraph titled "Load Status Communications". Even so, in many circumstances it may not be possible for the lighting status displayed by the M1 Controller to match the true status of the loads.

Setting up the M1XSP and the M1 to communicate with Centralite
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 9-pin serial port on the Centralite processor board marked "RS232-2".
3. Set **MODE** Jumpers on the M1XSP to a value of 1 1110: **S4*="1" (UP), S5="1" (UP), S6="1" (UP), S7="1" (UP), 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. Power up all the devices.
6. 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"**.

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 Centralite Processor.

Load Status Communications:
To receive load status changes from Centralite requires firmware **ver 1.0.14 or later in the M1XSP** and **ver 5.5 or later in the Centralite LiteJet.** Turn ON dipswitch 6 on the LiteJet board but DO NOT program the load "send changes" option.
Note: Version 5.5 or later of the Centralite firmware places a 1 second delay between each load change transmission. This means that multiple load changes can and will take several seconds to reach the M1. An ALL ON command could take well over a minute for all loads to report in.

Recap of Centralite Commands supported by M1:
Centralite commands sent by the M1XSP: ^Annn<cr>=Load ON, ^Bnnn<cr>=Load Off, ^Cnnn<cr>=Scene On, Dnnn<cr>=Scene Off, and ^Ennnllrr<cr>=Load, Level, & Ramp Rate. Where "nnn" represents the load or scene 001-256, "ll" represents the dim Level 00-99, and "rr" represents the ramp rate 00-31.

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

Lutron RadioRA - (Phantoms, Zones, Security Flash/Solid, Master Ctrl Buttons)

Interfacing to a Lutron RadioRA System requires: ELK-M1XSP Interface with **firmware 1.0.14 or greater**, 9 pin Serial Cable, Lutron RA-RS232 Interface, Dimmers, etc.

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. The ELK-WO37A cable that is supplied with the M1XSP will not be utilized.
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.

Lutron - (continued)

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 Flash Mode	81	F01	Lighting Z17 (S2)			**Zones 2nd Sys as Shades (S2)**	209	N01	MC6 Btn 3
			82	F02	Lighting Z18 (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 Solid Mode**	159	J15	Shade Z15 (S2)	225	O01	MC9 Btn 1
32	B16	B16 All On/Off				160	J16	Shade Z16 (S2)	226	O02	MC9 Btn 2
		Zones 1st Sys as Lights (S1)	97	G01	Phantom 1	161	K01	Shade Z17 (S2)	227	O03	MC9 Btn 3
			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	O16	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 as Shades (S1)**			**Master Control Buttons**	243	P03	MC12 Btn 1
48	C16	Lighting Zn16 (S1)							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			

INSTEON - (Individual Lighting Loads and Scenes)

INSTEON requires a special firmware version in the M1XSP. This firmware must be downloaded from the ELK M1 Dealer Web site and "flash" programmed in the field using Elk-RP. The firmware version can be identified by its unique first two digits being 50, example 50.0.16. This special firmware does not support any other manufacturer or protocol.

INSTEON is a Powerline Communications "PLC" technology. Numerous device types are available; such as Light Switches, Lamp Modules, Appliance Modules, Keypads, etc. A unique feature of INSTEON is the availability of RF signal enhancers or "Bridges" that can extend signal range as well as provide power line signal coupling.

There are three (3) ways to interface INSTEON with an M1 Control:
1) INSTEON Interface > Powerlinc Modem (PLM p/n 2412S) communicating to a ISY Controller produced by Universal Devices Inc. The ISY connects to the M1Control over a LAN network, utilizing Elk's M1XEP Ethernet Adapter. NO ELK-M1XSP is required if using an ISY Controller. This is perhaps the easiest and most powerful way to interface with INSTEON, as it offers Computer setup and management of the devices in a powerful and easy to use Graphical User environment

2) INSTEON Interface > Powerlinc Modem (PLM p/n 2412S) communicating directly to an ELK-M1XSP Serial Adapter. See instructions that follow.

3) INSTEON Interface > Powerlinc Serial Controller (PLC p/n 2414S - **obsolete - no longer sold**) communicating directly to an ELK-M1XSP Serial Adapter. NOTE: At this time the M1XSP firmware and instructions still support this obsolete interface, however no technical support is provided and there are no guarantees of future compatibility. One current requirement in order to use the PLC p/n 2414S is that it be marked as V2 rev 1.6 (or greater), with firmware 2.12 or later, and it must have the Smarthome SALad program titled "timerCoreApp" loaded. This was generally preloaded in production.

The M1 control family supports up to 192 individually addressable INSTEON Devices and up to 63 Scenes or Groups. Individual addresses 1-192 are mapped into the M1 architecture as lighting devices 1 to 192. Groups 1-63 are mapped in as lighting devices 193-255. For example, to turn on INSTEON Group 1 it would be necessary to turn on M1 Lighting device 193. An attached chart outlines the M1 Lighting devices and their corresponding INSTEON devices.

Limitations: (Without the use of "third party" hardware/software the following limitations apply)
- INSTEON devices can only be "linked" (learned) into the M1XSP starting at the first M1 Lighting device 001 (A1). Using just the M1XSP there is no way to have devices start at a specific location.
- INSTEON devices cannot be removed or re-arranged individually. If it becomes necessary to remove or re-arrange any linked devices the entire memory must be cleared and all devices re-linked (learned) again.
- Once an M1XSP has been linked with INSTEON devices, any updating to the firmware in that M1XSP will cause all memory of linked addresses to be erased, requiring all devices to be re-linked (learned) again.
- INSTEON devices do not initiate a report of their dim level status to the M1. However, they can initiate reports of their full ON or full OFF status changes. Refer to the section titled "Load Status Communications".
- The M1XSP is capable of sending commands to Groups 1 thru 62, but only if you have a way to setup the groups.
    NOTE: "Third Party" hardware/software such as the ISY Controller by Universal Devices, Inc. PowerHome, and others can overcome some limitations such as the starting addresses, removing or moving of devices, Group setup, etc.

Setting up an M1XSP and the M1 to communicate with INSTEON
1. Install the ELK-M1XSP per the instructions on page 3. Be sure to enroll the device into the M1.
2. Update the firmware in the M1XSP or verify that it is running the latest firmware for INSTEON.
3. Connect a serial adapter cable between the INSTEON Interface (P/N 2412S PLM or **P/N 2414S PLC - obsolete**) and the 9 pin male serial connector (J2) on the ELK-M1XSP. This cable should have been included with the INSTEON Interface.
4. Plug the INSTEON Interface into an available wall outlet.
5. Set the **BAUD** and **MODE** Jumpers on the M1XSP:
    Typical Jumper Settings: **S1= 1 , S2= 1 , S3= 1, S4= 1, S5= 0, S6= 1, S7= 0, S8= 1**
        a. Jumper S7 set to "0" position (down) is for operation with the PLM 2412S.
            For operation with the obsolete PLC 2414S interface this jumper would be set to "1".
        b. Jumper S1 = "1" is for normal operation. This jumper can also be used to clear memory. See note below.
        c. Jumper S2 = "1" Do NOT change this jumper.
        d. Jumper S3 = "1" is used to disable polling. Setting S3 = "0" will enable polling (normally not used or recommended).
        e. Jumper S5 = "0" sets ELK lighting devices 193 to 255 as reserved for INSTEON Group #'s 1 to 63.
            Setting S5 = "1" sets ELK lighting devices 193 to 254 as reserved for individual X-10 devices M1 to P14.
        f. Jumper S6 = "1" Do NOT change this jumper.

        NOTE: Should it become necessary to clear (erase) ALL of the linked INSTEON IDs from the M1XSP memory:
                1. Power down the M1XSP
                2. Set Jumper S1 = "0" (down)
                3. Power up the M1XSP and wait 5 seconds.
                4. Power down the M1XSP.
                5. Set Jumper S1 = "1" (up) and reapply power to the M1XSP.

6. Set the M1XSP Jumper **JP3="232"**.
7. Using the ElkRP software, program the M1 or M1EZ8 attributes for Lighting devices 1 through 192 as follows:
    Format = Serial Expander, Type = Dimmer (Type may alternately be On/Off Switch if device does not support dimming). These first 192 M1/EZ8 lighting devices may now be "linked" to INSTEON individual addresses.
8. Program the attributes for Lighting devices 193 through 254 as:
    Format = Serial Expander, Type = On/Off Switch   These 62 lighting devices can be used to control INSTEON Groups.
9. Program Lighting devices 255 and 256 as: **Format = Serial Expander, Type = On/Off Switch**.   Device 255 is reserved for future use. Device 256 is for remotely starting and ending the INSTEON "linking" mode. Program the name for device 256 as: **INSTEON LinkMode**.   Setting device 256 to ON starts the linking mode. Setting device 256 to OFF ends linking mode.

When a M1 Lighting device is activated from a rule or from the M1 Keypad "Automation" menu, the INSTEON device ID number and command will be transmitted.

Factory Defaulting INSTEON Devices

During installation or troubleshooting it may become necessary to factory default one or more devices. For example; multiple devices may inadvertently become cross-linked together, making them turn on together when they should be separate. This is caused by accidentally linking one device while another device is still in the link mode. Consult the instructions that came with the device for steps on factory defaulting, including possibly the INSTEON Interface models PLM 2412S and PLC 2414S.

Programming and Linking INSTEON Modules to the M1XSP:

The M1XSP must acquire the Address IDs of the installed INSTEON devices. The ID is a unique number hardcoded into each INSTEON device (i.e. 00.42.12). The M1XSP receives and stores this data from the INSTEON Interface ONLY while both units are in the "linking" mode.   Each device becomes mapped to an M1 Lighting Device address in the exact order in which it is linked (stored). The very first linked device will be mapped as M1 Lighting device 1 (A1), the second is 2 (A2), etc. REMINDER: Without "third party" hardware/software (ISY, PowerHome, etc.) it is not possible start INSTEON devices at another location.

1. To start the linking (enrollment) process, go to the M1 Keypad and press the ELK key followed by the Right arrow key to access Menu 1-View/Control Automation Fncts. Press 2 followed by the right arrow key for the Lighting sub-menu. Advance to M1 Light 256 "INSTEON LinkMode" by entering 2 - 5 - 6.

2. Turn ON Light 256 by pressing the # (pound) key.   The M1XSP will send a serial command to the Interface and instruct it to begin a 4 minute linking period. **You have 4 minutes to link the first device, and 4 minutes from that point to link the next device. Each time a new device is linked the time period will reset to 4 minutes. Work quickly. If the 4 minute timer expires (or you suspect it has expired), it is necessary to repeat step 1 to restart linking before proceeding.**

3. Press & hold the link mechanism (Lamplinc "SET" button / SwitchLinc "PADDLE") on the INSTEON device to be learned.

4. The light "LOAD" being controlled should flash once or twice indicating it has become linked.
    NOTE: The M1XSP status LED should flash ON 3 times and then OFF for 2 seconds once it receives an INSTEON during the linking process. This blink cadence continues until the linking process is manually ended by step 8. **

5. Release the link mechanism. At this time an LED on the device will continue to flash indicating that it is in the link mode.

6. *__This step is very important!__* With the LED on the device still flashing, momentarily tap the the link mechanism once and verify that the LED stops flashing. This stops the link mode for this device. Be sure the LED has stopped flashing or else the device will remain in the link mode causing it to be cross linked with future linked devices.

7. Repeat steps 3 thru 6 for each INSTEON device to be learned. Each time this is done, the device will be linked to the next incremental M1 Lighting device number (002, 003, 004, etc.).   A written record should be kept for future recall.

8. *__This step is very important!__* To end the linking process, go to the M1 Keypad and access the lighting menu. Turn OFF Light device 256 "INSTEON LinkMode". The # (pound) key toggles between On and Off. Ending the linking mode will result in the LED on the M1XSP returning to its normal status blink.

9. Test the operation of each light from the ELK-M1 using the lighting control menu at the keypad

    ** Optional: You may elect to end the linking process after each new device (using step 5) just so the next linked device will be visually confirmed by the start of the special blink process of the M1XSP. Keep in mind if you elect to do this, the linking process must then be restarted (using step 2) prior to proceeding to the next device.

INSTEON - (continued)

Adding (linking) new or additional INSTEON devices at a later date:
Additional devices can be added "linked" at any time by performing the previous steps. The newly linked device(s) will be associated to the M1 starting with the first empty lighting device locations. The maximum number of devices is 192.

Permanently erasing "Unlinking" all INSTEON devices from the M1XSP - (Jumper S1)
At the present time it is not possible to erase or "unlink" devices individually. The only option is to clear all the linked devices at once, erasing all the memory, and thus making it necessary to re-enroll all devices again.
        To erase all the linked devices from memory in the ELK-M1XSP:
1. Power down the M1XSP and move the S1 jumper to the 0 position.
2. Re-apply power to the M1XSP and after 5 seconds move the S1 jumper back to the 1 position. All devices addresses in the M1XSP should now be erased.

Grouping:
Lighting devices 193 through 254 are mapped to control INSTEON "Groups". The M1XSP can send commands to Groups 1 thru 62, but devices can only be made part of a group using special "third party" hardware/software. A good example is the ISY Interface made by Universal Devices Inc. Without this the M1 can only utilize group. In order to setup Group 1 you must manually place the INSTEON PLM or PLC Interface into the linking mode and then press the Link mode on the INSTEON device, repeating the whole process for each device to be included into Group 1. Controlling the Group 1 is done by simply turning lighting device 193 On or Off.

Operating BOTH INSTEON and X-10 devices: (Special attention to Jumper S5)
It is possible for the M1XSP to communicate with both INSTEON and traditional X-10 devices. It works as follows: Upon activation of a Lighting device the M1XSP (with special INSTEON Firmware) will send INSTEON commands for the lighting devices number that have an INSTEON linked address. It will send X-10 commands for the lighting devices that do not have an INSTEON "linked" address. This helps to eliminate the need for a separate X-10 PSC05 or TW523 Interface. However, there are tradeoffs and limitations which must be accepted. For example: No X-10 devices can have a House/Unit code that conflicts with any present or future linked INSTEON device locations. Lighting devices are numbered 1 (A01) to 256 (P16). See the chart on the next page. INSTEON device linking BEGINS at Lighting device 1 (A01) and ENDS at 192 (L16). For this reason, do not assign X-10 House/Unit codes in the extreme low numbers. Furthermore, no X-10 House/Unit codes can be assigned to light device addresses 193 (M1) through 256 (P16), as these are reserved for INSTEON Groups and special commands. There is an option to eliminate Groups and free up addresses 193 (M1) to 254 (P14). See note N2 below.

N1. With the M1XSP Jumper **S5 = 0** (factory setting), the M1XSP supports a total of 192 individual INSTEON or X-10 Lights and 63 INSTEON Groups.   It **cannot** support X-10 devices with a House/Unit code M01 or above in this setting.
N2. With the M1XSP Jumper **S5 = 1** Insteon groups will be disabled and X-10 devices at addresses 193 (M01) through 254 (P14) will be allowed. **Effectively, INSTEON Groups are disabled with S5 = 1**.
N3. It is important to note that the optional INSTEON RF Signal Enhancers DO NOT provide phase bridging or enhance/extend for traditional X-10 transmissions. An X-10 bridge/coupler will still be required for this purpose.
N4. Use the ElkRP software to program the format for any X-10 devices to **"Serial Expander"**. Assign a name, type, and set the "show" options. This should also be done for any INSTEON devices, at least on Light devices 1 to 192.
N5. Transmitted X-10 commands are limited to On, Off, and Preset Dim (provided the X-10 devices support preset). Received X-10 commands passed from the INSTEON Interface to the M1XSP are limited to On and Off states ONLY.

Load Status Communications:
INSTEON devices can send their On or OFF status to the M1 whenever a User turns the load On or Off.   However, In order for Load Status "On or Off" tracking to be enabled, the LampLinc or SwitchLinc devices must have the Interface's address linked into their database. To do this, activate linking mode at the LampLinc or SwitchLinc by pressing and holding the set button or paddle for 10 seconds. The LED will blink on the LampLinc or SwitchLinc. Now press and hold the set button on the INSTEON Interface for 10 seconds. The LED on the LampLinc or SwitchLinc should go solid to indicate they have been successfully linked to the Interface.

NOTE: INSTEON devices DO NOT initiate a report of their dim level status to the M1 when a device is changed by the User to a new level (eg:100% to 50%), only On or Off. However, the latest M1XSP firmware does send a command to request the level of a switch whenever it hears a switch has been pressed.

Optional Polling for INSTEON devices status: - (M1XSP Jumper S3)
The M1XSP can be set to periodically poll and retrieve the On, Off, and Dim level status of each linked device as a workaround to the limitation of INSTEON devices not initiating reports of their dim level status. The interval is one device polled every 15 seconds, with the next device polled 15 seconds later and so on. **NOTE: The added traffic associated with polling every 15 seconds may cause problems with other powerline transmissions and/or devices. Other than the use of polling, the M1 cannot maintain or trace Dim level states initialed by the User.**

1. To enable polling by the M1XSP, move Jumper S3 to the "0" (DN) position. This option will may not work if the INSTEON Interface does not have the latest firmware/software loaded.

M1 Lighting Devices Mapped to INSTEON

The PLC column is for reference only.

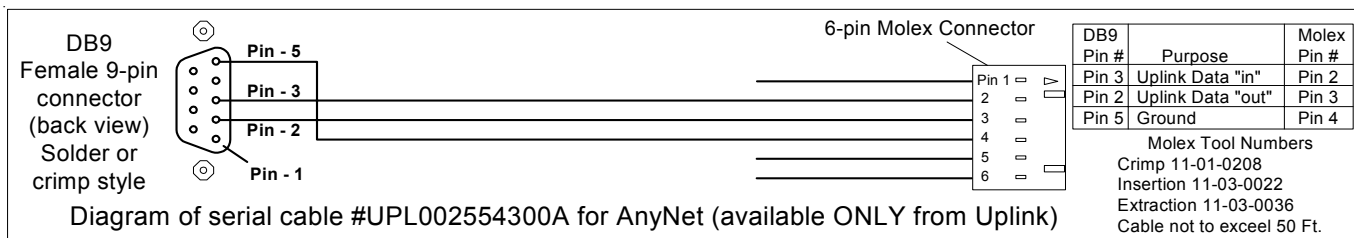| ELK Light Device #	PLC (X-10) Ref.	INSTEON	ELK Light Device #	PLC (X-10) Ref.	INSTEON	ELK Light Device #	PLC (X-10) Ref.	INSTEON	ELK Light Device #	PLC (X-10) Ref.	INSTEON
1	A01	Device 1	65	E01	Device 65	129	I01	Device 129	193	M01	Group 01
2	A02	Device 2	66	E02	Device 66	130	I02	Device 130	194	M02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

UPLINK "AnyNET" Cell Radio Backup

The UPLINK AnyNET Radio Communication Unit can be SERIALLY interfaced to ELK-M1G or M1EZ8 Controls utilizing an M1XSP. This provides FULL DATA reporting to a Central Station using Contact ID for all events and conditions.

IMPORTANT: Effective 06/03/08 the M1XSP must be flash programmed with firmware 10.0.2 to support Uplink. Also, the ELK-M1G/M1EZ8 must be version 4.3.8 or greater and ElkRP Remote Program Software must be version 1.6.2 or higher.

1. Install the ELK-M1XSP per the instructions on page 3.
2. Set **MODE** Jumpers on the M1XSP to 1 0000: **S4* ="1" (UP)**, **S5="0" (DN)**, **S6="0" (DN)**, **S7="0" (DN)**, & **S8="0" (DN)**.
   * NOTE: Some units do not have jumper S4. The BAUD jumpers S1,S2, & S3 do not matter for this setup.
3. Set Jumper JP5=**ON**.
4. Set Jumper JP3 to the "**232**" position.
5. Mount the Uplink Radio Unit in a suitable location as recommended by Uplink. This is very important in order to obtain the best signal strength. The M1XSP operates from the RS-485 data bus and can easily be located away from the control.
6. The Uplink AnyNET unit has several options and may have one of two serial connections.
   A - This unit will have a DB25F (female) connector, requiring a serial cable with a DB9F (9 pin female) on one end and a DB25M (25 pin male) on the other end. A DB9F to DB25M adapter plug can also be used with a standard 9 pin cord.
   B - This unit will have a side mounted 6 pin serial socket which requires a special adapter cable available only from Uplink. **The Uplink Part # is UPL002554300A.** See diagram below:

Diagram of serial cable #UPL002554300A for AnyNet (available ONLY from Uplink)

DB9 Pin #	Purpose	Molex Pin #
Pin 3	Uplink Data "in"	Pin 2
Pin 2	Uplink Data "out"	Pin 3
Pin 5	Ground	Pin 4

Molex Tool Numbers
Crimp 11-01-0208
Insertion 11-03-0022
Extraction 11-03-0036
Cable not to exceel 50 Ft.

7. Power the Uplink Radio from one of the Aux. 12V power terminals on the M1, or from an auxiliary 12VDC power supply.
8. Follow the Uplink Instructions for activating the Radio into the network. Verify that the unit is activated.
9. Using the M1 Keypad Programming OR the ElkRP software, program the Telephone and Communicator attributes.
   Select any 1 of the 8 telephone numbers and program the following:
   A. If you want Uplink to ALWAYS report the the selected conditions, program the Telephone TYPE as "0=Always report to this number". However, to have Uplink BACKUP (only report the selected conditions upon failure of) the previous telephone number, program the TYPE as "1=Backup previous number". NOTE: Only telephone numbers 2 thru 8 can be set as "Backup".
   B. Optional - Program a name to describe the location that this telephone number is reporting to.
   C. Do not program any numbers into the NUMBER TO DIAL location.
   D. Program the reporting format as "7-Serial Expander".
   E. Program the Dial Attempts value.
   F. Click on the selection blocks to program the desired conditions to be reported by this telephone number.
   G. For each active Area (Partition), program the Account number as 999999.
   From the Communicator Reporting Code menus (folders), program the following:
   H. Program any of the Area Reporting codes by setting their value greater than 00.
   I. Program any of the User Report codes by setting their value greater than 00.
   J. Program any of the Zone Report codes by setting their value greater than 00.
   K. Program any of the System Report codes by setting their value greater than 00.
   L. Program any of the Keypad Panic Report codes by setting their value greater than 00.
10. Test the Uplink reporting by activating any of the reported events.

    SUPERVISION: The M1XSP is enrolled into the M1 and is automatically supervised on the data bus. Loss of an M1XSP for more than 40~ seconds will result in a "Expander Missing" signal by the M1. This inherently supervises the loss of Radio as well.

    While the Uplink Radio is supervised to the Uplink Network Operations Center (NOC) it is also possible to supervise the loss of radio signal back into the M1 Controller. This can be done using an M1 Automation Rule to look for a specific ASCII text string from the M1XSP. The result of this type supervision signal can be whatever you wish, based on the capability of the rule engine. Do the following:
    A. From ElkRP program 2 new Text strings. One will be "uplinkloss^M" and the other "uplinkrest^M".
    B. Now write a rule utilizing the "uplinkloss^M" as follows:
       WHENEVER THE FOLLOWING TEXT IS RECEIVED: "uplinkloss^M" THROUGH PORT X (M1XSP address)
          THEN TURN Output X ON   (this can be used to power a trouble indicator)
    C. Write a second rule utilizing the "uplinkrest^M" text as follows:
       WHENEVER THE FOLLOWING TEXT IS RECEIVED: "uplinkrest^M" THROUGHT PORT X (M1XSP address)
          THEN TURN Output X Off (used to reset the trouble indicator)

NOTE: Text Strings are *Case Sensitive*. Make certain that each text string ends with ^M (carriage return).

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 <u>exactly</u> 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.

AES Intellinet Radio Subscriber Unit

This document describes how to interface an AES Intellinet Radio Subscriber unit to an ELK-M1 or EZ8 Control using an M1XSP Serial Port Expander containing a dedicated firmware version.   Reporting includes Contact ID formatted data of all events and conditions to the Central Station

IMPORTANT: For AES compatibility the M1XSP must be flashed with "dedicated" firmware version 10.x.x. This can be obtained from the M1 Dealer Website. In addition, the ELK-M1 or EZ8 control firmware must be at version 4.4.12 or higher and the ElkRP Programming Software must be at version 1.6.18 or higher.

1. Connect the M1XSP to the M1 Control per the instructions on page 3.
2. Set the M1XSP **MODE** Jumpers as: 1 0001: **S4* ="1" (UP)**, **S5="0" (DN)**, **S6="0" (DN)**, **S7="0" (DN)**, & **S8="1" (UP)**.
    * NOTE: Some units do not have jumper S4. The BAUD jumpers S1,S2, & S3 do not matter for this setup.
3. Set Jumper JP5=**ON**.
4. Set Jumper JP3 to the "**232**" position. MAKE CERTAIN TO "ENROLL" THE M1XSP WITH THE CONTROL!
5. Install the AES Radio Unit as per the manufacturers recommendation, obtaining the best possible signal strength. Since the M1XSP operates from the RS-485 data bus it allows the AES Radio to be positioned far from the control.
6. Construct a Serial Connection Cable from the M1XSP to the AES Radio Unit using the diagram below. This cable requires a DB9F 9 Pin Female connector on one end and a 6 wire modular phone plug on the other. See diagram below.

Diagram of Serial Connection Cable from M1XSP to AES
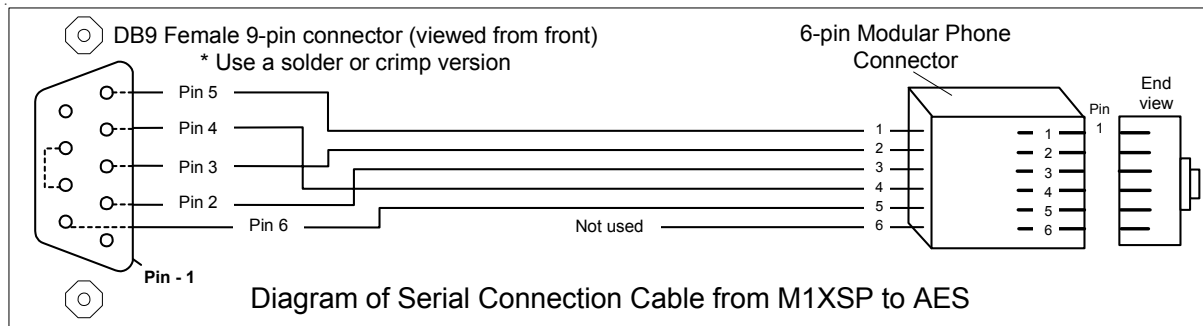
7. The AES Radio has it's own power supply and requires a plug-in transformer and backup battery.
8. Activate the AES Radio per its instructions. Verify that the unit is activated.
9. Program the M1 or EZ8 Control using a Keypad or the ElkRP software.
    From the Telephone Numbers menu select any 1 of the 8 telephone numbers.
    A. If the AES is to be the primary alarm reporting then program the Telephone TYPE as "0=Always report to this number". If the AES is to operate in a "Backup" mode (only report upon failure of the previous telephone number) then program the TYPE as "1=Backup previous number". NOTE: Only telephone numbers 2 thru 8 can be set as "Backup".
    B. Program the name to describe the reporting location of this telephone number. (Optional)
    C. Leave the telephone number "NUMBER TO DIAL" blank.

D. Program the reporting format as "7-Serial Expander".
E. Program the Dial Attempts to a value of at least 1.
F. Choose the desired conditions to be reported by clicking on the selection blocks at the bottom.
G. Program the Account Number to be reported for each active Area (Partition).

From the Communicator Reporting Code menus (folders), program the following:
H. Program any desired Area Reporting codes by setting their value greater than 00.
I. Program any desired User Report codes by setting their value greater than 00.
J. Program any desired Zone Report codes by setting their value greater than 00.
K. Program any desired System Report codes by setting their value greater than 00.
L. Program any desired Keypad Panic Report codes by setting their value greater than 00.

IMPORTANT: IF USING ELKRP SOFTWARE MAKE SURE TO **SEND** ALL OF THIS PROGRAMMING TO THE CONTROL.

10. Test - Test - Test   It is very important to test each of the reported events.

SUPERVISION

The M1XSP is enrolled with M1 Control and is automatically supervised on the data bus. Loss of an M1XSP for more than 40~ seconds will result in a "Expander Missing" signal by the control.

The M1XSP is also capable of reporting the loss of communications between the AES unit and the AES receiver or the loss of communications between the AES unit and the M1XSP. Likewise, it can report when communications is restored. To accomplish this the M1XSP produces two text strings "aesloss^M" and "aesrest^M". These text strings must be programmed into the "Texts" folder using the ElkRP software. See below:
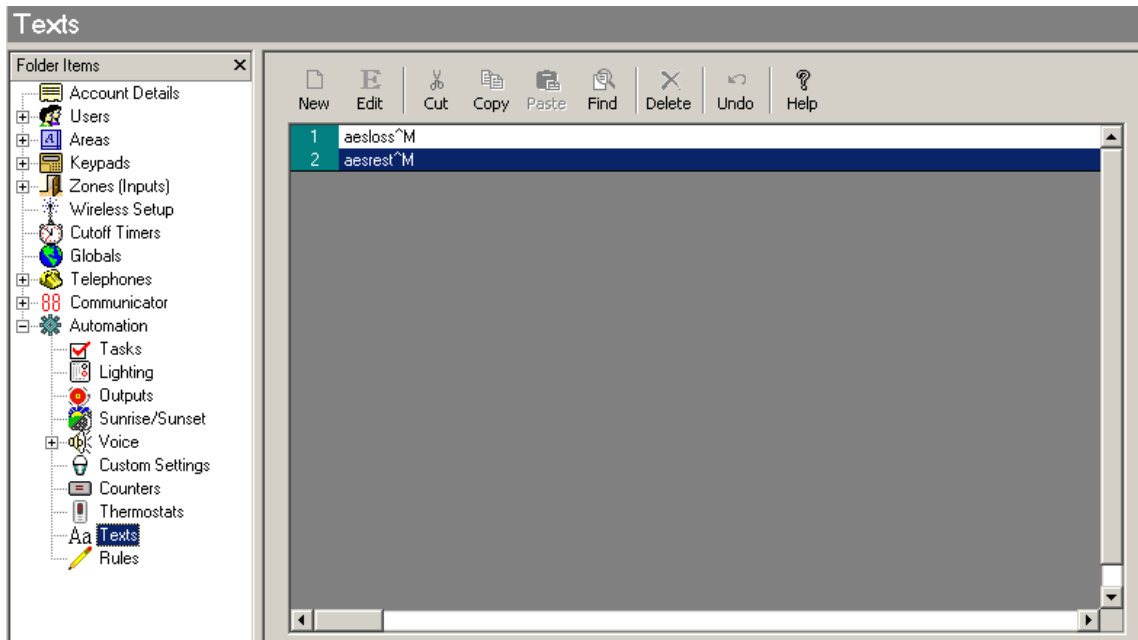
NOTE: Text Strings are *Case Sensitive*.

Before the text strings can produce any alert or actions it will be necessary to write a rule using the ElkRP software. For example, a rule can be written to turn on an output, speak a voice message, etc. See examples below:
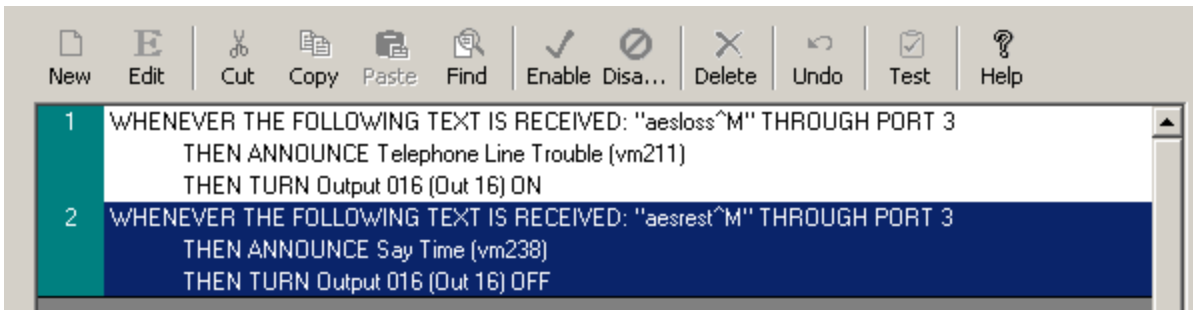
# Data Bus E.O.L. Termination - VERY IMPORTANT!

The M1 family features a true 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 required to eliminate the possibility of reflection errors caused by varying cable lengths. Every data bus device; serial port expander, keypad, etc. and the control board has a built-in bus terminating resistor (120 Ohm) which is installed (activated) via a 2 pin header/jumper (2 Gold Pins). The controls hardware pack includes two black shorting caps. When one of the shorting caps is placed on the two gold pins, it installs (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.**

Ideally, there should be no more than 2 home run cables (4 wire) with daisy chained devices along each. The last device on each cable MUST have a terminating resistor installed (activated) via the gold 2 pin header/jumpers marked JP2 on keypads, JP1 on expanders. Place a black shorting cap (see hardware pack) onto the 2 gold pins to install a 120 Ohm resistor across data lines A & B. If there is only 1 data bus cable place a shorting cap on JP3 of Main Board. See alternate hookups below.

Daisy Chain Connection of Data Bus Devices Using Two (2) Home Run Cables
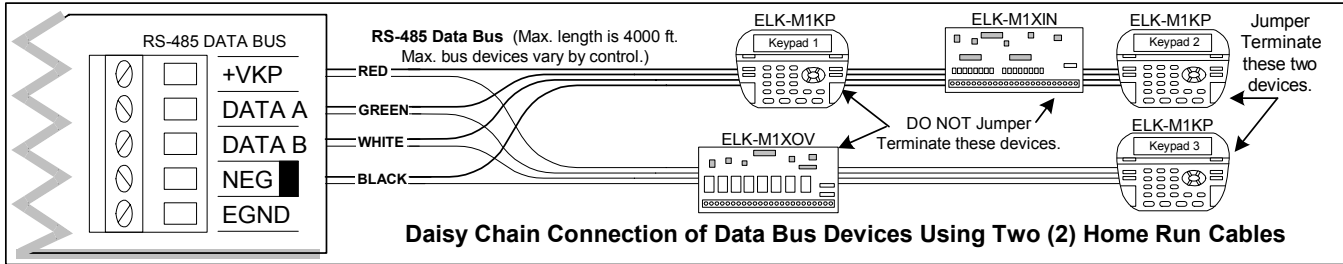
For those that prefer to home run wires, use 6 or 8 conductor (CAT5 is ideal) cable. At each device, make a three way splice of the data A, the device A wire (terminal), and a return data A1 wire (using one of the extra wires). At the control, make a two way splice of the data A1 return wire (series connection) to the outgoing data A wire of the next cable. Repeat for the data B wire. Remember to install a terminating jumper on the last wired device and the control JP3 ONLY! Electrically the data wires are now in series. Connect the POS (+) and Neg (-) power wires of each device directly to the M1's +VKP and Neg terminals. DO NOT SERIES THE POWER WIRES as this will cause unnecessary voltage loss.

Diagram for Daisy Chain Connection of Data Bus Devices Using 3 or More Home Run Cables.
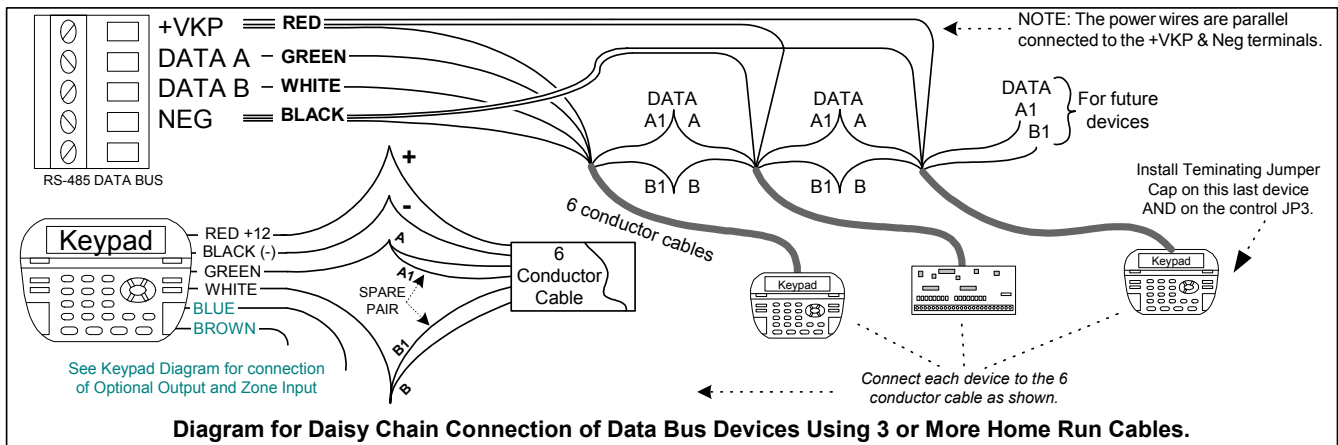
The ELK-M1DBH † Data Bus Hub accepts CAT5 or CAT6 cable with RJ45 plugs on the ends and does all the work of series connecting the DATA lines A & B. Terminate at the hub using the included RJ45 Terminating Plug in the first unused jack.

Daisy Chain Connection using the ELK-M1DBH and CAT5 Cables.
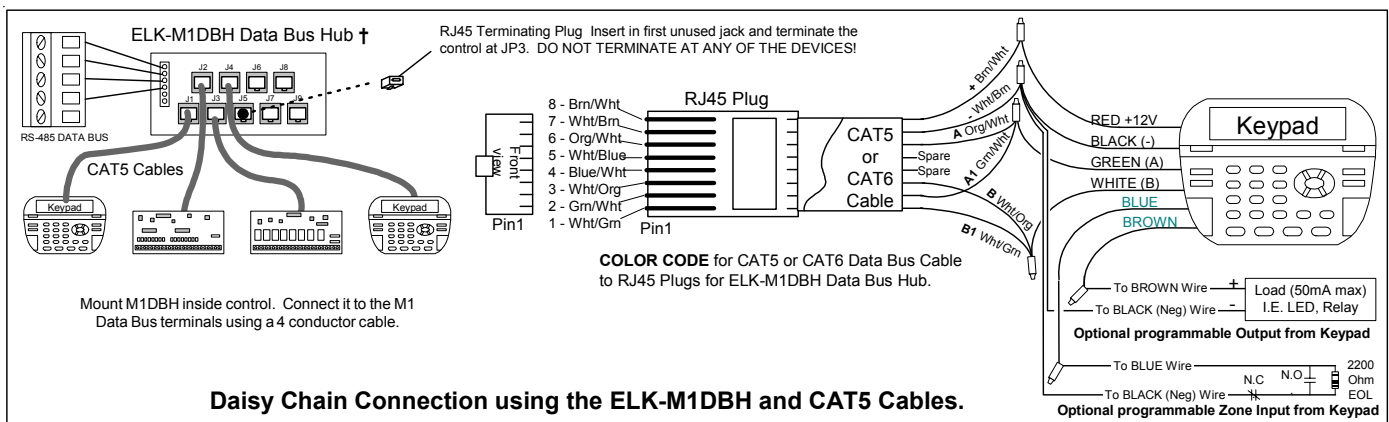
The ELK-M1DBHR † "Active" Data Bus Hub Retrofit splits the Controls' main RS-485 Data Bus into 4 managed RS-485 branches. Each branch can have 2 parallel home run cables for a total of 8 home runs. The last (end of line) device on each home run should be jumper terminated to insure proper operation and supervision.

Diagram for Home run wiring using M1DBHR Active Data Bus Hub
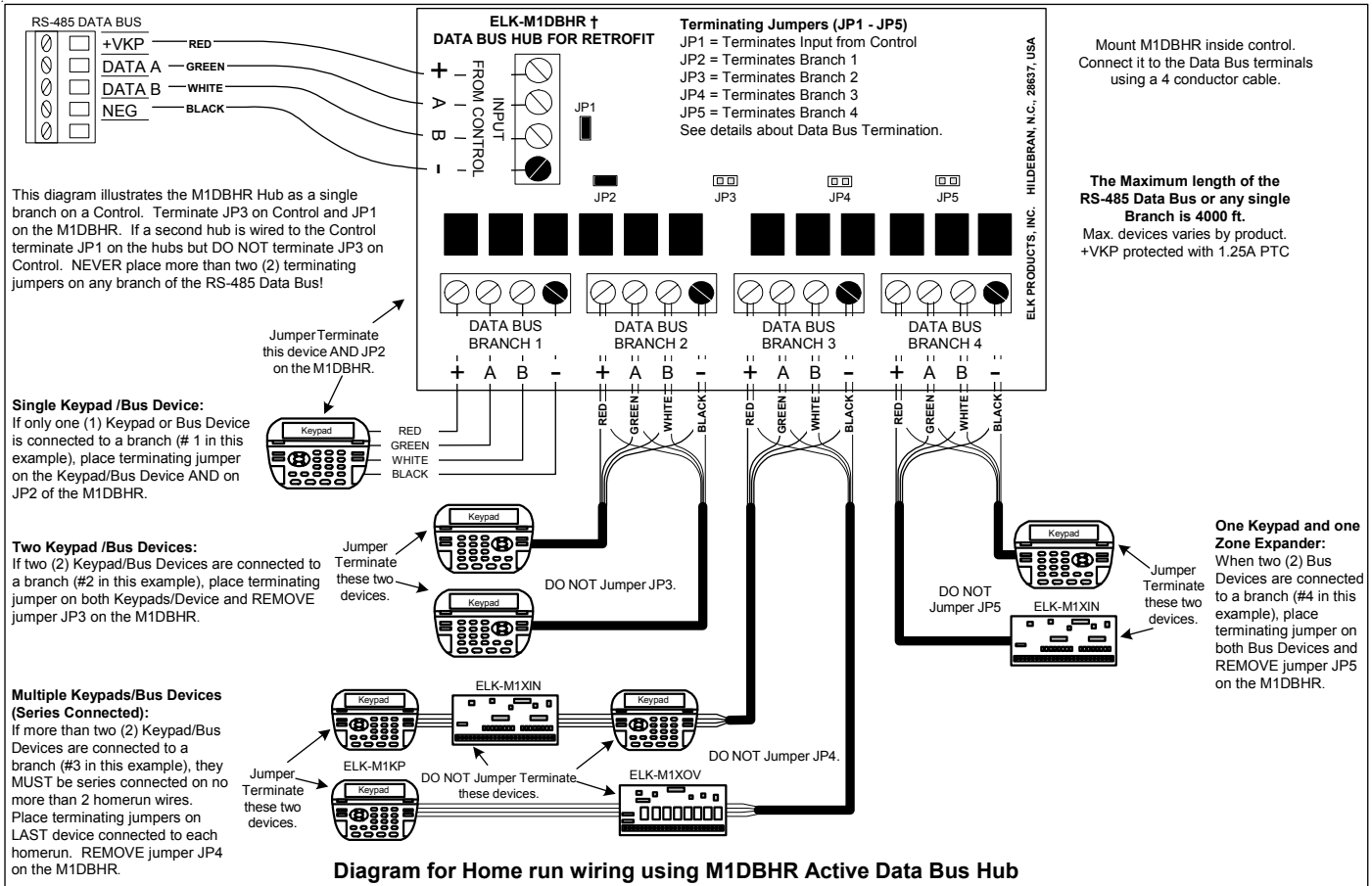
Setting the Data Bus Address and Enrolling Device(s) into the System

Keypads and expander devices communicate over the RS-485 4-wire data bus. Each device must have a unique address setting (from 1 to 16) within it's device type. Keypads are TYPE 1, input (zone) expanders TYPE 2, output expanders TYPE 3, serial expanders TYPE 4, etc. The purpose of device types is so that the address numbers can be re-used in each different device type. It's OK to have a Keypad, Zone Expander, and Output Expander all set to address 2 and on the same data bus since each device is a different device type. **It is NOT OK to have duplications of addresses within the same device type. I.E. Multiple keypads on the same control cannot be set to 'like' addresses.**

ADDRESS: From the factory all keypads are set to address 1. Valid addresses are 1 to 16. The first keypad on the system (Keypad 1) is automatically enrolled upon power up. Each additional keypad must be assigned a unique address and then manually enrolled from "Menu 1 - Bus Module Enrollment". (See Menu 01, for complete instructions on Bus Module Enrollment)

1. Press and hold the " * " key, followed by the F5 key . HOLD BOTH keys pressed for 5-10 seconds or until the LCD displays:
     Exit when done. F1 Set Addr.   (This is Keypad setup mode)
   NOTE: An alternate method is to remove power from the keypad and then power up while holding any key pressed.
2. Press the F1 key to display the current address setting.
3. Set the desired address (from 1 to 16) by using the Up or Down arrow keys.
4. Press the Exit key twice when done.

ENROLLING:
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 ▶
```

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M1XSP Compatibility, Jumper Settings and Misc. Information

M1XSP options are set by the placement of black shorting plugs on gold plated jumper pins. Some have 3 pins with a selection of "0" or "1".
Some have only 2 pins with a selection of Off or On. Options vary by manufacturer. Refer to detailed installation and hookup diagrams.

Partner Interface (Mfg or function)	Settings for Jumpers ** (S4 for future use)					Special setup, notes, and comments	Communications Speed
	S4	S5	S6	S7	S8		
Serial Port Exp.	-	1	0	0	0	Set BAUD Jumpers according to desired speed.	
RCS Thermostat	-	1	0	0	1	Set JP3 to 232 or 485 depending on RCS model	9,600 Baud
HAI OmniStat 1 (RC)	-	1	0	1	0	JP5 must be "ON" .	300 Baud
HAI OmniStat 2	-	1	0	1	0	**Use firmware ver. 70.x.x** JP5 must be "ON"	2,400 Baud
Aprilaire Thermostat	-	1	0	1	1		9,600 Baud
OnQ-ALC	-	1	1	0	0		9,600 Baud
UPB	-	1	1	0	1	JP5 must to "ON"	4,800 Baud
Centralite "LiteJet/Eleg"	-	1	1	1	0		19,200 Baud
Centralite "JetStream"	-	1	1	1	0	**Use firmware ver. 30.x.x** JP5 must be "OFF"	19,200 Baud
EDT - iLine	-	1	1	1	1	Supported ONLY by firmware 1.0.26 or earlier	9,600 Baud
Uplink "AnyNET" Radio	-	0	0	0	0	**Use firmware ver. 10.x.x**	9,600 Baud
AES Intellinet Radio	-	0	0	0	1	**Use firmware ver. 10.x.x**	4,800 Baud
[future]	-	0	0	1	0		
INSTEON	-	0 *	0	1	1	**Use firmware ver. 50.x.x**	* Set Baud Jumpers to 111
HPM (australia)	-	0	1	0	0		4,800 Baud
Dynalite (australia)	-	0	1	0	1	RS-485 (Command Only - No Status Received)	9,600 Baud
Lutron Radio RA	-	0	1	1	0		9,600 Baud
WGL W800RF32	-	0	1	1	1	W800RF32 receives X10 RF devices	4,800 Baud
Leviton ViziaRF+	-	-	-	-	$	**Use firmware ver. 20.x.x** JP5 must be "OFF"	n/a

** Jumper S4 for future expansion, shown for reference only. Current M1XSPs do not provide this jumper.
    The equivalent value of position S4 with no jumper is a 1.
  Jumper S5 was not included on very early product units.
* In the INSTEON mode S5 has an alternate setting of **1** to allow more X-10 units in lieu of INSTEON groups.
$ For ViziaRF+ S8 selects whether a "request node status" (poll) command is sent.

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

**IMPORTANT! Several partner interfaces require the M1XSP to be downloaded (flashed) with
dedicated firmware as noted above. Refer to the M1 Dealer Website for most recent firmware
versions. The above chart represents the most recent firmware versions and compatibility.
Information subject to change without notice.**

Other Jumper Settings
JP1   Used to engage a 120 Ohm resistor for terminating the M1 RS-485 Data Bus. See M1 Data bus wiring instructions before use.
JP2   Used to engage a 120 Ohm resistor for terminating the 'Outbound' (External) RS-485 Data Bus if required by other manufacturer.
JP3   Selects either RS-232 or RS-485 format communications on the 'Outbound' connections. Jumper Left = RS-232, Jumper Right = RS-485
JP4   Not used
JP5   Used to supply +12V to pin 4 (DTR) of the DB9 Female connector for certain modes. This jumper can typically be left on always.

THERMOSTAT COMPATIBILITY CHART

Brand & Model	Format	Baud Rate	Maximum Thermostats M1G / M1EZ8	Required Number of M1XSP and Other Equipment
RCS TR-16	RS-485	Auto 9600	16	1 M1XSP handles all thermostats
RCS TR-40	RS-485	Auto 9600	16	1 M1XSP handles all thermostats
RCS TR-16	RS-232	Auto 9600	7	RCS 232 format requires 1 M1XSP per Thermostat
Aprilaire 8870	RS-485	Auto 9600	16	1 M1XSP + 8811 Adapter & 8818 Dist. Panel required
HAI RC Series	RS-232	Auto 300	16	1 M1XSP for every 4 thermostats **

    **** IMPORTANT: When interfacing with HAI Thermostats, only data bus addresses 1, 2, 3, or 4 are used. Data bus address
1 is used for HAI Thermostats numbered 1 thru 4. Data bus address 2 for HAI Thermostats numbered 5 to 8. Data bus
address 3 for HAI Thermostats numbered 9 to 12. Data bus address 4 for HAI Thermostats numbered 13 to 16.**

ELK-WO37A 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