ELK-M1XEP v2

M1 Ethernet Interface

INSTALLATION MANUAL

ELK PRODUCTS, INC.
828-397-4200 Voice
828-397-4415 Fax
http://www.elkproducts.com
email: info@elkproducts.com
PO Box 100 • Hwy. 70W • Hildebran, NC 28637 • USA

L524 9/14

Table of Contents

If your M1XEP contains firmware older than version 2.0.0 some functions described in this manual may not be available.

About M1XEP With “New” Version 2 Firmware

Version 2 firmware adds some exciting and noteworthy changes to an M1XEP Ethernet Interface. An extended list of email service providers are now supported, including some with SSL/TLS encryption requirements. This version also supports M1Cloud remote services available through our M1Cloud partners. In light of the functionality available through ELK's free M1ToGo software, third-party apps for smart devices, and M1Cloud services, we have removed the out of date Java based web server user interface from the Version 2 firmware. For details on email enhancements, see page 9. For information on remote control options, see page 16.

Features and Specifications

APPLICATION:

The **ELK-M1XEP** is an Ethernet Appliance with a RS-232 Serial Port Interface. It may be used to connect a control in the M1 Family to an Ethernet network. It features email event notification and FIPS compliant encryption algorithms for security sensitive environments. It is powered by an ELK-P1216 12 Volts DC, 1.5 Amp plug-in power supply/adapter. A software setup utility is built into ElkRP for configuring the connection setup, network password, etc. The M1 Ethernet Interface is factory defaulted to obtain a dynamic IP address from a DHCP server (i.e. router, cable modem, etc.). It may optionally be setup with a static IP address.

FEATURES:

- Secure connection with password protection and SSL/TLS encryption
- Flash Memory for Firmware Updating
- Event notification via E-Mail (SMTP)
- Supports automatic Dynamic DNS Updates with providers using the DynDNS protocol.
- Supports Network Time Protocol for synchronizing the M1/EZ8's clock with an Internet time server.
- Internet Monitoring and Reporting Capability
- Network stack supporting the following protocols:
  TCP,UDP,DHCP,SSL/TLS, NTP, SMTP
- Federal Information Processing Standards (FIPS) 128 bit encryption
- Integrated 802.3 compliant 10/100 Mbit network interface
- RS232, DB9M 9-pin serial port connection
- Connects to the M1 RS-232 Serial port (Port 0). The baud rate for this port must be set to 115,200 (factory default)
- RJ45 8-pin Network Jack
- 2.1mm barrel type power connector (center positive)
- LED Indicators for Power, Link, and Data

SPECIFICATIONS:

- Operating Voltage: 12 Volts D.C. from Elk-P1216 Plug-in Power Supply **
- Current Draw: approx. 300 mA
- Housing Dimensions: 4.25" x 6.375" x 2.125"
- Circuit Board Dimensions: 2.25" x 3.95"

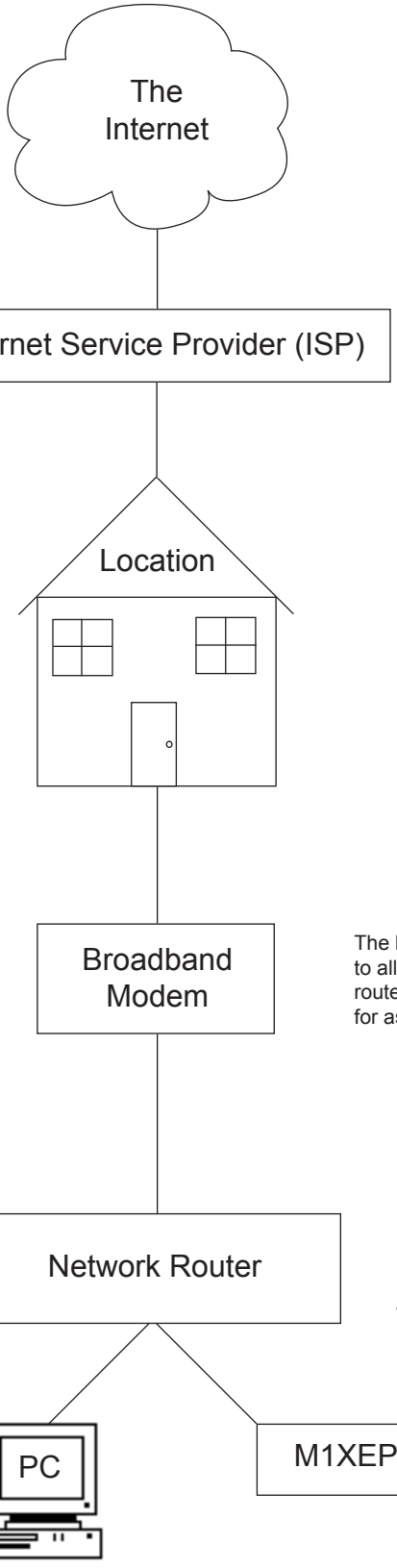
**** The M1XEP may be powered from a different 12VDC power source. A 2.1 mm barrel type connector is required for the power connection and the center of the barrel connector must be positive (+).**

Any required network equipment, i.e. Ethernet switch, router, cable modem, etc. including the plug-in power supply for the M1XEP, <u>MUST</u> be backed up with an adequately sized UPS (Uninterruptible Power Supply) in order for the equipment to continue operating during brief power outages.

The non-secure port in the M1XEP is intended for use within the LAN ONLY. Only devices on the local network (behind the network router) should connect to this port. We strongly discourage port forwarding the non-secure port outside the LAN.

Basics of Networking

The installer must have a basic understanding of Ethernet setup to install and configure the M1XEP. If you do not have this basic knowledge, please seek the assistance of a network professional.



WAN
Wide Area Network

Connection to outside the local network may require assistance from others, including the Internet service provider and the network administrator.

The broadband modem may need to be bridged to allow the IP address to be passed to the router. Contact the manufacturer of the modem for assistance.

Refer to the Notes on Router Setup located on page 14.

Technical support from Elk Products, Inc. is limited to the setup and connection of the M1 Ethernet Interface inside the local network.

LAN
Local Area Network

Installation and Hookup

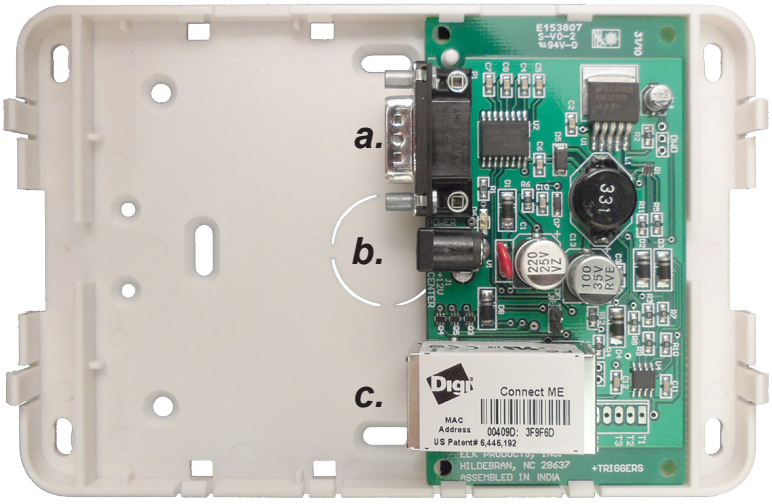
The following connections are required for the M1XEP Ethernet Interface.

a. The DB9M 9-pin male connector should be connected to the DB9F 9-pin female serial port (port 0) on the Control using a standard 9-pin male to female serial cable (included). The M1Gold has the main serial port (port 0) on board, while the M1EZ8 requires the M1EZ8MSI Main Serial Interface to provide the port 0 connection. The M1XEP should be mounted within 10 feet of the Control. The baud rate of the Control's serial port must be set to 115,200, which is the factory default.

b. The 2.1mm barrel type connector is used to connect an ELK-P1216 Plug-in Power Adapter. The M1 Ethernet Interface operates from 12 Volts DC and draws approximately 300 mA. The center pin of the barrel connector is positive.

Any required network equipment, i.e. Ethernet switch, router, cable modem, etc. including the plug-in power supply for the M1XEP, *MUST* be backed up with an adequately sized UPS (Uninterruptible Power Supply) in order for the equipment to continue operating during brief power outages.

c. The RJ45 8-pin network jack is used to connect the M1XEP to a LAN/WAN Ethernet network switch or router. This requires a standard network 8-pin RJ45 terminated patch cable (not included).



1. Remove power from the Control before making any connections.

2. Connect the serial port cable from the Control to the M1XEP. Connect a network patch cable from the M1XEP to the LAN (local area network) switch or router. Power up the Control.

3. Connect the power cable from the P1216 plug-in power supply. Plug the P1216 into a 110V power outlet. The M1XEP should power up and attempt to link up with the Ethernet network.

4. Enroll the M1 Ethernet Interface into the Control. Using the keypad, access the Installation Programming menu (Menu 9). Choose Bus Module Enrollment (Menu 1) and press the right arrow key to start the enrollment. When the enrollment is complete press the ELK or * (Asterisk) key to exit.

The M1XEP does not connect to the RS-485 data bus on the control, therefore it will not appear in the list of devices enrolled on the keypad. However, the enrollment process is necessary to ensure proper supervision of the device. If the M1XEP is removed, it must be "un-enrolled" by completing the Bus Module Enrollment process to prevent an "Ethernet Trouble" from occurring. ElkRP will display the current firmware, hardware, and bootware versions of the M1XEP on the "Enroll/Update Control and Devices" screen. This screen is accessed from the Send/Rcv menu when connected to the control.

5. Proceed to the Configuration and Setup.

Configuration and Setup

Many of the features provided by the M1XEP require newer versions of M1 Control firmware, M1XEP firmware, and ElkRP software. Current software and firmware updates, as well as release notes can be downloaded from the M1 Website (www.elkproducts.com). Please refererence the corresponding section of this manual for information on what versions are required for each feature. *For the initial setup, ElkRP and the M1XEP must be on the same local network. ElkRP cannot "find" an M1XEP outside of the local area network (refer to step 1.2).* The M1XEP is shipped with DHCP enabled. If a DHCP server exists on your network the M1XEP will obtain a "*dynamic*" IP address, gateway address, and subnet mask allowing it to work on the local network. If not, the factory programmed (default) IP address is 192.168.0.251. If desired, the M1XEP can be configured with your choice of a *"static"* (non-changing) IP address. This can be done during the following setup.

Before beginning the M1XEP setup, please ensure that the Control is programmed to transmit ASCII strings at 115,200 baud for each of its available conditions to allow the M1XEP to provide access to the information. Using the Keypad Installer Programming, or the ElkRP software, access the Globals Menu (Menu-07) and program yes for options 35, 36, 37, 38, 39, and 40. Verify that Option 34 is set to 115,200.

1. Basic Network Setup

1.1. A router serving DHCP should not need any configuration to allow the M1XEP to connect inside the local network. For communications outside the local network you will need to establish several open ports on the router. Please refer to section 9 of the configuration and setup on page 14 and the documentation for the router for more details.

1.2. Start the ElkRP software and open the desired account.

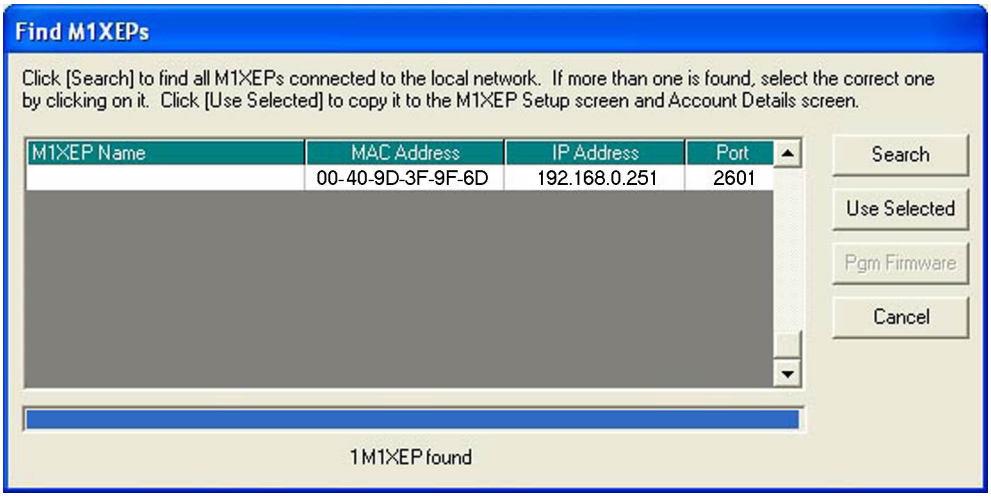
a. On the account details screen, click the 'M1XEP Setup' button located near the lower right side of the screen. With the 'Introduction' tab selected, take a few minutes to read this information.

b. When you are ready to proceed, click the 'Find' button. This will open the "Find M1XEPs" screen.

c. ElkRP will search for all M1 Ethernet Interfaces connected to the local network. If the installation and hookup procedure has been completed correctly, the M1XEP should be listed on this screen. Only one should be found, unless there are multiple units installed. If you are unable to find the M1XEP, please refer to the troubleshooting section of this manual on page 20.

d. Verify that the MAC address in the second column matches the MAC address of the M1XEP. The MAC address is located on top of the white barcode label on the RJ45 connector of the unit (see image below).

e. Note the IP address in the third column. This is the address used to connect/communicate with the M1XEP. Remember, if a DHCP server is on the network and the M1XEP is still set for DHCP (factory default), this number will most likely be a "dynamic" address. However, in the absence or failure of a DHCP server, the M1XEP will default to its last static IP address, which is set from the factory to 192.168.0.251. **To force the DHCP/IP address settings to known values, please reference page 18 of this manual.**



1.3. Highlight the M1XEP to be configured and click the 'Use Selected' button. This will copy the IP address and Port settings to the ElkRP Account Details location. Click CLOSE to exit this screen.

1.4. Before continuing with the setup and configuration, you must connect to the Control over the network.
   a. Verify that the URL/IP and Port setting are correct on the "Account Details" screen.
   b. Make sure the serial number is correct and the "RP Access Code" is set to the correct value programmed into the control. (default=246801)
   c. From the RP Connection Menu, choose the "Network" method.

   If everything is setup correctly, ElkRP should now connect to the control through the M1 Ethernet Interface.

1.5. Once connected, click the 'M1XEP Setup' button once again to continue the configuration. Click the 'TCP/IP Settings' tab. At the top, a device name of up to 16 characters may be entered. This name is used during subsequent “Find” processes for quick identification when there are more than one on the same network. It is also used for system identification when the M1XEP has been configured to send email notifications.

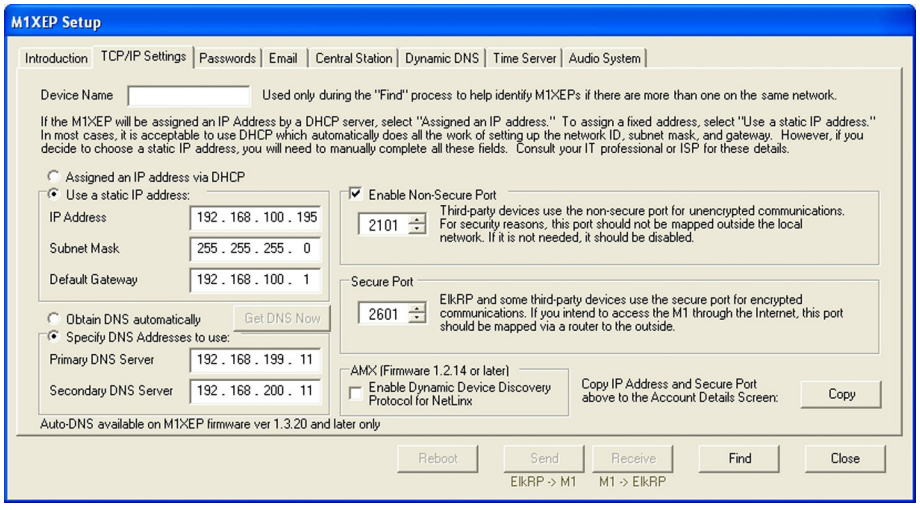
1.6. As previously discussed, the M1XEP is factory defaulted to DHCP, which means that it expects to be assigned a “dynamic” IP address. Be aware that a “dynamic” IP address can periodically change for many reasons, including a power down/up cycle. You may optionally assign the M1XEP a permanent “static” address, if permitted by the network. The static IP address MUST NOT be assigned to any other device on the network. Configuring a static IP address will also involve setting values for subnet mask, default gateway, and primary and secondary DNS servers. These settings can be obtained from your network administrator or Internet service provider. Valid IP addresses DO NOT end in 0, 1, 254, or 255. The primary and secondary DNS servers must be entered correctly in order for many features of the M1XEP (email, ddns, time server, etc.) to work correctly.

If the M1XEP is programmed with a static IP address, and later changed to obtain a dynamic IP address from a DHCP server, it will revert back to the last programmed static IP address if it fails to obtain a dynamic IP address from the DHCP server after 1 minute. If a static IP address has not been programmed and the M1XEP cannot obtain a dynamic IP address from a DHCP server it will default to an IP address of 192.168.0.251.

1.7. Some third party devices use a TCP or non-secure port for standard (unencrypted) communications on the local network. If this port is needed, select “Enable Non-Secure Port" and enter the appropriate port number. Values between 1024 and 49151 are valid. The recommended (default) port is 2101. This port should not be mapped outside the local network for security reasons. If the port is not needed, it should be disabled. To disable the non-secure port, remove the check from the box beside of "Enable Non-Secure Port".

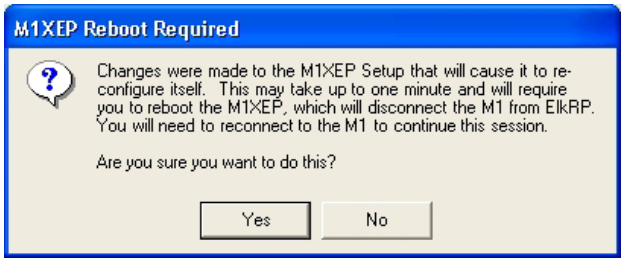
1.8. ElkRP and some third party devices use a SSL or secure port for encrypted communications. Enter the appropriate value for the secure port. Values between 1024 and 49151 are valid. The recommended (default) port is 2601. If you intend to access the Control through the Internet, this port should be mapped (port forwarded) to outside the local network via a router.

Do not set the secure and non-secure ports to the same value. Doing so may make it impossible to re-connect to the unit, rendering it unusable.

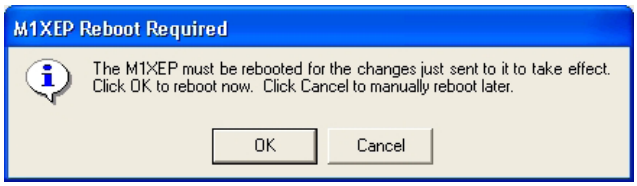


2. Send Changes to the M1 Ethernet Interface and Save

Send the changes by clicking the send button located at the bottom of the setup screen. The send process may take up to a minute. You may receive a message that informs you that the changes will cause the M1XEP to reconfigure itself, and it must be rebooted after the send is complete. Click 'Yes' on this screen.



Once the send process is complete, if the M1XEP needs to be rebooted you will see the message below. Click 'OK'. *You must reboot the M1XEP before the changes will take effect.*

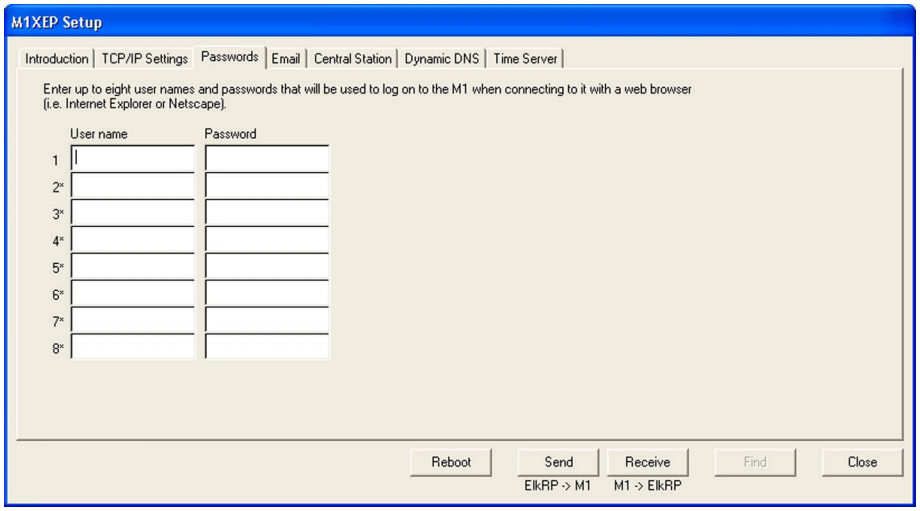


The reboot will take up to 2 minutes. A connection with the M1XEP cannot be re-established until the reboot process is complete. Click 'Save Account' under the "File" menu to save the changes to the database.

3. Setup of User Names & Passwords (optional)

Usernames and Passwords are entered on this tabbed screen for use as a means of authentication while logging on to the M1XEP's secure connection port. THESE ARE OPTIONAL! If every Username and Password field is left blank, the M1XEP will not prompt for one during the connection process. Up to eight (8) different Usernames and Passwords may be entered, each being up to 16 alphanumeric characters long.

ELK strongly recommends the entry of at least one Username and Password on this screen as it helps protect against unauthorized access to the M1/EZ8. Third party software developers wishing to connect to the M1XEP secure port should always use the Username and Password Feature.



Send changes to the M1XEP and save the changes to the database. Refer to section 2 on page 8.

4. Email Notification Setup (optional)

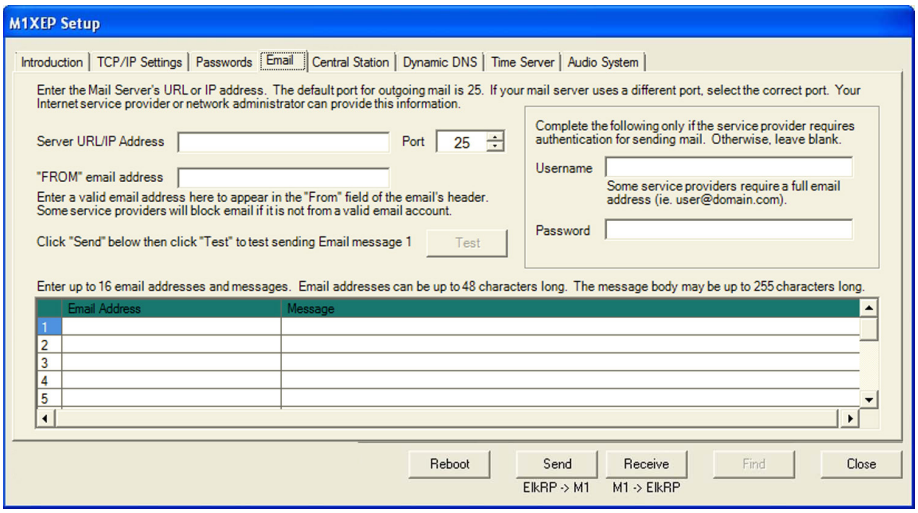
Supported Email Services: M1XEP firmware version 2.0.20 or later has been enhanced to support secure and encrypted email services and is now compatible with a larger number of email services. For complete details on the supported and tested services including setup infomation, please visit www.elkproducts.com/m1xepv2-email. While not confirmed, this version may also support some ISP (Internet Service Providers) email services.

1. Enter the SMTP server's URL or IP address. This can be up to 48 characters long. Set the port value to the correct setting for outgoing mail. The default port setting is 25. If your mail server uses a different port, your email service provider or network administrator can provide you with the correct port setting.

2. Some email service providers will block email if not sent from a valid email account. Enter a valid email address in the "FROM" email address block. This address will appear in the "from" field of the email.

3. Some email service providers may require a username or password to log onto the email server. If required, enter the username and password in the corresponding fields. If your email service provider does not require this log on information, leave the fields blank.

4. The lower portion of this screen is where the email addresses and messages for email notification are entered. Up to 16 addresses and messages can be stored. Email addresses can be up to 48 characters long. The message body may be up to 255 characters long. To enter an email address, simply click on the line where you want to enter the address and type the address. Then click on the message block next to the address and enter the message that you want to be sent to that address. These messages are activated using the Whenever/And/Then rules programming in ElkRP.



Send changes to the M1XEP and save the changes to the database. Refer to section 2 on page 8.

Emails sent from the M1XEP will have a subject line of "Alert from [Device Name of M1XEP]" To send a test email, make sure all changes have been sent to the M1XEP then click the "Test" button. The M1XEP will attempt to send email message 1 to the recipient listed for that message. Allow a few minutes for the message to be delivered then check the recipient's inbox. **The Test button of the email tab of the M1XEP Setup is only instance where the M1XEP can send an email message while connected to ElkRP.**

Email Rule Example
In this example, an email message will be sent when the system is disarmed by a particular user. This email is sent to "Mom" at the office to let her know Suzy got home okay.

WHENEVER Smith Home (Area 1) STATE BECOMES DISARMED
AND LAST USER WAS Suzy Smith (User 3)
THEN SEND EMAIL MESSAGE 1 TO mom@office.job (Email 1)

5. Central Station Setup (optional)

The M1XEP supports Alarm over Internet Monitoring to Central Stations that support either the G.E. OH2000E or DSC SurGard IP receivers.

Internet monitoring requires setup of the M1XEP as well as a corresponding telephone number in the Control: Telephone number # 1 for CS1 in the M1XEP setup, Telephone number # 2 for CS2, etc.

1. Create a new telephone number in ElkRP. To do this, right click on the "Telephones" icon on the left side of the screen. Choose "New Telephone". Enter the number of telephones to create and the first (starting) telephone number ID and click OK.

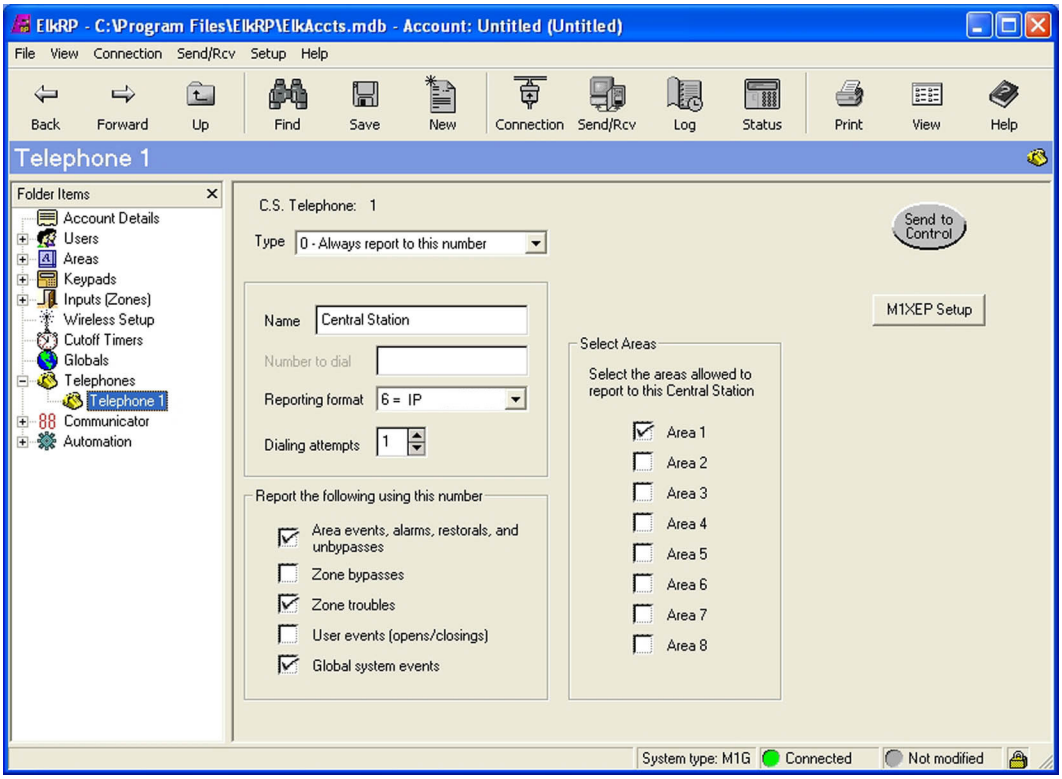
2. On the telephone number screen, enter a name and set the reporting format to 6 = IP. Dialing attempts should be set to 1 to enable reporting.

3. In the "Report the following to this number" box, check all the events that should be reported to the Central Station through the M1XEP.

4. Place a checkmark in the checkbox beside each area that will make reports to this Central Station.

5. If the M1XEP will be the primary method of sending reports to the Central Station, select "0=Always report to this number" from the Type dropdown box at the top of this screen. If the M1XEP will be used to send reports to the Central Station as a backup method, select "1=Report to this number as a backup" from the Type dropdown box.

6. Click the "Send to Control" button to store this information in the control. Click "Save" to save to database.

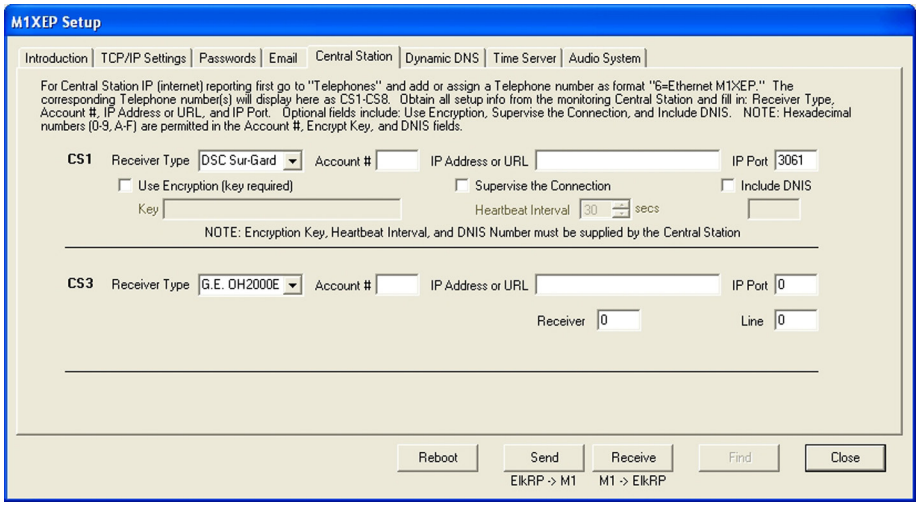


After setting up the telephone number, click on the "M1XEP Setup" button. Select the Central Station tab. The receiver type, account number, IP address or URL, and IP port number for the Central Station are entered here. This information is obtained from the Central Station. Note that the IP Port is the port number the receiver listens on, not the port number the M1XEP sends on.

When using alarm over Internet monitoring, only one account number is required regardless of the areas check marked on the corresponding telephone account setup page. The reports sent to the Central Station will include the area ID that the alarm, trouble, or event came from.

Information specific to OH2000E receivers: The Account Number must be a decimal value (not hexadecimal) between 0001 and 9999. Line and Receiver numbers may also be entered on this screen. This information is obtained from the Central Station. Line and Receiver numbers help the Central Station identify the account. Reports to OH2000E receivers are always automatically encrypted.

Information specific to SurGard receivers: The Account Number is four digits long and may include hexadecimal digits (0-9 and A-F). SurGard receivers allow optional encryption. If the Central Station provides an encryption key, place a checkmark in "Use Encryption" and enter the key in the box below that. The key must be 32 digits long and may include hexadecimal digits. If the Central Station requires supervision, place a checkmark in "Supervise the Connection." When supervision is enabled, the M1XEP will send a regular heartbeat signal to the Central Station. The default time between heartbeats is 30 seconds, but can be changed to values between 10 and 255 seconds. If the Central Station provides a DNIS (Dialed Number Identification Service) number, place a checkmark in the "Include DNIS" box and enter the DNIS number below it.



Internet Monitoring requires support from the Central Station. Special hardware and software is required to allow the Central Station to receive alarm codes via the Internet. If you are unsure if Internet Monitoring is supported or need further information, please contact the Central Station.

6. Dynamic DNS Setup (optional)

To access an M1XEP on the Internet, you need to know its Public IP Address. The Internet service provider may change that IP address from time to time. Because IP addresses change and are difficult to remember, you can sign up for a free or low-cost service known as Dynamic DNS. This service allows you to select a semi-custom URL and register it to your IP address. When your IP address changes, the DDNS service will update your URL to point to the new address. The M1XEP can be set up to automatically update the DDNS provider when your IP address changes.

NOTE: If your router supports DDNS updates, the router should be setup to provide the updates instead of the M1XEP.

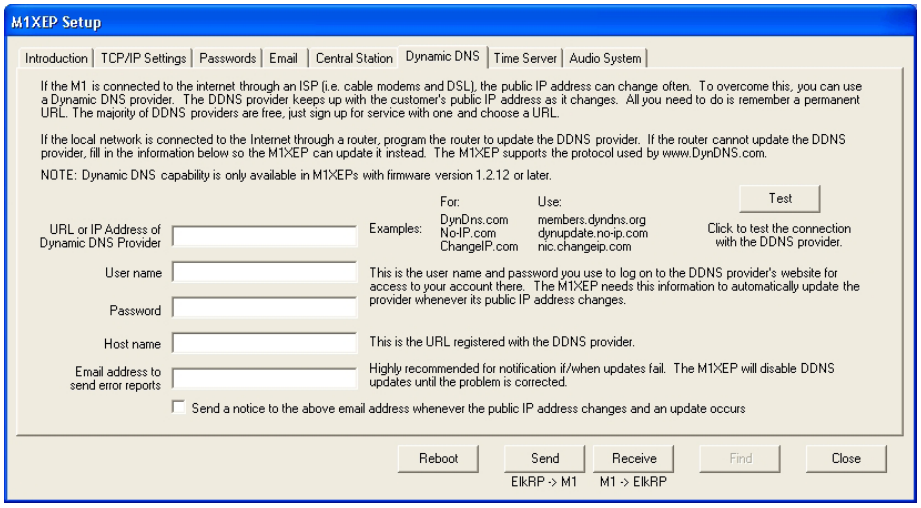
Before setting up the M1XEP to do this, you must register for a DDNS account. There are several available that will work with the M1XEP. The M1XEP has been tested and proven to work with the following three DDNS providers (although there may be more):

DynDNS	www.dyndns.com
No-IP	www.no-ip.com
ChangeIP	www.changeip.com

Other DDNS providers may also work provided they adhere to the standard protocol which these three use.

Select a DDNS provider and visit their website to sign up for an account. Some may offer free accounts that are basic, but sufficient for accessing the M1XEP from the Internet. For additional fees, each provider has "extras" such as letting you select a fully custom URL, email services, etc. The free service allows you to select a URL in one of their "sub-domains." For example, DynDNS has nearly one hundred sub-domains to choose from, one being "dyndns.org." You can prepend any name to the front of it (so long as it's not already taken) such as "MyM1," giving you the URL "MyM1.dyndns.org." Please be sure to read and adhere to the provider's policies. Because they provide the service for free, they must institute rules to prevent abuse of their service.

After setting up the account (it may take a day or two for it to begin working), enter the setup information for that account on the Dynamic DNS tab of the M1XEP Setup window in ElkRP.



1. In the first box, enter the DDNS provider's update URL. This is the URL the M1XEP will connect to when updating the provider of any IP address change.
2. Below that, enter the username and password you chose when setting up the account on the provider's website. The M1XEP needs this information to log into the provider's site to perform the updates.
3. In the Host Name box, enter the custom URL you selected (ie. mym1.dyndns.org).
4. The M1XEP can send you or anyone else an email message whenever an error occurs during an update. This is to notify you that your custom URL will not work until the update is successful. To enable this feature, enter the email address in the next box. You must also fill in the necessary information on the Email tab (see Email Notification Setup on page 9).

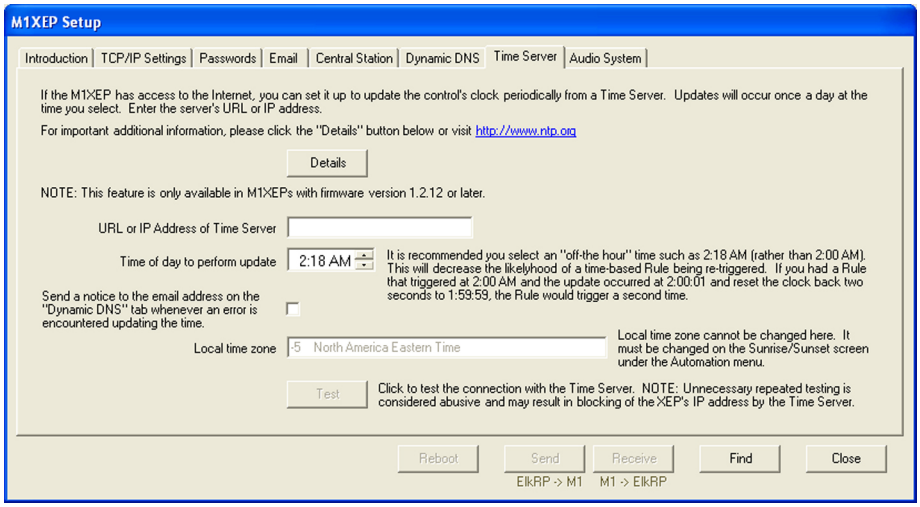
5. In addition to notifying you of update errors, you may also want to know when a successful update occurs. Check the last box to enable this.
6. SEND the setup to the control, then click the Test button to test that the M1XEP can contact the DDNS provider. The test does not perform an actual update, as the provider would consider that an abuse of their service. Instead, it simply checks that it can connect to the provider.

How the M1XEP DDNS updates work:
Every few minutes, the M1XEP "checks in" with the DDNS provider to find out what its public IP address is. When the M1XEP detects that the public IP address has changed, it logs in to the provider's website and sends a message containing its new IP address. Most providers will delete a free account if it is not updated every month or two. To prevent this, the M1XEP will "force" an update every thirty days even if its public IP address hasn't changed. If you enabled email notification of updates, you will be notified when this occurs. Most providers consider it an abuse of their service to force an update too often, but they will allow forced updates every thirty days.

7. Time Server (optional)

The M1XEP can connect daily to a Time Server on the Internet to synchronize the M1's or EZ8's clock. This keeps the control's clock to within a second of universal standard time. To enable this feature, click the Time Server tab on the M1XEP Setup window in ElkRP. If you don't already have or know of a time server to use, click the link provided or go to http://www.ntp.org/s2 to find a time server. Please observe the following rules while doing this:

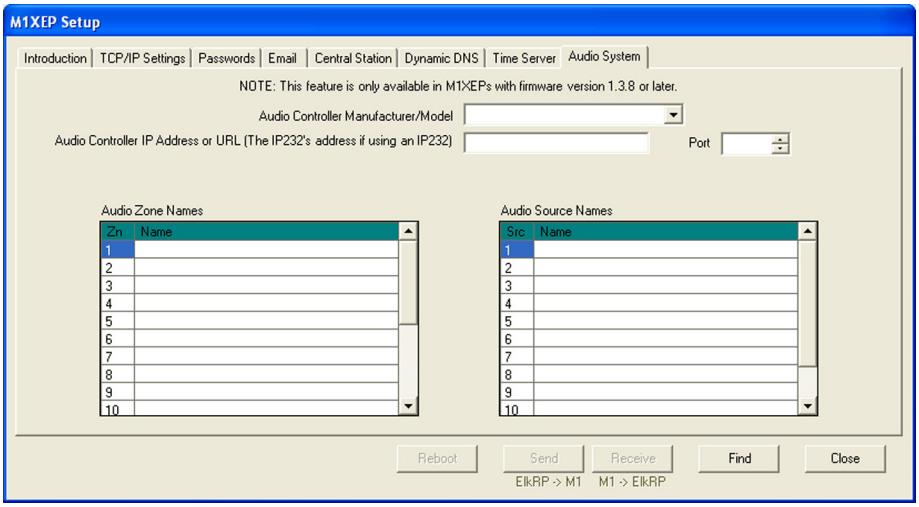
1. Choose only a "Stratum-2" server. They are intended for public use. "Stratum-1" servers are reserved for use by governments, large institutions, and stratum-2 servers. Synchronizing to a stratum-2 server will be accurate to within a few milliseconds – more than enough for the M1/EZ8.
2. Select a time server that is geographically close to you. Doing so will ensure that no one server is over taxed with requests.
3. If the server you choose lists any restrictions, please observe them. Some restrict use to certain organizations. Others may simply want to be notified by email if you use them.
4. If using the list on the NTP.org website, be aware that the servers are listed by country first, then state or province. Don't mistake a country abbreviation for a state abbreviation.



Enter the URL or IP address of the server in the first box. Select a time of day for the updates. Updates will be performed daily at this time. Select an "off-the-hour" time such as 2:18 AM rather than 2:00 AM. This will reduce the likelyhood of a Rule being triggered twice. If the M1/EZ8 is programmed with a Rule that is triggered at 2:00 AM, it may be triggered twice if the time update caused the control to reset its clock back a few seconds before 2:00 AM. If you want to be notified via email when errors occur updating the time, check the check box, and enter your email address on the Dynamic DNS tab (see Dynamic DNS Setup on page 12). You must also fill in the necessary information on the Email tab (see Email Notification Setup on page 9). Local time zone information is filled in automatically from the Sunrise/Sunset settings in ElkRP's Automation menu. If you change it there, you will need to SEND the M1XEP setup to the control afterward. SEND the setup to the control, then click the Test button to verify the settings work.

8. Audio (optional)

For detailed information on audio control, including supported equipment and commands, please reference the M1 Audio Control application note available at www.elkproducts.com.



9. Notes on Router Setup

Port Forwarding - Particular ports must be opened through the router to allow access to the M1XEP via the Internet. You must access the router's setup in order to open (port forward) these ports. The method for this differs from product to product. Some routers use a software utility to access their setup while others can be accessed via a web browser. Consult the router's documentation for complete instructions on this procedure.

The table below lists the ports used by the M1XEP that should be port forwarded through the router.

Port	Use	Routing	Protocol
2601	Encrypted communications port. Configurable by installer. 2601 is the default.	Route outside to connect with ElkRP via Internet/WAN.	TCP
21	M1XEP Firmware Updates	Route outside if ElkRP will connect via Internet/WAN to download firmware updates to the M1XEP.	FTP or TCP

10. Other Ports Used by the M1XEP

The following table contains additional ports used by the M1XEP. These ports should *not* be opened (port forwarded) outside the local network.

Port	Use	Protocol
2362	The M1XEP listens on this port to respond to a "FIND" Command.	UDP
2101	Plain text communications port. Configurable by installer. 2101 is default.	TCP

Connecting ElkRP to the Control over a Network

1. Start the ElkRP program and create or open an account.

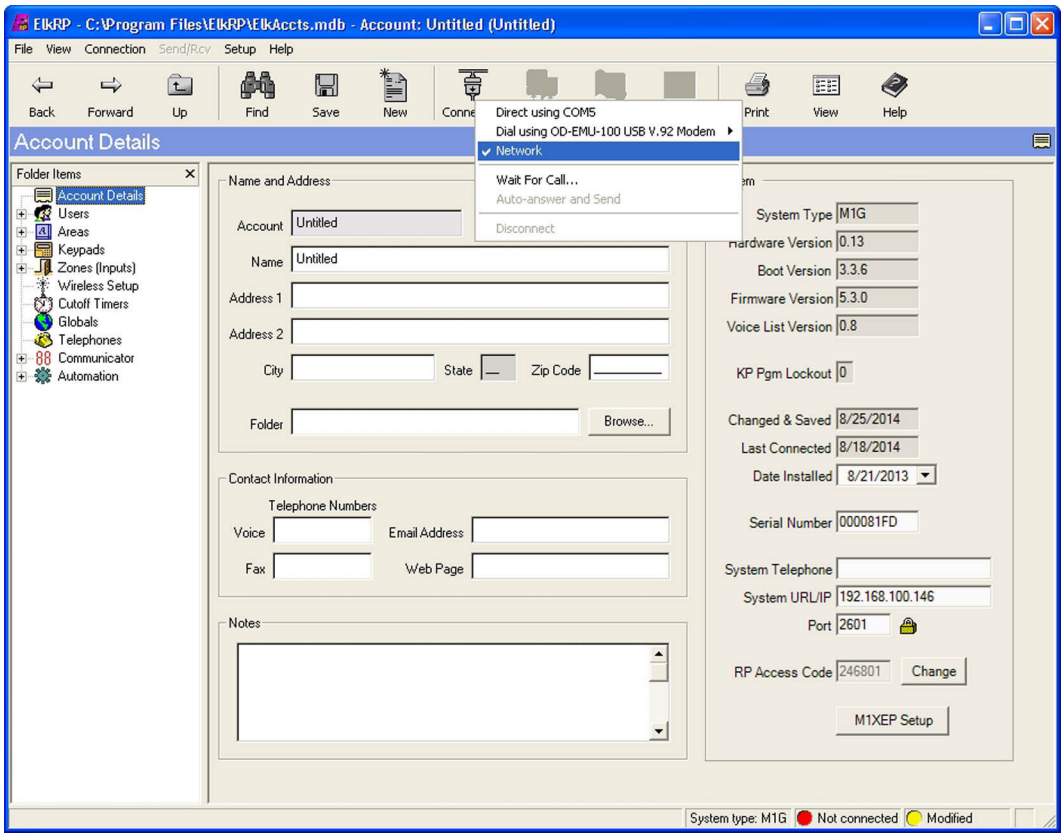
2. Look at the lower right side of the "Account Details" screen for the two data entry blocks labeled: "System URL/IP" and "Port".

3. If ElkRP and the Control are both on the **same network**, the IP address and port should have been copied from the M1XEP setup screen during the configuration and setup process. Verify that the values are correct.

4. If ElkRP will connect to the Control **through the Internet,** manually enter the IP address or URL for the entire local network. The router must be programmed to allow outside traffic through a specific port. For information on setting up your router, please refer to section 9 on page 14 and your router documentation or contact the manufacturer of the router.

5. Make sure that the serial number is correct and the "RP Access Code" is set to the correct value programmed into the control (default=246801). From the Connection menu choose the "Network" method.

6. If everything is setup properly ElkRP should now connect to the Control through the M1XEP.



Remote Control Options

M1ToGo Software for WIndows

M1ToGo is a **free** software application that provides users computer-based, internet remote access to their M1 from anywhere in the world. The secured Windows®-based platform allows users full access to their security system along with lighting and energy management, door/gate access and many other systems connected and controlled through the M1. For more details on M1ToGo, please visit www.elkproducts.com/m1togo.

Apps for iPhone, iPad, and Android Devices

Remote control apps for the iOS and Android platforms are available from third-party partners. These apps provide varying levels of remote control capabilities for M1 controls. Apps are purchased from the third-party developer through the App store or Google Play at nominal cost with no monthy fees required. For more details on these apps, please visit www.elkproducts.com/m1-remote-control.

M1Cloud

The M1Cloud is a remote services application that leverages the power of the Internet and third party service providers. It enables greater ease of access to the M1 for remote services and control, without the need for any cumbersome setup or configuration of the customer's local area network such as port forwarding or Dynamic DNS (DDNS). Elk's third party service providers are essentially Elk Partners that have developed powerful server software to manage and coordinate the remote access.

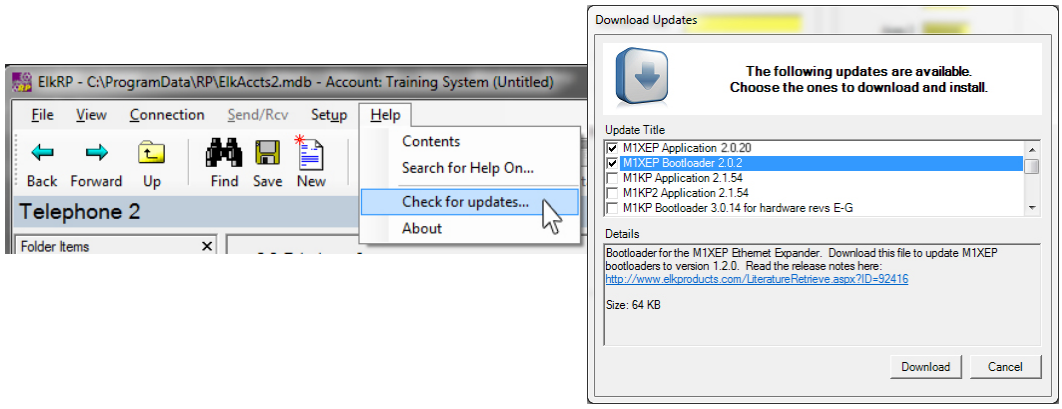
Through the remote service provider and the M1Cloud you can monitor M1 system status, remotely arm and disarm, and manage users by adding, changing, or removing them. In addition, you can control automation features and receive email or text alerts whenever any particular event occurs. These alerts may contain extended information such as the zone that caused an alarm, the user that disarmed, and the current temperature of a sensor. Learn more at www.elkproducts.com/m1cloud

Updating the Firmware in the M1 Ethernet Interface

Obtaining Updates

New firmware updates can be downloaded using one of the following methods (an Internet connection is required):

1. From ElkRP2, click "Check for Updates" in the Help menu at the top of the screen. Select the desired version(s) in the list of available updates and click "Download".



2. Log into the Support section of www.elkproducts.com and download the update files. Double-click the download file to run it, which will automatically extract the update files to the proper location on your computer.

To access and download firmware updates for M1 controls and peripherals, you must have a valid log on for our website. If you do not have a log on for our site you may obtain one by signing up for an account at www.elkproducts.com/request_login.html.

Updating the M1XEP

IMPORTANT: UPDATING THE M1XEP FIRMWARE TO VERSION 2 IS A ONE-WAY PROCESS! Once the M1XEP is updated to Version 2 firmware it can never be reverted back to the previous version (1.x.x).

Some firmware updates may default certain settings in the M1XEP. It is good practice to connect to the Control, receive the M1XEP setup, and save those setting to the database before updating the M1XEP firmware. This will ensure that the database is up to date, so the programming can be sent back to the M1XEP after the firmware update.

1. Start ElkRP and open the account belonging to the Control you will connect to. Click the Connection menu and establish a connection using the "Network" method.

In order to connect to ElkRP and update the M1XEP firmware remotely over the Internet, ports 2601 and 21 must be opened (port forwarded) to outside the local network.

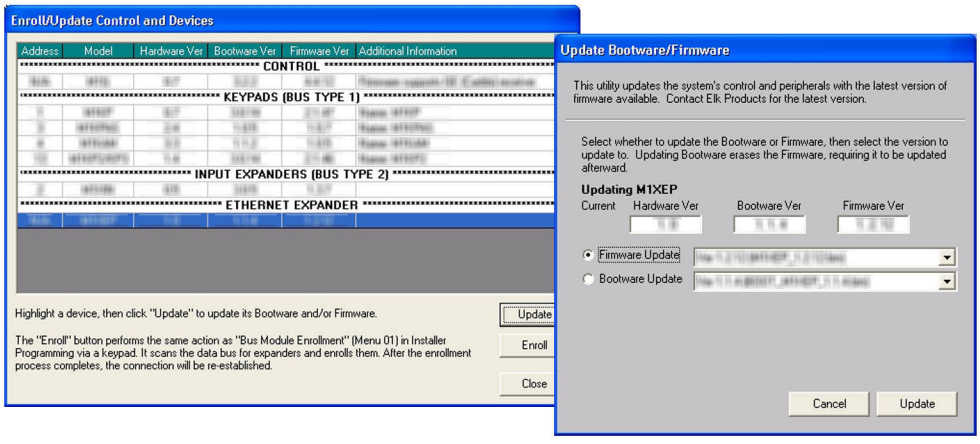
2. Click on 'Enroll/Update Control and Devices' from the Send/Rcv menu.

3. On the "Enroll/Update Control and Devices" screen, highlight the Ethernet Expander and click the 'Update' button.

4. The "Update Bootware/Firmware" screen displays the current firmware, hardware, and boot version, and two drop down menus for selecting the bootware or firmware to use for updating. Select 'Firmware Update' or 'Bootware Update' and then select the version to update the unit to. Always select the latest version.

5. Click the 'Update' button. The update may take several minutes. Wait for the process to complete. **DO NOT INTERRUPT OR POWER DOWN THE UNIT DURING THIS PROCESS.**

6. When the screen indicates that the download is complete, wait for the update to finish programming into the M1XEP. The green light will stop flashing when the programming has almost finished. Programming is complete when the orange light goes off momentarily, turns back on and the green light begins flashing again. **This process may take up to 8 minutes. DO NOT INTERRUPT OR POWER DOWN THE UNIT UNTIL THIS PROCESS IS COMPLETE!**



The M1XEP bootloader may also need to be updated periodically. The bootloader update is done using the steps outlined above. The bootloader update files are downloaded from the M1 Dealer Site along with a corresponding firmware update. Update the bootloader first and then update the firmware.

Forcing the DHCP/IP Address Settings to Known Values

The M1XEP supports an easy method for forcing the M1XEP from a static IP address to DHCP mode or vice versa. This is accomplished with the use of Jumper JP2 located beside the metal housing of the RJ45 connector.

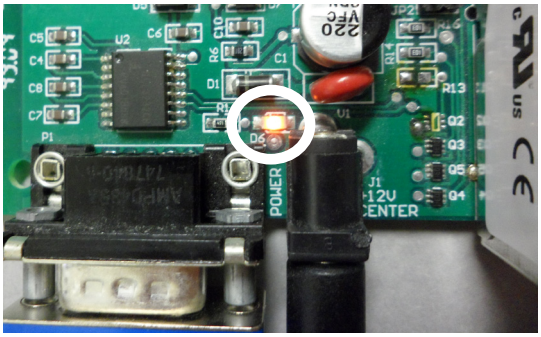
1. Power down the M1XEP. Place a shorting jumper across the two pins of JP2. Then power the M1XEP back up.
2. After a few seconds, the green LED on the RJ45 connector will blink two times (5 times for version 1 units). About 30 seconds later, the green LED will blink and repeat in a “coded” fashion, indicating either DHCP or STATIC modes.
   - If set for DHCP mode there will be 1 quick blink.
   - If set for STATIC mode there will be 2 quick blinks. When the M1XEP is forced to STATIC mode its address will become 192.168.0.251.
3. If the blink indicates the wrong mode, power the unit down and back up to force it to the opposite setting.
4. When the green LED indicates that the M1XEP is at the desired setting, remove the shorting jumper from JP2 WITHOUT removing power from the M1XEP and allow the M1XEP to continue booting up. This may take another minute.

LED Indicators

Power LED Indicator

LED Color	Description	Normal State
Orange	DC Power Indicator	On-Solid

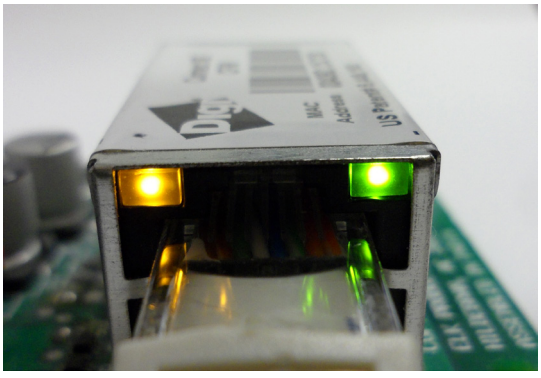
The power LED indicator is located near the power connector as shown in the image to right. If this LED does not come on or flashes when power is connected, check the output of the power source.



RJ-45 Connector LED Indicators

LED Color	Description	Normal State
Amber/Orange	Network Link Indicator	On-Solid
Green	Network Traffic Indicator	On-Blinking

These LEDs are located in the upper left and right corners of the RJ-45 connector as shown in the image to the right. During a reboot, the green light will be off and the orange light will be on for 30-45 seconds. When the reboot is complete, both lights will be off for a second, and then the orange light will come on solid and the green light will begin to blink. Wait several seconds before re-establishing a connection with the control.



Glossary of Terms

Router- A communications device between networks that determines the best path between them for optimal performance. Routers are used in complex networks such as enterprise-wide networks and the Internet.

Port - The identifier used by Internet transport protocols to distinguish among multiple simultaneous connections to a single destination host.

MAC Address - unique number assigned by the manufacturer to identify each network interface on all network devices. The first few digits of a MAC address typically identify the manufacturer. The remaining digits uniquely identify the specific interface on that individual device. Also known as a "physical" address. (Example: 00409D:256EC0)

LAN (Local Area Network) - a computer network covering a local area, like a home, office or small group of buildings such as a college.

WAN (Wide Area Network) **-** a computer network covering a wide geographical area, involving vast array of computers. The best example of a WAN is the Internet.

ISP (Internet Service Provider) - provides access to the Internet for others via some connectivity service(s). This might be in the form of dial up services, web hosting services or the combination of both.

DSL (Digital subscriber line) - type of broadband connection that brings information to homes and businesses over ordinary copper telephone lines.

URL (Uniform Resource Locator) - A string of characters that represents the location or address of a resource on the Internet and how that resource should be accessed. World Wide Web pages are assigned a unique URL. Also known as an Internet address or web address. (Example: http://www.elkproducts.com/)

TCP/IP (Transmission Control Protocol/ Internet Protocol) - the basic communication protocol of the Internet. This is a standard for routing and data transfer around the world. The Internet Protocol is a connectionless protocol which provides packet routing. TCP is connection-oriented and provides reliable communication and multiplexing.

IP Address (Internet Protocol Address) - the address of a computer attached to a TCP/IP network. Every client and server station must have a unique IP address. (Example: 192.168.0.1)

"Static" IP Address - a permanent or non-changing IP address that is assigned to a node in a TCP/IP network. Static IP addresses are generally used for servers, routers, etc.

"Dynamic" IP Address - an IP address that is automatically assigned to a client station in a TCP/IP network, typically by a DHCP server.

DHCP (Dynamic Host Configuration Protocol) - a standard method for assigning IP addresses automatically to the devices on a TCP/IP network. As a new device connects, the DHCP server assigns an IP address from a list of available addresses. The device retains this IP address for the duration of the session. Once the device disconnects the IP address becomes available for use again.

DNS (Domain Name System) - A DNS server lets you locate computers on a network or the Internet (TCP/IP network) by domain name. The DNS server maintains a database of domain names (host names) and their corresponding IP addresses.

DDNS (Dynamic Domain Name System) - Dynamic DNS is a system for allowing an Internet domain name to be assigned to a varying IP address. This makes it possible for other sites on the Internet to establish connections to the machine without needing to track the IP address themselves. A common use is for running server software on a computer that has a dynamic IP address (e.g., a dial-up connection where a new address is assigned at each connection, or a DSL service where the address is changed by the ISP occasionally).

SMTP (Simple Mail Transfer Protocol) - Internet standard protocol used to transfer electronic mail from one computer system to another.

Encryption - process of obscuring information to make it unreadable without special knowledge. Information is converted into a code language before it is sent. The receiver has the same software and decodes the information after it arrives.

SSL (Secure Socket Layer) - An encryption protocol for transmitting documents securely over the Internet by electronically authenticating each end of an encrypted transmission.

Account Number - A 4 digit number entered on the Telephone ID screen and the Central Station screen of the M1XEP setup. This number is an identifier of the particular premise for which the alarm or event is being reported to the Central Station.

Time Server – A computer on the Internet that responds with standard universal time information to time requests.

NTP (Network Time Protocol) - The protocol for requesting and receiving the current time from a time server.

Troubleshooting Guide

PROBLEM: ElkRP cannot "Find" the M1XEP

POSSIBLE SOLUTIONS:
Verify the M1XEP is powered up and connected to the M1 Control

Wait 1 to 2 minutes after powering up the M1XEP for the initialization process to complete before ElkRP can "Find" the M1XEP

Verify all cable connections and check to see if green LED on the RJ45 connector is blinking, indicating network traffic.

Check the serial baud rate in the M1. This setting can be accessed through the keypad by entering Menu 9- Installation Programming, Sub-Menu 7-Global System Definitions. Global option G34 should be set to 115200.

Use the JP2 jumper to force the DHCP/IP address setting to known values. For instructions on this process, see page 18.

If the network router is not serving IP addresses, or the M1XEP is set to a static address, use a crossover cable to connect directly from the PC to the M1XEP. This will require making some changes to the network setup of the PC to allow the PC and the M1XEP to be in the same subnet.

If there is a router/firewall between the PC and the M1XEP, it must port forward port 2362.

PROBLEM: Cannot connect with ElkRP via Local Network

POSSIBLE SOLUTIONS:
Using ElkRP, click on M1XEP setup, then click "Find" to verify IP address. Highlight the M1XEP and click "Use Selected" If the M1XEP does not appear on the find screen, refer to the troubleshooting steps above.

The M1XEP and the computer must have IP addresses within the same subnet. Check the IP address of the computer and if it is in a different subnet than the M1XEP, change the IP address of the computer or use the JP2 jumper to force the M1XEP to DHCP mode. For instructions on this process, see page 18.

If there is a router/firewall between the PC and M1XEP, it must port forward port 2601. For M1XEP firmware updates, port 21 must also be port forwarded through the router.

PROBLEM: Cannot connect with ElkRP via Internet/WAN

POSSIBLE SOLUTIONS:
Ensure that a connection can be established on the local network.

Verify router settings- the router must port forward port 2601. For M1XEP firmware updates, port 21 must also be port forwarded through the router.

If using a DDNS service, any changes to the “dynamic” name may require time to propagate through the entire internet system. Depending on the service, this could even take 1 or 2 days

PROBLEM: M1XEP will not send emails

POSSIBLE SOLUTIONS:
Verify "From" address is valid

Verify Mail server URL/IP address and Port. Check www.elkproducts.com for information on supported and tested email services.

If server requires logon, verify the username and password.

Verify Primary and Secondary DNS servers are entered correctly on the TCP/IP tab of the M1 XEP setup

Verify the Rule to send email is written correctly.

Verify that ElkRP is disconnected when the triggering event occurs.

PROBLEM: Central Station did not receive report

POSSIBLE SOLUTIONS:
Verify Telephone 1 corresponds with C.S.1, etc

Verify M1XEP Setup: IP Address and Port, Account Number, Line and Receiver

Verify Telephone Setup: Format = 6 (IP), Correct areas are checked, Events that should be reported are checked.

Verfiy all necessary/desired reporting codes in Communicator section are enabled with 01 in the Pulse column

PROBLEM: Fail to Communicate

POSSIBLE SOLUTIONS:
Follow troubleshooting steps for "Central Station did not receive report" shown above

PROBLEM: Ethernet Trouble

POSSIBLE SOLUTIONS:
Verify the M1XEP is connected to the M1 and enrolled.

Follow troubleshooting steps for "Central Station did not receive report" shown above.

If enabled, verify Central Station is receiving the heartbeat (supervision) signal.

ELK
PRODUCTS, INC.

www.elkproducts.com