

ELK Products, Inc.

M1 Security and Automation Controller

ASCII Protocol & Interface Specification

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Specifications subject to change without notice.

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Hildebran, NC 28637 USA

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M1 Command Summary

Lower case represents commands to the control.

Upper case represents responses from the control.

a0 – Disarm
a1 – Arm to away
a2 – Arm to stay
a3 – Arm to stay instant
a4 – Arm to night
a5 – Arm to night instant
a6 – Arm to vacation
a7 – Arm step to next Away Mode
a8 – Arm step to next Stay Mode
AP – Send ASCII String
ar – Alarm Reporting Acknowledge
AR – Alarm Reporting to Ethernet
as – Request arming status
AS – Arming status report data
ax – Alarm Report negative ack (nak)
az – Alarm by zone request
AZ – Alarm by zone reply

ca – Request Touchscreen audio command
CA –Reply Touchscreen audio command
CC – Control output change update
cd – Incoming Audio Equip Command
CD – Outgoing Audio Equip Command
cf – Control output OFF
cn – Control output ON
cp – Request ALL custom values
cr – Request custom value
CR – Custom value report data
cs – Control output status request
CS – Control output status report data
ct – Control output TOGGLE
cu – Change user code request
CU – Change user code reply
cw – Write custom value data
cv – Request Counter value
CV – Counter Value Data
cx – Write counter value

dm – Display message
ds – Lighting Poll Request
DS – Lighting Poll Response

EE – Entry/Exit Time Data
EM – Email Trigger to M1XEP

IC – Send invalid user code digits
IE – Installer program exited
IP- M1XSP Insteon Program
ip- M1XSP Insteon Program
IR- M1XSP Insteon Read
ir- M1XSP Insteon Read

ka – Request keypad areas

KA – Keypad areas report data
kc – Request F Key illumination status

KC – Keypad key change update
kf – Request simulated function key press
KF – Function key pressed data

LD – Log data with index
ld – Request log data, with index
le – Write Log Data Entry
lw – Request temperature data
LW – Reply temperature data

pc – Control lighting device
PC – Lighting change update
pf – Turn OFF lighting device
pn – Turn ON lighting device
ps – Request lighting status
PS – Lighting status report data
pt – Toggle lighting device

RE – Reset Ethernet Module
RP – ELKRP connected
rr – Request Real Time Clock Read
RR – Real Time Clock Data
rs – Used by Touchscreen
rw – Real Time Clock Write

sd – Request text string descriptions
SD – Text string description report data
sp – Speak phrase
ss –Request System Trouble Status
SS – System Trouble Status data
st – Request temperature
ST – Temperature report data
sw – Speak word

t2 – Request Omnistat 2 data
T2 – Reply Omnistat 2 data
TC – Task change update
tn – Task activation
tr – Request thermostat data
TR – Thermostat data report
ts – Set thermostat data

ua – Request user code areas
UA – User code areas report data

vn – request Version Number of M1
VN – Reply Version Number of M1

XB – reserved by ELKRP
xk – Reply from Ethernet test

XK – Request Ethernet test
zb – Zone bypass request
ZB – Zone bypass report data
ZC – Zone change update
zd – Request zone definition data
ZD – Zone definition report data

zp – Zone partition request
ZP – Zone partition report data
zs – Zone status request
ZS – Zone status report data
zv – Request Zone analog voltage
ZV – Zone analog voltage data

1. General

This document describes the ASCII protocol specifications for communications between the ELK M1/M1EZ8 Control Panels and various 3rd party devices, including but not limited to computers, advanced automation platforms, HVAC and Lighting products, etc. The protocol described can be used either directly connected to the control panel's main RS232 Serial Port (port 0) or via IP when connecting through the M1XEP or C1M1 family interfaces.

2. M1 Serial Electrical / Mechanical Specifications

The M1 RS232 Serial Port (port 0) interface is a female DB-9 connector supporting a limited RS-232 hardware interface configured as DCE (Data Communication Equipment). The pin-outs are GND – Pin 5, and the TXD – Pin 2, RXD – Pin 3 signals. The control ignores all handshake lines when sending data, so connected equipment must be capable of receiving continuous 9600 to 115,200 baud data.

Connect serially with a computer requires just a straight through serial cable. Connecting serially to other DCE configured serial ports may require a null modem and/or gender changer.

Baud rates must be set in the M1 under Global programming and may be 9600 to 115,200 baud. Always use 8 data bits, no parity, and one stop bit. Logic levels at the interface are standard RS-232 and the interface is full duplex. **Buffer size in the M1 is limited so it is best to wait for a response after each command to avoid buffer overflow and lost data.** Be aware that data is transmitted from the M1 asynchronously so the message received immediately after a command may be unrelated to the response you are expecting.

The optional M1XEP and C1M1 Family of interface devices may be connected to this DB-9 interface connector. The M1XEP interface allows communications via Ethernet and the C1M1 Family interface allows communications either via Ethernet or USB.

3. Error Checking

The transmission contains checksum and packet length error checking. No acknowledge or re-transmission capability is implemented.

4. Messages

With the exception of the message terminator, CR-LF, all characters are printable ASCII. See Appendix for an example of C source for generating a well-formed message string.

A packet length and checksum generator program is available from ELK Products, Inc. to generate test ASCII packets. The program is called M1_SDK.exe.

4.1 Data Packet Format

Data packets both from a PC to the control panel and from the control panel to a PC use the following format.
NNMSD...OO CC (CR-LF)

ASCII hexadecimal Notation - 0x00 to 0xFF. The 0x.. Represents ASCII hexadecimal notation

4.1.1 Packet Length

NN 2 ASCII characters, length of packet including all characters except Length and CR-LF at the end of the packet. Legal values are ASCII hex 00 to FF. Permissible characters are ASCII 0-9 and upper case A-F.

4.1.2 Message Type

M 1 ASCII character, message/packet type ID. These are upper and lower case alpha characters. Upper case is used for responses from the control panel and lower case for commands to the control panel. Allowed values are a-z and A-Z

4.1.3 Sub-Message Type

S ASCII character, sub-message/packet type. These are upper and lower case alpha characters. Upper case is used for responses from the control panel and lower case for commands to the control panel. Allowed values are 0-9, a-z and A-Z.

4.1.4 Data

D... 0 or more ASCII characters of data associated with the command/packet type. Any printable ASCII character is permitted. L, P is part of the Data packet as explained when needed.

4.1.5 Reserved

0 0 Two ASCII characters, reserved for future development. The only legal character is 0 (ASCII zero).

4.1.6 Checksum

CC 2 ASCII characters, 2-digit checksum. This is the hexadecimal two's complement of the modulo-256 sum of the ASCII values of all characters in the message excluding the checksum itself and the CR-LF terminator at the end of the message. Permissible characters are ASCII 0-9 and upper case A-F. When all the characters are added to the Checksum, the value should equal 0.

4.1.7 Terminator

(CR-LF) Message terminator. ASCII characters consisting of hexadecimal 0x0D and 0x0A. The 0x0A is optional. A message terminator may also use the 0x0A only.

NNMSD...0 0 CC (CR-LF) packet protocol

4.1.8 Message Processing Time:

The M1's incoming message buffer can hold up to 250 characters. Control messages take different times to process messages: Lighting control messages may take up to 500 ms to process the message and send it to a M1XSP Serial Port Expander if it is used. The M1XSP can buffer two control messages. Some of the lighting control systems have status feedback with failure retries which may take 2 to 3 seconds to transmit to a faulty light control signal.

Note: In examples below, the data portion will be in **Bold** text. The packet length and checksum will not be in bold.

4.2 Arm and Disarm Messages (a0..a8)

For Arm and Disarm messages the data field **aLPDDDDDD** consists of:

a L P DDDDDD

Example: 0D **a1 1 003456 00 37**

L = Arming Level. Range: 0 to 9 and :.

0 = Disarm

1 = Armed Away

2 = Armed Stay

3 = Armed Stay Instant

4 = Armed Night

5 = Armed Night Instant

6 = Armed Vacation

7 = Arm to next Away Mode M1 Ver. 4.2.8 or later

8 = Arm to next Stay Mode M1 Ver. 4.2.8 or later

9 = ForceArm to Away Mode M1 Ver. 5.3.0 or later

: = ForceArm to Stay Mode M1 Ver. 5.3.0 or later

P = Partition or Area 1 to 8

DDDDDD = six digits for the User Code. If using four digits as the code length, precede the code with 0's, ex. 1234 would be 001234.

Note: Arming the control panel with zones open will initiate “force arming” regardless of whether force arming is enabled or disabled in the control panel.

Arm / Disarm Examples

4.2.1 Disarm (a0)

0Da010034560038(CR-LF)

Example: a0=Disarm, 1=Area 1, 003456=User Code 3456.

4.2.2 Arm to Away (a1)

0Da11001234003F(CR-LF)

Example: a1=arm away, 1=Area 1, 001234=User Code 1234.

4.2.3 Arm to Stay (Home) (a2)

0Da23005678002C(CR-LF)

Example: a2=arm stay, 3=Area 3, 005678=User Code 5678.

4.2.4 Arm to Stay Instant (a3)

0Da380056780026(CR-LF)

Example: a3=arm stay instant, 8=Area 8, 005678=User Code 5678.

4.2.5 Arm to Night (a4)

0Da480056780025(CR-LF)

Example: a4=arm night, 8=Area 8, 005678=User Code 5678.

4.2.6 Arm to Night Instant (a5)

0Da580056780024(CR-LF)

Example: a5=arm night instant, 8=Area 8, 005678=User Code 5678.

4.2.7 Arm to Vacation (a6)

0Da680056780023(CR-LF)

Example: a6=Vacation, 8=Area 8, 005678=User Code 5678.

4.2.8 Arm, Step To Next Away Mode (a7)

0Da710034560031 (CR-LF) Version 4.2.8 or later.

Example: a7=Step to next Away arming mode, 1=Area 1, 003456=User Code 3456.

4.2.9 Arm, Step To Next Stay Mode (a8)

0Da810012340038 (CR-LF) Version 4.2.8 or later.

Example: a8=Step to next Stay arming mode, 1=Area 1, 001234=User Code 1234.

4.2.10 Force Arm to Away Mode (a9)

0Da910012340037 (CR-LF) Version 5.3.0 or later.

Example: a9=Force Arm to Away mode, 1=Area 1, 001234=User Code 1234.

4.2.11 Force Arm to Stay Mode (a:)

0Da:10012340036 (CR-LF) Version 5.3.0 or later.

Example: a:=Force Arm to Stay mode, 1=Area 1, 001234=User Code 1234.

You can send a request to the control panel for its arming status by sending an Arming Status request. The Control panel will respond with an Arming Status Report.

4.2.12 Arming Status Request (as)

06 – Length as ASCII hex
as – Request arming status
00 – future use
CC – Checksum

Example: 06as0066(CR-LF) Request Arming status

The control panel responds to this message with an Arming Status Report

4.2.13 Reply - Arming Status Report (AS)

1E – Length as ASCII hex
AS – Reply with zone definition data
S[8] – Array of 8 area armed status.
U[8] – Array of 8 area arm up state.
A[8] – Array of 8 area alarm state.
00 – future use, M1 Version 4.11 and later, contains the first found
Exit time if U[x] = '3' or Entrance time if A[x] = '1' as two digits
hex in seconds.
CC – Checksum

Example: 1EAS10000000400000003000000000E Area 1 is armed away, and the area is
full fire alarm.

Example: 1EAS1000000031111111000000000902 Exit time set to 9 seconds.

NOTE: If a control's area status changes, this message will be sent if Global Option "Transmit Keypad Keys" is enabled.

"S" 8-character array field, represents the arming status of partitions 1-8. The leftmost "S" is Area 1. Each area or partition field can contain one of the following ASCII values:

'0' Disarmed
'1' Armed Away
'2' Armed Stay
'3' Armed Stay Instant
'4' Armed to Night
'5' Armed to Night Instant
'6' Armed to Vacation

"U" 8-character array field, represents the arm up state of partitions 1-8. The leftmost "U" is Area 1. Each area or partition field can contain one of the following ASCII values:

'0' Not Ready To Arm
'1' Ready To Arm
'2' Ready To Arm, but a zone is violated and can be Force Armed.
'3' Armed with Exit Timer working
'4' Armed Fully
'5' Force Armed with a force arm zone violated
'6' Armed with a bypass

"A" 8-character array field, represents the current alarm state of partitions 1-8. The leftmost "A" is Area 1. Each area or partition field can contain one of the following ASCII values:

'0' No Alarm Active

'1' Entrance Delay is Active
 '2' Alarm Abort Delay Active
 '3' to 'B' Area is in Full Alarm, see ASCII alarm table values below:
 FireAlarm = '3',
 MedicalAlarm = '4',
 PoliceAlarm = '5',
 BurglarAlarm = '6',
 Aux1Alarm = '7',
 Aux2Alarm = '8',
 Aux3Alarm = '9', *//not used*
 Aux4Alarm = ':', *//not used*
 CarbonMonoxideAlarm = ';',
 EmergencyAlarm = '<',
 FreezeAlarm = '=',
 GasAlarm = '>',
 HeatAlarm = '?',
 WaterAlarm = '@',
 FireSupervisory = 'A',
 VerifyFire = 'B',

4.3 Send ASCII String to an IP Address (AP) **** No 3rd Party Application ****

**** PLEASE NOTE ****

The AP command is for use only by the M1 Control. It cannot be used by any 3rd party application.

Important: This command will only function with the ELK-M1XEP Ethernet Interface. The Elk-C1M1 will not function or respond to this command.

The AP command can be used to send a custom ASCII string message via the ELK-M1XEP (TCP/IP protocol) to a specific IP address and port. The custom ASCII message must be created and stored in the M1 as a TEXT string under the Automation/Text section of ELKRP. The TEXT string must consist of the AP command message plus the destination information.

The destination IP Address and Port must be programmed into one of the Central Station IP slots located in M1XEP Setup dialog from ElkRP. To gain access to one of these slots you first add and setup a corresponding "Telephone Number" in ElkRP and program it with a "Reporting Format" of "6 = IP" (Ethernet).

NOTE: Make sure to uncheck all Area blocks as well as the reporting event blocks on this screen because this Telephone Number can no longer be used for any other alarm reporting events.

Create a TEXT string and store it in the M1's Automation/Text section:

00APxDDDD...{up to 72 ASCII chars here}CRLF

00 - two zeros. Any two digits will work, but they are ignored.

AP - Command to send text string.

x - ASCII "1" - "8". This tells the M1XEP which Central Station IP address to use. Corresponds to Telephone 1-8.

DDDD... - ASCII text data

CRLF - Carriage Return/Line Feed

Example: 00AP4Sprinkler 1 ON^M^J Build a text string and store in the M1's Automation > Text section using ELKRP. "^M^J" is a carriage return/line feed.

The example will send "Sprinkler 1 ON" to the IP address programmed as telephone number 4.

Write a RULE to send this text string out serial port 0. When the M1XEP receives it, it will look up the specified Central Station IP address/port and send only the ASCII message in a TCP packet to that

address/port. The text string has two parts, a command and a message. **00AP4** is the command and the rest is the message. The M1XEP splits the message from the command and forwards the message part only. Therefore, if you are receiving the message at another M1, the string to match is the message part only. In the example above, that would be **Sprinkler 1 ON^M^J**. So to receive this message at another M1, simply create a text string with **Sprinkler 1 ON^M^J** and write a RULE to perform some action when that text string is received through serial port 0.

Special Case:

If the first character of the text string message is an ASCII "3", the M1XEP will insert zone status of all 208 zones at the end of the remaining ASCII message (if any characters follow the "3") and before the CR/LF. The Zone Status is 208 bytes and is identical to the "data" portion of the "ZS" ASCII command.

Example: 00AP43SendingZoneStatus^M^J

Packet Data: **SendingZoneStatus(208 bytes of ZS zone status) (CR-LF)**

4.4 Send Alarm Report via IP Internet Protocol ** No 3rd Party Application **

**** PLEASE NOTE ****

The alarm reporting commands are for use only by the M1 Control. They cannot be used by any 3rd party application or external source to accomplish Central station reporting.

4.4.1 Send Alarm Report (AR)

Command sent from M1 to a connected IP Communicator (ELK-M1XEP or ELK-C1M1). Message format is similar to the digital dialer's Contact ID transmission. At least one (1) of the eight (8) telephone numbers in the M1 must be set to format = "IP". Alarms are then directed out over the RS-232 serial port 0. This capability first become available in M1 FW Version 4.2.8.

Example 1: 16ARAAAAAACCCCGZZT00CC<cr><lf>

16 – Length as ASCII hex, 22 bytes

AR – Alarm Reporting Command

AAAAAA – Account Number, 6 ASCII digits

CCCC - Alarm Code consists of 4 ASCII digits.

GG - Group/Partition Number consisting of 2 ASCII digits.

ZZZ - Zone/User Number consisting of 3 ASCII digits.

T – IP Address to send alarm on. Valid 1 to 8 on M1 Gold, 1 to 4 on M1 Standard and Ez8.

00 - Future use 2 digits.

CC – checksum

Example 2: 16 AR 123456 1134 01 001 1 00 85 - Length 22 bytes, AR alarm reporting, account 123456, CID – Burglar Entry/Exit 1, Area 01, Zone 001, use telephone/IP address 1. Spaces are for readability only.

4.4.2 Reply - Alarm Report Acknowledge (ar) / Alarm Report Fail (ax)

The M1XEP or C1M1 will acknowledge the M1's Alarm Report transmission with the reply: **06ar0067<cr><lf>** upon receipt of the central station's acknowledgement that the data packet was successfully received. If the central station does not acknowledge receipt of the data packet, the M1XEP or C1M1 will reply: **06ax0061 <cr><lf>**.

4.4.3 Control RTC Broadcast / IP Communications Device Test (XK)

The M1 sends the "XK" command out serial port 0 every 30 seconds, regardless of whether any device is connected. This command serves two purposes. 1) If an IP Communications device is connected, the XK tests whether the device is connected and working. 2) The Control's RTC (real time clock) data is included in this command for use in synchronizing time with connected device(s). M1 Ver. prior to 4.32 did not include the RTC data.

16 – Length as ASCII hex, 22 bytes
 XK – Test Ethernet Module is alive
 ss – second as two ASCII characters decimal, “00” to “59”
 mm – Minute as two ASCII characters decimal, “00” to “59”
 hh – Hour as two ASCII characters decimal, “00” to “23” 24 hour
 D – Day of week as one ASCII character, “1”=Sunday to “7”=Saturday
 DM – Day of month as two ASCII characters decimal, “01” to “31”
 MM – Month as two ASCII characters decimal, “01” to “12”
 YY – Year as two ASCII characters decimal, “00” to “99” as in 2099
 S - Daylight Savings Time: “0”=Not active, “1”= Active.
 C - Clock Mode as one ASCII character, ‘1’ = 12 hour, 0 = 24 hour time mode
 T - Date Display Mode as one ASCII character, 0 = mm/dd, 1 = dd/mm
 00 - Future use 2 digits.
 CC – checksum

Example: 16XK2636115020605110006F test signal to the IP Communications device. Real Time Clock Value = Thursday, 11:36:26 PM, June 2, 2005, Daylight savings is active for this time of year, Clock display mode is 12 hour, Date display mode is month/day.

4.4.4 Reply – RTC / IP Communications Device Connected (xk)

If the IP Communications device is connected and working correctly it should reply back to the M1 with: 06xk0057<cr><lf>. If an “xk” response is not received within 120 seconds of the control’s “XK” command, the Control will display and log a “Ethernet Trouble” message.

NOTE: Some older versions of Control FW did not keep track of a missing “xk” response unless the Ethernet Module device was enrolled via the Bus Module Enrollment process.

4.5 Alarm By Zone Request (az)

06 – Length as ASCII hex M1 version 4.3.9 and later
 az – Request alarm by zone
 00 – future use
 CC – Checksum

Example: 06az005F (CR-LF) Request alarm by zone

The control panel will reply to this message with an Alarm By Zone Report

4.5.1 Reply - Alarm By Zone Report (AZ)

D6 – Length as ASCII hex M1 version 4.3.9 and later
 AZ – Reply with zone definition data
 Z[208]- Array of 208 bytes showing alarm by zone.
 A value of ‘0’ or 0x30 indicates the zone is not in alarm.
 A value greater than ‘0’ indicates the zone has been triggered into alarm. The zone value will be reset back to ‘0’ when an authorization code is entered to acknowledge the alarm. The value in the zone byte is the same as the zone function value plus 0x30 or 48. See table below.
 00 – future use
 CC – Checksum

Zone Definitions in Alarm By Zone reply string:

Disabled = ‘0’	Burglar Interior Follower = ‘5’
Burglar Entry/Exit 1 = ‘1’	Burglar Interior Night = ‘6’
Burglar Entry/Exit 2 = ‘2’	Burglar Interior Night Delay = ‘7’
Burglar Perimeter Instant = ‘3’	Burglar 24 Hour = ‘8’
Burglar Interior = ‘4’	Burglar Box Tamper = ‘9’

Emergency Alarm = 'B'
Freeze Alarm = 'C'
Gas Alarm = 'D'
Heat Alarm = 'E'
Medical Alarm = 'F'
Police Alarm = 'G'
Police No Indication = 'H'
Water Alarm = 'I'

4.7 Audio Equipment Command (cd)

Important: This command will only function with the ELK-M1XEP Ethernet Interface. The Elk-C1M1 will not function or respond to this command.

An M1XEP Ethernet Module is required to intercept the “cd” command. These commands are sent into the M1XEP via the Ethernet connection and passed through to the M1. The M1XEP builds custom audio commands to control the audio equipment and sends these commands to the audio equipment via ethernet. An IP232 Ethernet Module may be required at the audio equipment to receive the commands if no Ethernet Port is available on the audio equipment. The incoming “cd” command can trigger Rules in the M1 which can fire outgoing audio equipment “CD” commands or other control Rules. ELKRP downloads the Audio Equipment Command tables into the M1XEP according to the Audio Equipment Manufacturer. M1 version 4.1.11, 5.1.11 or later is required.

4.7.1 Audio Command (cd)

0F - Length as ASCII hex
cd - Request Audio Command
NN - Which audio command from Audio Command Table.
SS - Audio Source Information
ZZ - Audio Zone Information
VVV - Audio State or Value
00 - future use
CC - Checksum

Example: 0Fcd01020300000AD Audio command 1, Source 2, Zone 3, Power On

Example: 0Fcd10020305000A8 Audio command 10, Source 2, Zone 3, Volume Level = 50
The “cd” command may or may not use the audio source/zone info.

4.7.2 Audio Command Table (used by M1XEP)

<u>Function</u>	<u>Description (numeric NN value)</u>
Power Off	0-Turns the zone power Off.
Power On	1-Turns the zone power On.
Power Toggle On/Off	2-Toggles Power state of a zone.
Next Source	3-Steps to next source
Source	4-Select a source input.
Previous Select	5-Steps backward to previous available.
Next Select	6-Advances forward, next.
Volume Down	7-Decrement the zone volume.
Volume Up	8-Increment the zone volume.
Mute Audio	9-Toggles the mute on/off of a zone.
Volume set	10-Set zone volume to a level.
Play	11-Starts source Play
Pause	12-Pauses Play
Stop	13-Stop Play
Select Favorite #1	14-Executes Favorite Playlist 1.
Select Favorite #2	15-Executes Favorite Playlist 2.
Minus	16-Down Select
Plus	17-Up Select
All Zones Off	18-Turn all zones off
All Zones On	19-Turn all zones on
Audio System Manufacturer	20-Version number,

VVV value: 0 = No audio configured, 1 = Russound, 2 = Nuvo, 3 = Proficient, 99 = IP Failure

4.7.3 Reply - Audio Command (CD)

0F - Length as ASCII hex
CD - Request Audio Command
NN - Which audio command from Audio Command Table.
SS - Audio Source Information
ZZ - Audio Zone Information
VVV - Audio State or Value
00 - future use
CC - Checksum

Example: 0FCD02030400000EA Audio command 2, Source 3, Zone 4, Toggle Power.

Example: 0FCD09030400000E3 Audio command 09, Source 3, Zone 4, Toggle Mute.

4.8 Control Output Commands

Output commands may be used to control any of the control panel outputs. The data portion of the output on and off commands, DDD is a 3-digit, (1 base) referenced decimal number corresponding to the number of the desired output, 1 to 208. TTTT is the number of seconds the output will be active. A value of 0 will stay on until commanded to turn off. Range: 0 to 65535

4.8.1 Control Output off (cf)

09cfDDD00CC(CR-LF)

Example: turn off Control Output 2: 09cf00200DC(CR-LF)

4.8.2 Control Output On (cn)

0EcnDDDTTTT00CC(CR-LF)

Example: turn on Control Output 1 for 10 seconds: 0Ecn0010001000D8(CR-LF)

It is possible to query the control panel concerning output status with a Control Output Status Request. The control panel will respond with a Control Output Status Report.

4.8.3 Control Output Status Request (cs)

06cs0064(CR-LF)

The control panel responds with a Control Output Status Report for all 208 outputs.

4.8.4 Reply - Control Output Status Report (CS)

D6CSD...00CC(CR-LF)

The control panel sends this message in response to a Control Output Status Request. The data portion of this message is 208 characters long, one character for each output in order. The value will be: 0 (Off), 1 (On).

Example: With control output 1 off, output 2 on, output 3 and output 4 off, the message would begin D6CS0100...

4.8.5 Control Output toggle (ct)

09ctDDD00CC(CR-LF)

Example: toggle Control Output 2: 09ct00200CE(CR-LF)

4.8.6 Reply - Control Output Change Update (CC)

Optional Command sent from M1 containing the status and identity of Output changes as they occur. To enable this option, set the location TRUE in the M1 Control **Global Programming Location 37. "Xmit OutputChgs-ASCII" (Yes or No)**

0ACCZZZS00CC

0A - Length as ASCII hex
CC - Zone Change Message Command
ZZZ - Output Number, 1 based
S - Output State, 0 = OFF, 1 = ON
00 - future use
CC - Checksum

Example: 0ACC003100E5 Output change - Output 3, changed to ON

NOTE: The Output Change Update will also be transmitted out M1XSP Serial Port Expanders which are setup and configured in the Generic Serial Transmit Mode.

4.9 Read or Write Custom Values (cr)

Allows 3rd party equipment to read or change a Custom Value stored in the M1. Custom Values are user changeable values stored in EEPROM Memory like sprinkler watering times or wakeup times.

4.9.1 Read Custom Value (cr)

08 - Length as ASCII hex
cr - Read custom value
NN - Which Custom Value to return (2 decimal ASCII digits, 1 based). ie."16" = custom value 16. Range 1 to 20.
00 - future use
CC - Checksum

Example: 08cr010002 Read custom value 1.

4.9.2 Read ALL Custom Values (cp)

06 - Length as ASCII hex
cp - Read ALL custom values
00 - future use
CC - Checksum

Example: 06cp0067 Read all custom values.

4.9.3 Reply - Custom Value (CR)

0E - Length in ASCII hex (Length fixed in M1 Ver. 4.3.1 >
CR - Returned custom value
NN - Custom Value to be returned (2 decimal ASCII digits, 1 based). ie."16" = custom value 16. Range 1 to 20.
DDDDD - 16 bit Custom Value returned (5 decimal ASCII digits)
If Format = 2, Time of day, this value should be converted to a hexadecimal value. The low two bytes will display the minutes in hexadecimal, the third and fourth bytes will display the hours in hexadecimal.
F - Custom value format. 0=Number, 1=Timer, 2=Time of day
00 - future use
CC - Checksum

Example: 0ECR01001230000F Returned value = 123, Number format, from Custom Value 1

Example: 0ECR010541620003 Convert 5416 to hex = 15 28. Convert 15 to decimal = 21.
Convert 28 to hex = 40. Therefore time = 21:40 or 9:40 PM.

4.9.4 Reply - ALL Custom Values (CR)

80 - Length in ASCII hex (Length fixed in M1 Ver. 4.3.6 >
CR - Returned custom value
NN = 00. 00 implies all 20 Custom Values returned.
DDDDD... - 16 bit Custom Value returned (5 decimal ASCII digits)
If Format = 2, Time of day, this value should be converted to a hexadecimal value. The low two bytes will display the minutes in hexadecimal, the third and fourth bytes will display the hours in hexadecimal.
F - Custom value format. 0=Number, 1=Timer, 2=Time of day
... **DDDDD and F above is repeated 19 more times corresponding to each of the 20 custom values.**
00 - future use
CC - Checksum

Write Custom Value (cw)

0D - Length as ASCII hex
cw - write custom value
NN - Custom Value to be written (2 decimal ASCII digits, 1 based). ie."16" = custom value 16. Range 1 to 20.
DDDDD - 16 bit Custom Value to write (5 decimal ASCII digits)
If the Custom Value Format = 2, Time of day, place the hours in bytes 3 and 4 as a hexadecimal value and the minutes in bytes 1 and 2 as a hexadecimal value. Then convert that value to decimal and place in the DDDDD value.
00 - future use
CC - Checksum

Example: 0Dcw050012300F7 Written value = 123 into Custom Value 5. The "Reply With Custom Value" (CR command above) string will be returned after the EEprom has been written.

Example: 0Dcw010541600F1 Write 9:40 PM to Custom Value 1 which was previously set as a Time of day format. Convert time to 24 hour format: 21:40. Convert the hours and minutes to hexadecimal 15 28. Convert entire value to decimal: 5416. Place in DDDDD value.

4.10 Change User Code (cu)

Allows 3rd party equipment to change a user code. The data packet must include a Master User Code or the current user code of the user code to be changed. Eff. with M1 FW 4.3.9 and later.

4.10.1 Request Change User Code (cu)

23- Length as ASCII hex
cu - Request change user code
ccc - User code to change
abababababab - Master or current user authorization code.
Upper and lower nibble of code. For user code the "a" will be an ASCII zero (0). For Prox codes the "a" expressed in ASCII, will be the upper nibble of the byte of the Prox code. Right justified.
anananananan - New user code to change to. "a" is the upper nibble of the user code in ASCII. Normally set to zero(0). If a Prox code the value will be the upper

nibble of the Prox code byte in ASCII. Right justified.

NN - Areas code may be used in. Two ASCII Hex characters, 0-9,A-F, using the Hex value of each character as the mask for 4 areas. Right most character is areas 1 to 4 with bit 0 equal to Area 1. Authorization code must be valid in areas requested. If Area value = "00" then no area change is made.

00 - future use, 1st byte used for Code Restriction set/clear.

CC - Checksum

Example: 23cu0050000030405060000090807062100BB Request user code 5 to be changed to 009876, authorized by user code 003456. Code is valid in Areas 1 and 6 if authorization code is valid in Areas 1 and 6.

4.10.2 Reply - Change User Code (CU)

0B - Length as ASCII hex

CU - Reply Lighting Device Status data

ccc - 000 = User code change denied due to invalid authorization code, 001 to 254 indicates user code that was changed. 255 = new code is a duplicate and change is denied.

00 - future use

CC - Checksum

Example: 09CU005000A User code 005 was changed.

Example: 09CU000000F User code denied - invalid authorization code.

Example: 09CU2550003 User code denied - duplicate code.

Note: Setting the first future use byte to "1" in the "cu" command will set the user code restriction which will prevent the code from being used. Setting the first future use byte to "0", enables the code to be used.

To M1: 23cu0050000030405060000080807062110BB If the first Future Use byte as a '1', the code will not be programmed, but the restriction on the code will be enabled.
From M1: 09CU0051009 Response from the M1 that the code is restricted.

To M1: 23cu0050000030405060000080807062120BA Sending a '2' value in the first Future Use byte takes the code restriction away.
From M1: 09CU005000A Response from M1 with the code restriction cleared.

4.11 Change And Read Counter Values (cv)

Allows automation equipment to read and change a Counter Value stored in the M1. Counter Values are RAM based and may be used as flags or to hold simple math values. This feature is available in M1 versions 4.1.11, 5.1.6 and later.

4.11.1 Read Counter Value (cv)

08 - Length as ASCII hex

cv - Read counter value command

NN - Counter Value to be returned (2 decimal ASCII digits, 1 based). ie."16" = counter value 16. Range 1 to 64.

00 - future use

CC - Checksum

Example: 08cv0100FE Read counter number 1.

4.11.2 Write Counter Value (cx)

0D - Length as ASCII hex
cx - Write counter value command
NN - Counter Value to be returned (2 decimal ASCII digits, 1 based). ie."16" = counter value 16. Range 1 to 64.
DDDDD - 16 bit Counter Value returned (Five decimal ASCII digits). Range 0 to 65535.
00 - future use
CC - Checksum
Example: 0Dcx011234500F1 Write counter number 1 to a value of 12345.
Returns "CV" command string as reply.

4.11.3 Reply - Counter Value (CV)

0D - Length as ASCII hex
CV - Returned Counter value command
NN - Counter Value to be returned (2 decimal ASCII digits, 1 based). ie."16" = counter value 16. Range 1 to 64.
DDDDD - 16 bit Counter Value returned (Five decimal ASCII digits) Range 0 to 65535.
00 - future use
CC - Checksum
Example: 0DCV0100123003C Returned value = 123, from Counter number 1

4.12 Display Text On LCD Screen (dm)

This is a M1 received message to display ascii text on the bottom line of the LCD display on the keypads in the area specified. Enter the line terminator, "^", as the ending character of the line display if less than 16 characters are to be displayed. The message line, L1 or L2, will need dummy characters to fill the rest of the line for 16 characters each line.

2E - Length as ASCII hex
dm - Display Message On Keypad Command
A - Keypad Area, 1 to 8
C - Clear, 0=clear message, 1=clear message with * key, 2=Display until timeout
B - Beep Keypad, 0=no beep, 1=beep
TTTTT - Display time in decimal seconds, 1-65535 seconds, 0=No timeout
L1[16] - 16 ASCII characters for first line
L2[16] - 16 ASCII characters for second line, alternately scrolled with first line
00 - future use
CC - Checksum

Example: 2Edm11100020abc^efghijklmnopABCDEF^HIJKLMNOP00B2
Would display "abc" on the first line and "ABCDEF" on the second line

If the second line is not needed, enter a "^" as the first character of the second line.
The second line will be scrolled with the first line if it is included.

LCD will display: **Ready To Arm** then **Ready To Arm**
 abc **ABCDEF**

4.13 Lighting Device Status Poll (DS) **** No 3rd Party Application ****

WARNING: No 3rd party use or application. This command can only be sent by the M1 Control. This is a command issued from the M1 to ELK-M1XSP Serial Port modules that are connected to integrated lighting partners. It allows the M1 to poll single light devices to obtain their On, Off, or Dim status. Enable the “2 Way” Poll setting for the device to be polled. Eff. M1 Ver. 4.3.9 and later.

Note: Only single light devices can be polled for status. Groups and scenes will not return valid data. This command cannot be used by 3rd party integration equipment.

4.13.1 Request Lighting Device Status (ds)

09 - Length as ASCII hex
ds - Request lighting device status
aaa - Lighting device # 001 to 256, base 1, device A1 = 001
00 - future use
CC - Checksum

Example: 09ds00100CF Request lighting device status of lighting device 001.

4.13.2 Reply - Lighting Device Status Data (DS)

0B - Length as ASCII hex
DS - Reply Lighting Device Status data
aaa - Lighting device # 001 to 256, base 1, device A1 = 001
ss - Lighting status. 00=Off, 01=Full On, 2 to 99=Dim level
00 - future use
CC - Checksum

Example: 0BDS001990094 Reply lighting status of device 001, set to a dim level of 99%.

4.14 Send Entry/Exit Time Data (EE)

Command sent from M1 containing the entry 1 & 2 and exit 1 & 2 time data when the timers are started by area. As each exit timer expires another “EE” command will be sent. Eff. with M1 Ver. 4.1.12, 5.1.12 or later. Armed State added eff. M1 Ver. 4.1.18, 5.1.18 or later.

0F - Length as ASCII hex
EE - Send exit/entry timer data.
A - Area, “1” to “8”.
D - Data Type. “0” = Exit, “1” = Entrance time.
ttt - Timer 1 value in seconds. Range “000” to “255” seconds.
TTT - Timer 2 value in seconds. Range “000” to “255” seconds.
S - Armed State
 0=Disarmed
 1=Armed Away
 2=Armed Stay
 3=Armed Stay Instant
 4=Armed Night
 5=Armed Night Instant
 6=Armed Vacation
00 - future use
CC - Checksum

Example 1: 0FEE10060120100E5 Area 1, Exit 1 Time=060, Exit 2 Time=120 seconds started, Armed Away.

Example 2: 0FEE21030254200DD Area 2, Entry 1 Time=030, Entry 2 Time=254 seconds started, Armed Stay.

4.15 Send Email Trigger (EM) **** No 3rd Party Application ****

Command sent from M1 to trigger email messages stored in the M1XEP Ethernet interface. Eff. with M1 Version 4.2.8 and later.

WARNING: This can only be sent by the M1 Control. It has no 3rd party use or application. This also only works with the ELK-M1XEP. The ELK-C1M1 will not respond to the command.

09 - Length as ASCII hex
EM - Send email trigger command to M1XEP.
DDD - The address of the email message stored in the M1XEP.
00 - future use
CC - Checksum

Example: 09EM0010014 Send email message 001 trigger to the M1XEP. The M1XEP will then send the email on the Ethernet to the email address that is associated with the message.

4.16 Send Valid User Number and Invalid User Code (IC)

Command sent from M1 when a user PIN code is entered and a valid code is found. Only the valid user code number (not the code itself) will be returned. If a user code is not found in the M1's User Code Data Base, the code that was enter will be sent. If the User Code Length is set to 4 digits, the invalid data packet will be sent after 4 digits are entered, then repeated for each additional invalid user code digit. If the User Code Length is set to 6 digits, the invalid data packet will be sent after 6 digits are entered, then repeated for each additional invalid user digit. If prox card data is enter, the packet will be sent immediately. This data can be used by 3rd party integration equipment having its own user code data base. The equipment would sent the appropriate arm/disarm command ("a0" to "a6") or output relay control commands ("cn", "cf", or "ct") back to the M1 after it has verified the proper code is in its data base. Modified for 26 bit Weigand data cards and available in M1 Ver. 4.2.8 and after.

17 - Length as ASCII hex. {12 in M1 Ver. Prior to 4.3.2}

IC - Send Invalid User Code digits

DDDDDDDDDDDD - 12 characters (ASCII Hex, 0 to F) of user code data. High nibble and low nibble of each code data byte. 4 & 6 digit codes are left padded with zeros. Set to all zeros if code is valid.

UUU - 3 characters (ASCII Dec.) User Code Number 001 to 103, indicating which valid user code was entered. Eff. with M1 Ver.4.3.2 and later.

NN - Keypad number, 01 to 16, that generated the code.

00 - future use

CC - Checksum

Note: In M1 Ver. 4.4.2 and later, user code 201 = Program Code, 202 = ELK RP Code, 203 = Quick Arm, no code.

Example 1: 17IC 00 00 03 04 05 06 000 01 00CC Invalid user keypad code 3456.

Keypad entered codes only use the low nibble of the 6 bytes of code data. Spaces in this example are for reading clarity only.

17 - Length as ASCII hex

IC - Command

00 - high and low nibble of byte one in high and low ASCII character.

00 - high and low nibble of byte two in high and low ASCII character.

03 - high and low nibble of byte three in high and low ASCII character.
Low nibble has first character of keypad code entry.

04 - high and low nibble of byte four in high and low ASCII character.
Low nibble has second character of keypad code entry.

05 - high and low nibble of byte five in high and low ASCII character.

Low nibble has third character of keypad code entry.
06 – high and low nibble of byte six in high and low ASCII character.
 Low nibble has fourth character of keypad code entry.
000 – Valid user code number. Set to 0 for an invalid user code.
01 - Keypad number 01 generated the code.
00 - Future Use
CC – Checksum

Example 2: **17IC 123456789012 000 01 004B** Invalid 26 bit Weigand prox card code. Prox card codes use the high and low nibbles of the 6 bytes of code data. Spaces in this example are for reading clarity only.

17IC – length and command
123456789012 - Example prox card code. ASCII Hex (0 to F).
000 – Valid user code number. Set to 0 for an invalid user code.
01 – Keypad number that generated code.
004B - not used byte characters and checksum

Example 3: **17IC 000000000000 003 01 0078** Valid user code. Prox card codes use the high and low nibbles of the 6 bytes of code data. Spaces in this example are for reading clarity only.

17IC – length and command
000000000000 – Invalid user code data is set to all zeros on a valid user code. This purposes hides all valid codes.
003 – Valid user code number 3.
01 – Keypad number that generated code.
0078 - not used byte characters and checksum

4.17 Send Installer Program Mode Exited (IE)

Command sent from M1 when the installer program mode has ended. This occurs when either the Installer pressed the “*” key three times or when the installer timer expires. IP devices can monitor this command to know when they may reload M1 program data after an installer has done any keypad programming. Eff. M1 Ver. 4.2.8 and later.

06 – Length as ASCII hex
IE – Send installer mode exited.
00 – future use
CC – Checksum

Example: **06IE00AC** Send installer mode has exited.

NOTE: The “IE” is also sent out when ELK RP disconnects. See section **4.33 ELKRP Connected (RP)** for additional information.

4.18 Insteon Lighting thru M1XSP Serial Port Expander

These commands allow programming and reading Insteon device addresses via the M1XSP Serial Port Expander configured in the Insteon mode. Commands may be sent to program and read the Insteon device IDs. Lighting device descriptions may also be accessed from the M1. All data packets are terminated with a carriage return (0x0D) with a line feed option (0x0A).

4.18.1 Request ASCII Lighting Device Description (sd)

0B – Length as ASCII hex
sd – Request ASCII String Text Descriptions Command

07 - Lighting device description
NNN - Which lighting description to be returned, 1 - 192
00 - future use
CC - Checksum

Example: 0Bsd07001005F Request Lighting Device 001 (A1) Name.

4.18.2 Reply - ASCII Lighting String Text Description (SD)

1B - Length as ASCII hex
SD - Reply ASCII Lighting Device Command
07 - Lighting device description
NNN - Which lighting device desc. returned, 001-192
Text[16] - 16 ASCII characters, "space" character (20 hex) will be filled in if text is less than 16 characters.
00 - future use
CC - Checksum

Example: 1DSD07001Hall Light 0089D2 Lighting Device 001 Description - "Hall Light"

Note: The high bit of the first character in the text string may be set as the "Show On Keypad" bit. Mask out the high bit for proper ASCII display. If the first character in a requested name is a "space" or less, the next names are searched until a name is found whose first character is greater than "space" or the "Show On Keypad" bit is set. If no valid names are found, a "000" for the NNN address is returned. This speeds up the loading of names so that invalid names are not returned.

4.18.3 Request Insteon Lighting Device (ir)

0A - Length as ASCII hex
ir - Request read of Insteon lighting device data
aaa - Starting Lighting device number 001 to 192
n - Number of devices to return, 1-8
00 - future use
CC - Checksum

Example: 0Air0018008B Read of lighting device data starting at device 001 and returning 8 devices.

4.18.4 Reply - Insteon Lighting Device (IR)

XX - Length as ASCII hex
IR - Reply read of Insteon lighting device data
aaa - Starting Lighting device number 001 to 192
n - Number of devices being returned, 1-8
AAAAAA Insteon Device ID with 6 ASCII Hex bytes per device.
BBBBBB Number of devices is determined by "n" above.
CCCCC
...
EEEEEE
FFFFFF
00 - future use
CC - Checksum

Example: 22IR0014123456ABCDEF987654A1B2C3006F Reply Insteon lighting device ID data for device 001 to 004.

4.18.5 Request Programming of Insteon Lighting Device (ip)

XX - Length as ASCII hex
ip - Request Program of Insteon lighting device data
aaa - Starting Lighting device number 001 to 192
n - Number of devices being programmed, 1-8

AAAAAA Insteon Device ID with 6 ASCII Hex bytes per device.
 BBBBBB Number of devices is determined by "n" above.
 CCCCCC
 ...
 EEEEEEE
 FFFFFFF
 00 - future use
 CC - Checksum

Example: 22ip0014123456ABCDEF987654A1B2C30031 Request Programming Insteon lighting device ID data for device 001 to 004.

4.18.6 Reply - Programming of Insteon Lighting Device (IP)

0A - Length as ASCII hex
 IP - Reply Programming of Insteon lighting device data
 aaa - Starting Lighting device number 001 to 192
 n - Number of devices being programmed, 1-8
 00 - future use
 CC - Checksum

Example: 0AIP001400D1 Reply Acknowledge Programming Insteon lighting device ID data for device 001 to 004.

Note: Insteon Lighting Device 193 to 256 corresponds to Insteon Groups 1 – 64.

4.19 Request Keypad Area Assignments (ka)

This request command allows 3rd party integration equipment to request the Areas that all keypads are assigned to. The return string contains a 16 byte array with keypad 1's area at array index 0 and keypad 15's area in array index 15. Eff. M1 Ver. 4.2.5 and later.

4.19.1 Request Keypad Area Assignment (ka)

06 - Length as ASCII hex
 ka - Request keypad areas
 00 - future use
 6E - Checksum

Example: 06ka006E Request keypad areas.

4.19.2 Reply - Keypad Area Assignments (KA)

16 - Length as ASCII hex
 KA - Returned Keypad Areas Command
 D[16] - array of 16 ascii bytes with the first byte corresponding to keypad 1's area assignment (area '1' to '8'), last byte is keypad 16's areaassignment.
 00 - future use
 CC - Checksum

Example: 16KA12345678111111110081 Returned value = keypads 1 to 8 are assigned to areas 1 to 8. Keypads 9 to 16 are assigned to area 1.

4.20 Keypad KeyChange Update (KC)

Optional Command sent from M1 which contains the identity of keypad key presses as they occur. To enable this option, set the location TRUE in the M1 Control **Global Programming Location 40**.
"Xmit Keypad Key Chgs" (Yes or No)

19KCNNDLLLLLLCPPPPPPP00CC

19 - Length as ASCII hex, (0A in M1 Ver. prior to 4.2.8, 11 in M1 Ver. prior to 4.3.2)

KC - Keypad Change Message Command

NN - Keypad Number, 1 based

DD - Key Number from Key Table Below

L[6] - Array of 6 ASCII bytes, indicating the Keypad Function Key's illumination status. L[0] = Function Key 1's LED status.
"0" = Off, "1" = On constant, "2" = On Blinking. L[5]= F6 LED.
Eff. in M1 Ver. 4.2.8.

C - Code required to bypass if = "1"

P[8] - Beep & chime mode. Eff. in M1 Ver. 4.3.2 and after

00 - future use

CC - Checksum

Example: 19KC01112010000200000000010 Keypad change = Keypad 1, "*" Key pressed, F1 LED blinking, F3 LED is On, all other F Key LED's are Off, No code required to bypass, Area 1 is constantly beeping.

Key Table:

NO KEY = 0 or a user code was sent from a keypad.

STAR KEY (*) = 11

POUND KEY (#) = 12

F1 KEY = 13

F2 KEY = 14

F3 KEY = 15

F4 KEY = 16

STAY KEY = 17

EXIT KEY = 18

CHIME KEY = 19

BYPASS KEY = 20

ELK KEY = 21

DOWN KEY = 22

UP KEY = 23

RIGHT KEY = 24

LEFT KEY = 25

F6 Key = 26

F5 Key = 27

DATAKEYMODE = 28 *Data was entered, this acts as a carriage return*

Beep & Chime mode bitmask flags by area (P[8]):

(Using the LSB 0 numbering scheme) Eff. M1 Ver. 4.3.2 and after.

Chime & beep OFF = 0x30. No bits in the least significant nibble are set.
Single beep = 0x31. Bit 0 is set.

Constant beep = 0x32. Bit 1 is set once the beeping starts and will be unset when the constant beep ends.

Chime = 0x34. Bit 2 is set and then unset after transmission of the "KC" command.

4.20.1 Request Keypad Function Key Illumination Status (kc)

08kc010009

The function key illumination request returns the **Keypad KeyChange Update (KC)** data with the Key Number set to zero (0). This command allows automation equipment to request the illumination status of the keypad function keys for building virtual keypads on a PC.

08 - Length as ASCII hex
kc - Request Keypad Function Key Illumination Status Command
NN - Keypad Number, 1 based
00 - future use
CC - Checksum

Example: 08kc010009 Request keypad 1's illumination status.

Returns: 11KC01001000000009E Keypad 1's Function Key F1 is illuminated as described in "KC" command above.

4.21 Keypad Function Key Press (kf)

This command simulates a function key being pressed on a keypad. This will only be single key press even if the M1 Control is programmed for double function key press. Eff. with M1 Ver. 4.2.5 and later. The '*' key was added Eff. M1 Ver. 4.2.6 and later. The 'C' key was added Eff. M1 Ver. 4.3.2 and later.

4.21.1 Request Keypad Function Key Press (kf)

09 - Length as ASCII hex
kf - Function key pressed
NN - Keypad 01 to 16
D - Which function key pressed, 1 to 6 ASCII, '*' = 0x2A to silence trouble beep on keypads. 'C' = 0x43 to control Chime, '0' function key value will only return the "KF" command
00 - future use
CC - Checksum

Example: 09kf01100D4 Keypad 01, Function Key 1 to be pressed

4.21.2 Reply - Keypad Function Key Press (KF)

11 - Length as ASCII hex
KF - Function key pressed
NN - Keypad 01 to 16
D - Which function key pressed, 1 to 6 ASCII, '*' = 0x2A, 'C' = Chime.
CM[8] - Chime mode for each area 1 to 8, '0' = Off, '1' = Chime only, '2' = Voice only, '3' = Chime and voice.
00 - future use
CC - Checksum

Example: 11KF01C200000000087 Function key reply with Chime Mode set to voice only in Area 1.

4.22 System Log Data Update (LD)

Optional command sent from M1 containing the updated event log data as the internal log is written. The log information will have the ddd index value set to "000" to indicate a logging entry. To enable this option, set the location TRUE in the M1 Control **Global Programming Location 35. "Xmit Event Log-ASCII" (Yes or No)**.

The log data may also be requested at any time using the “ld” (lower case “LD”) command below and is not controlled (enable or disable) by the Global Programming option. Eff. M1 ver. 4.3.2

1CLDEEEENNNAHHMMmmDDdddDYY00CC

1C – Length as ASCII hex

LD – Log Data Message Command

EEEE – Event

NNN – Event Number Data, i.e. Zone number, user number, etc.

A – Area Number 1 – 8

HH – Hour

MM – Minute

mm – Month

DD – Day

ddd – Decimal index to which log data, 001 to 511, added in M1 version 4.3.2

D – Day of week, ‘1’ = Sunday, ‘7’ = Saturday

YY – Year as “05” = 2005

00 – future use

CC – Checksum

Example: 1CLD1193102119450607001505003F AnyArmed event-1193, user 102, Area 1, at 19:45 on June 07, Log index 001, Thursday, 2005

4.22.1 Request System Log Data (ld)

Request to get system log data entry. The first entry is index “1”, the last entry is index “511”. Log data index “0” is the next location to be written, index 511 is the oldest log data.

09 – Length as ASCII hex

ld – Request Log Data entry command (lower case ‘LD’)

ddd – Decimal index to which log data

00 – future use

CC – Checksum

Example: 09ld00100D6 Request log data for index 1, the newest log data.

Replies with the “LD” log data command above.

4.22.2 Request Write Log Data (le)

The Write Log Data Command “le” writes log data into the M1 log specifically to trigger communicator reporting to the central station. A valid zone must be programmed for communicator reporting. The M1 will return an “OK”
response when the data is written to the log.

10 – Length as ASCII hex

le – Request Log Data entry write command (lower case ‘LE’)

LLL = Log Type, Alarm = 128, Alarm Restore = 064

EEE = Event Type, 001 to 386, drop the thousand character from Event Table 7.0 below.

ZZZ = Zone Number, 001 to 999

A = Area, 1 to 8

00 – future use

CC – Checksum

NOTE: The log will contain the Event Type, but reporting to the central station will reference the zone definition programmed into the M1’s zone definition.

4.23 Zone Temperature / Keypad Temperature Request (lw)

This command allows automation equipment to request the temperatures from zone temperature sensors and keypad temperatures in one ASCII packet. Eff. M1 Ver. 4.3.4 and later.

4.23.1 Request Temperature Data (lw)

06 – Length as ASCII hex
lw – Request real temperature data
00 – future use
CC – Checksum

Example: 06lw0057 Request keypad and zone sensor temperature Data. “lw” is lower case “LW”

4.23.2 Reply - Temperature Data (LW)

66 – Length as ASCII hex
LW – Reply Temperature data
aaa – Keypad 1 temperature, as 3 ASCII characters, subtract 40.
bbb – Keypad 2 temperature, as 3 ASCII characters, subtract 40.
... 13 – 3 ASCII characters for each keypad, 3 to 15
ppp – Keypad 16 temperature, as 3 ASCII characters, subtract 40.
AAA – Zone Sensor 1 temperature, as 3 ASCII char., subtract 60.
BBB – Zone Sensor 2 temperature, as 3 ASCII characters, sub 60.
... 13 – 3 ASCII characters for each Zone Sensor, 3 to 15
PPP – Zone Sensor 16 temperature, as 3 ASCII characters, sub 60.
00 – future use
CC – Checksum

Example: 66LW108109000...000130000007A Keypad 1 temperature is 68 degrees F. (108 – 40).
Keypad 2 temperature is 69 degrees F. (109 – 40). Zone 15 temperature sensor is 70 degrees F. (130 – 60).

4.24 Lighting Commands

Developed originally for X-10 type PLC (Power Line Carrier) lighting, these commands are also for some 3rd party integrated lighting products although they reference the Lighting Device ID vs. the X-10 command codes.

H = House Code, ASCII “A” to “P”

UU = Unit Code, ASCII decimal 01 to 16

FF = Function Code as follows:

01 = X10_ALL_UNITS_OFF in a House code
02 = X10_ALL_LIGHTS_ON in a House code
03 = X10_UNIT_ON
04 = X10_UNIT_OFF
05 = X10_DIM, EE extended value holds number of dims
06 = X10_BRIGHT, EE extended value holds number of brights
07 = X10_ALL_LIGHTS_OFF in a House code
08 = X10_EXTENDED_CODE
09 = X10_PRESET_DIM, EE extended value hold level 0 to 99%
10 = X10_EXTENDED_DATA
11 = X10_STATUS_REQ
12 = X10_HAIL_REQUEST
13 = X10_HAIL_ACK, not used
14 = X10_STATUS_ON, not used
15 = X10_STATUS_OFF, not used

TTTT = ON Time in seconds, range - 0 to 9999 decimal

4.24.1 Request Control Lighting Device (pc)

11pcHUUFFEETTTT00CC

11 - Length as ASCII hex

pc - PLC Control Command

H - House Code 'A' to 'P'

UU - Unit Code '01' to '16'

FF - Function Code '01' to '16'

EE - Extended Code '00' to '99'

Brightness percentage level for preset dim function (9) or the number of dims for dim function (5), number of brights for bright function (6).

TTTT - ON Time in seconds, range - 0 to 9999 decimal

00 - future use

CC - Checksum

Example: 11pcA01010000050043 House Code A, Unit 1, All Lights Off for 5 seconds, then turn back On.

4.24.2 Reply – Lighting Change Update (PC)

In addition to being a reply to a requested Lighting Change command, this command can optionally be set to broadcast lighting status changes as they occur. To enable this option, set the location TRUE in the M1 Control **Global Programming Location 39. "Xmit Light Chgs-ASCII" (Yes or No).**

0BPCHUULL00CC

0B - Length as ASCII hex

PC - PLC Change Message Command

H - House Code 'A' to 'P'

UU - Unit Code '01' to '16', '00' = All Command, see below.

LL - Level/scene/state Status, 0 = OFF, 1 = ON, 2-99 = light level percentage

00 - future use

CC - Checksum

Example: 0BPcA01000099 PLC change - A01, changed to OFF

Special: When an *All_Lights_On*, *All_Lights_Off*, or *All_Units_Off* command is transmitted the Unit Code will equal 00, and the Level (LL) will be:

X10_ALL_UNITS_OFF = 01

X10_ALL_LIGHTS_ON = 02

X10_ALL_LIGHTS_OFF = 07

4.24.3 Turn OFF Lighting Device (pf)

09pfHUU00CC

09 - Length as ASCII hex

pf - PLC OFF Command

H - House Code 'A' to 'P'

UU - Unit Code '01' to '16'

00 - future use

CC - Checksum

Example: 09pfA0100BF House Code A, Unit 1, Off

4.24.4 Turn ON Lighting Device (pn)

09pnHUU00CC

09 - Length as ASCII hex

pn - PLC ON Command

H - House Code 'A' to 'P'

UU - Unit Code '01' to '16'

Example: 09pnA0100B7 House Code "A", Unit 1, On

```

07psb00CC
    07 - Length as ASCII hex
    ps - request PLC status Command
    b - Bank (ASCII), 0=A1 to D16, 1=E1 to H16, 2=I1 to L16,
        3=M1 to P16
    00 - future use
    CC - Checksum

```

Example: 07ps00026 PLC status for bank A1 to D16

47PSBD... 00PCC

- 47 - Length as ASCII hex
- PS - request PLC status Command
- B - Bank, 0=A1 to D16, 1=E1 to H16, 2=I1 to L16, 3=M1 to P16
- D - 64 bytes, current status of the PLC environment by bank 0 to 3. Subtract 48 or 0x30 hex from the value in "D". This will give the light level value, (M1 version 4.2.6) then 0 = OFF, 1 = ON, 2 - 99 = Dim Level.
- 00 - future use
- CC - Checksum

Bank 0 (A to D Housecodes) has A2 to A16 turned On.

09ptHUU00CC

- 09 - Length as ASCII hex
- pt - PLC toggle state Command
- H - House Code 'A' to 'P'
- UU - Unit Code '01' to '16'
- 00 - future use
- CC - Checksum

Example: 09ptA0100B1 House Code "A", Unit 1, Toggle

Important: This command will only function with the ELK-M1XEP Ethernet Interface. The Elk-C1M1 will not function or respond to this command.

Command sent from the M1 to cause the M1XEP to reset its processor and/or its IP address to: 192.168.0.251. This can be used when the IP address of the M1XEP is set to an unknown value. This is accessed through the M1's Keypad Global Installer Programming, Option 45, then enter 96. Eff. with M1 Ver. 4.3.7 and later.

07 - Length as ASCII hex
RE - Request Request Ethernet Reset
D - "0"= Reset the M1XEP, "1"= Reset the M1XEP and the IP Address.
00 - future use
CC - Checksum

Example 1: 07RE00072 Reset the M1XEP.

Example 2: 07RE10071 Reset the M1XEP and set the IP Address to **192.168.0.251**.

4.26 ELKRP Connection Status (RP)

Commands sent from M1 to advise the connection status of the ELK-RP Upload/Download Software. ELK-RP may be connected RS232 direct to Serial to Port 0, or via IP (ELK-M1XEP or ELK-C1M1).

Upon disconnection of Elk-RP this command broadcast is sent to any/all other socket connected devices.

08RP000036<cr><lf>. ELKRP disconnected broadcast.

Should any IP connection devices attempt to send a poll to the M1 while ElkRP is connected, those devices may receive the following reply:

08RP010035<cr><lf>. ELKRP is connected, poll reply

Should any IP connection device attempt to send a poll while the ELK-M1XEP is powering up rebooting, those devices may receive the following reply:

08RP020034<cr><lf>. M1XEP is initializing after powerup or reboot.

Reminder: The "IE" Command (Installer Program Mode exited) is sent out to all socket connected devices whenever ELKRP disconnects from the M1 Control.

4.27 Real Time Clock (rr)

Allows 3rd party devices to request and write Real Time Clock data. Eff. with M1 Ver. 4.3.2 and after.

4.27.1 Request Real Time Clock Data (rr)

- 06 - Length as ASCII hex
- rr - Request real time clock data
- 00 - future use
- CC - Checksum

Example: 06rr0056 Request Real Time Clock Data.

4.27.2 Reply - Real Time Clock Data (RR)

- 16 - Length as ASCII hex
- RR - Reply real time clock data
- ss - second as two ASCII characters decimal, "00" to "59"
- mm - Minute as two ASCII characters decimal, "00" to "59"
- hh - Hour as two ASCII characters decimal, "00" to "23" 24 hour
- D - Day of week as one ASCII character, "1"=Sunday to "7"=Saturday
- DM - Day of month as two ASCII characters decimal, "01" to "31"
- MM - Month as two ASCII characters decimal, "01" to "12"
- YY - Year as two ASCII characters decimal, "00" to "99" as in 2099
- S - Daylight Savings Time: "0"=Not active, "1"= Active.
- C - Clock Mode as one ASCII character, '1' = 12 hour, 0 = 24 hour time mode
- T - Date Display Mode as one ASCII character, 0 = mm/dd, 1 = dd/mm
- 00 - future use
- CC - Checksum

Example: 16RR0059107251205110006E Real Time Clock reply data: December 25, 2005, at 10:59:00, Saturday day of week, Day light Savings Time is active for this time of year, Clock display mode is 12 hour format, Date display mode is month/day format.

4.27.3 Write Real Time Clock Data (rw)

13 - Length as ASCII hex
rw - Write real time clock data into the Control
ss - second as two ASCII characters decimal, "00" to "59"
mm - Minute as two ASCII characters decimal, "00" to "59"
hh - Hour as two ASCII characters decimal, "00" to "23" 24 hour
D - Day of week as one ASCII character, "1"=Sunday to "7"=Saturday
DM - Day of month as two ASCII characters decimal, "01" to "31"
MM - Month as two ASCII characters decimal, "01" to "12"
YY - Year as two ASCII characters decimal, "00" to "99" as in 2099
00 - future use
CC - Checksum

Example: 13rw305923111050500C0 Set Real Time Clock to: May 11, 2005 at 11:59:30 PM or 23:59:30 hours. Sunday day of week.

Acknowledge will be "RR" Real Time Clock data above.

4.28 ASCII String Text Descriptions (sd)

Allows 3rd party devices to read the text descriptions that are stored in the control.

4.28.1 Request ASCII String Text Descriptions (sd)

0B - Length as ASCII hex
sd - Request ASCII String Text Descriptions Command
TT - Type of string text description to request. See Type Table below.
NNN - Which name in the Type to be returned. ie.003=zone 3.
00 - future use
CC - Checksum

Example: 0Bsd010010065 Area Name-Type 1, Area 1

4.28.2 Reply - ASCII String Text Descriptions (SD)

Reply format:

1B - Length as ASCII hex
SD - Reply ASCII String Text Descriptions Command
TT - Type of string text description in reply.
See Type Table below
NNN - Which address name in the Type to be returned.
ie.003=zone 3.
Text[16] - 16 ASCII characters, "space" character
(20 hex) filled if less than 16 characters.
00 - future use
CC - Checksum

Example 1: 1BSD01001Front DoorKeypad0089

Area Name -Type 1, Area 1, "Front DoorKeypad"

Example 2: 1BSD05001Garage Door 0005

Task Name - Type 5, Task 1, "Garage Door"

Note: The high bit of the first character in the text string may be set as the "Show On Keypad" bit. Mask out the high bit for proper ASCII display.

If the first character in a requested name is a "space" or less, then the next names are searched until a name is found whose first character is greater than "space" or the "Show On Keypad" bit is set. If no valid names are found, a "000" for the NNN address is returned. This speeds up the loading of names so that invalid names are not returned. M1 version 2.4.6 or later.

4.28.3 Type Table for Text Descriptions:

Type (TT)	Range (NNN)
0 = Zone Name	1 – 208
1 = Area Name	1 – 8
2 = User Name	1 – 199
3 = Keypad Name	1 – 16
4 = Output Name	1 – 64, No name for 65 – 208
5 = Task Name	1 – 32
6 = Telephone Name	1 – 8
7 = Light Name	1 – 256
8 = Alarm Duration Name	1 – 12
9 = Custom Settings	1 – 20
10 = Counters Names	1 – 64
11 = Thermostat Names	1 – 16
12 = Function Key 1 Name	1 – 16, NNN = Keypad number
13 = Function Key 2 Name	1 - 16
14 = Function Key 3 Name	1 - 16
15 = Function Key 4 Name	1 - 16
16 = Function Key 5 Name	1 - 16
17 = Function Key 6 Name	1 – 16
18 = Audio Zone Name	1 – 18 for use by M1XEP
19 = Audio Source Name	1 – 12 for use by M1XEP

4.29 System Trouble Status (ss)

This command allows 3rd party equipment to poll for system trouble status. Eff. M1 Ver. 4.5.4, 5.1.4 and after. This message will automatically be sent upon a trouble status change.

4.29.1 Request System Trouble Status (ss)

06– Length as ASCII hex
ss – Request System Trouble Status
00 – future use
CC – Checksum
Example: 06ss0054 Request System Trouble Status

4.29.2 Reply - System Trouble Status (SS)

28SS <reply system trouble status string> 00<checksum.
When deciphering reply system trouble status string, “0” = Normal, “1” or a hex value minus 30 hex = Trouble and/or the zone or device number.

28 – Length as ASCII hex
SS – Reply System Trouble Status string
AC Fail Trouble – “0” = normal, “1” = trouble
***Box Tamper Trouble – “0” = normal**
Fail To Communicate Trouble – “0” = normal, “1” = trouble
EEProm Memory Error Trouble – “0” = normal, “1” = trouble
Low Battery Control Trouble – “0” = normal, “1” = trouble
***Transmitter Low Battery Trouble – “0” = normal**
Over Current Trouble – “0” = normal, “1” = trouble
Telephone Fault Trouble – “0” = normal, “1” = trouble
Not Used = “0”
Output 2 Trouble – “0” = normal, “1” = trouble
Missing Keypad Trouble – “0” = normal
Zone Expander Trouble – “0” = normal, “1” = trouble

4.30.1 Request Temperature (st)

09 - Length as ASCII hex
st - Request Temperature Command
G - Requested Group (ASCII): "0"=temperature probe,
"1"=Keypads, "2"=Thermostats
NN - Which device in the group to be returned (2 decimal
ASCII digits, 1 based). ie."16" = device 16
00 - future use
CC - Checksum
Example: 09st00100BF Temperature Probe, Device 01
Example: 09st10100BE Keypad Temperature, Device 01
Example: 09st20100BD Thermostat, Device 01

4.30.2 Reply - Requested Temperature (ST)

Reply format:
0C - Length as ASCII hex
ST - Reply Temperature Command
G - Requested Group (ASCII): "0"=zone temperature probe,
"1"=M1KP Keypads, and "2"=Thermostats
NN - Which device in the group to be returned (2 decimal ASCII
digits, 1 based). ie."16" = device 16
DDD- Temperature in ASCII decimal.
00 - future use
CC - Checksum

NOTE:

Elk zone temperature probes and M1KP Keypad sensors return their temperature values with an offset value. Their returned values must be adjusted by subtracting a designated correction factor in order to obtain the actual temperature reading. For a Group 0 device subtract 60 from the returned Temperature data value. For a Group 1 device subtract 40 from the returned Temperature data value. For a Group 2 device NO SUBTRACTION is needed as these devices return their actual temperature values.

Example 1: 0CST001135005C Zone Temperature Probe, Zone 01, Returned value = 135.
Subtracting 60 from 135 yields a result of 75 degrees F actual.

Example 2: 0CST1021050058 M1KP Keypad Temp sensor, Keypad 02, Returned value = 105.
Subtracting 40 from 105 yields a result of 65 degrees F actual.

Example 3: 0CST201072005A Thermostat Temperature, Thermostat 01, Returned value = 072.
No subtraction is needed. The temperature is 72 degrees F actual.

4.31 System Word Messages (sp)

In all system word messages, the Data field is a 1-based 3-digit decimal number corresponding to the number of the desired word or phrase. See 6.0 Word And Phrase Table for a listing of all voice words and phrases.

4.31.1 Speak Word at Voice/Siren Output (sw)

09swDDD00CC(CR-LF)

4.31.2 Speak Phrase at Voice/Siren Output (sp)

09spDDD00CC(CR-LF)

Example: Speak Word 123 at Voice/Siren Output is 09sw12300B7(CR-LF)

Example: Speak Phrase 123 at Voice/Siren Output is 09sp12300BE(CR-LF)

4.32 Tasks Change Update (TC)

Optional command sent from M1 with updated status when a Task is triggered. To enable this set the location TRUE in the M1 Control **Global Programming Location 38. "Xmit Task Chgs - ASCII" (Yes or No)**

0ATCRRR000CC

0A - Length as ASCII hex

TC - Zone Change Message Command

RRR - Task Number, 1 based

0 - future use

00 - future use

CC - Checksum

Example: 0ATC001000D7 Task change - Task 1, changed to activated

4.33 Task Activation (tn)

You can use your PC to send a command to activate a Task. Tasks are event flags that are common to the telephone remote control option 2, the keypad user menu option 1, the Whenever/Then programming, and the ASCII string programming. Any one of these methods can activate a Task (events 2001 to 2032). The Whenever/Then programming rules can then issue control commands when a Task has been activated. When all rules that are activated from the Task is serviced, the Task will be de-activated.

The data portion of the Task Activation command, DDD, is three decimal ASCII digits (1 base) corresponding to the number of the desired Task to activate. Range: 001 to 032. This value is a three digit value for future expansion.

4.33.1 Task Flag Activation

09tnDDD00CC(CR-LF)

Example: activate Task 1: 09tn00100C4(CR-LF)

4.34 Thermostat Control (tr)

This command allows automation equipment to monitor and control HVAC Thermostats connected to the M1. All temperature settings are expressed in ASCII Decimal, two digits. M1 Version 4.2.6 and after.

4.34.1 Request Thermostat Data (tr)

08 - Length as ASCII hex

tr - Get thermostat data

NN - Thermostat 01 to 16

00 - future use

CC - Checksum

Example: 08tr0100F1 Thermostat 01, request data

4.34.2 Reply - Thermostat Data (TR)

13 - Length as ASCII hex

TR - Reply with Thermostat Data

NN - Thermostat Number 01 to 16, 0 = invalid

M - ThermostatMode 0=Off, 1=Heat, 2=Cool, 3=Auto, 4=Emergency Heat

H - ThermostatHold Hold current temperature. 0=False, 1=True

F - ThermostatFan 0=Fan Auto, 1=Fan turned on

TT - CurrentTemperature Current temperature, deg.F 0=invalid, 70=70

HH - HeatSetPoint Heat setpoint if in heat/auto mode, decimal

SS - CoolSetPoint Cool setpoint if in Cool/auto mode, decimal

UU - CurrentHumidity *Current humidity, 01 to 99%, 0 = invalid*
 00 - future use
 CC - Checksum

Example: 13TR01200726875000000 Thermostat 01, data reply, Cool Mode,
 Hold temperature = False, Fan Auto, Current Temperature = 72 F,
 Heat Setpoint = 68 F, Cool Setpoint = 75 F, no humidity data

4.34.3 Set Thermostat Data (ts)

0B - Length as ASCII hex
 ts - Set Thermostat Data
 NN - Thermostat Number 01 to 16
 VV - Value to set 00 to 99 range
 E - Element to set: Set VV above with value to set in element
 0 = Mode VV= [00=Off, 01=Heat, 02=Cool, 03=Auto, 04=EmergHeat]
 1 = Hold VV= [Hold current temperature. 00=False, 01=True]
 2 = Fan VV= [00=Fan Auto, 01=Fan turned on]
 3 = Current Temperature setting from controller with
 thermostat else not used. M1 Ver. 5.1.6
 4 = CoolSetPoint VV= [Cool setpoint if in Cool/auto mode, 01
 to 99]
 5 = HeatSetPoint VV= [Heat setpoint if in heat/auto mode, 01
 to 99]
 00 - future use
 CC - Checksum

Example: 0Bts01704004B Set Thermostat Cool Set Point element
 - Thermostat 01 to 70 degrees.

Reply Thermostat Data will reply to Set Thermostat Data.

4.34.4 Request - Omnistat 2 From PC to M1 ASCII Protocol (t2)

Request command for data from M1XSP connected to a HAI Omnistat 2 HVAC Thermostat. The Omnistat 2 protocol is required to build the ASCII command strings.

WARNING: M1 ver. 5.1.9 or later is required for the t2 command AND t2 reply.

2A - ELK Packet Length in ASCII hex, 42 length

t2 - ELK Command "t2" - PC to Omnistat command via M1.

D[36]... - 36 ASCII Hex bytes comprising 18 binary bytes of Omnistat data, including
 Checksum. "0" right padded.

RA - Start/Remote Address, Bit 7 = 1

DA - Data Length/Message Type

Data - 0 to 15 binary data bytes, converted to 0 to 30 ASCII Hex bytes

CKSUM - Omnistat 2 checksum is last byte of Omnistat 2 data before padding.

00 - Future use

CC - ELK Checksum

CRLF

4.34.5 Reply - M1 to PC with Omnistat 2 ASCII Hex data (T2)

Reply from M1XSP connected to a HAI Omnistat 2 HVAC Thermostat.

2A - ELK Packet Length in ASCII hex, 42 length

T2 - ELK Command "T2", Omnistat 2 to PC command..

D[36]... - 36 ASCII Hex bytes comprising 18 binary bytes of Omnistat 2 data, including
 Checksum. "0" right padded.

RA - Start/Remote Address, Bit 7 = 0

DA - Data Length/Message Type

Data - 0 to 15 binary data bytes, converted to 0 to 30 ASCII Hex bytes

CKSUM – Omnistat 2 checksum is last byte of data before padding.
 00 – Future use
 CC – ELK Checksum
 CRLF

4.35 Version Number of M1 and M1XEP (vn)

The vn command requests the M1's version number, and the VN command replies with the version number data. If an M1XEP is connected to the M1, the M1XEP's version number will also be included. Available in M1 ver. 4.1.12 or 5.1.12 and later. M1XEP 1.3.2 or later. This command does not work with Elk-C1M1.

4.35.1.1 Request M1 Version Number (vn)

- 06 - Length as ASCII hex
- vn - Request the M1's version number data
- 00 - future use
- CC - Checksum

Example: 06vn0056 Request the M1's version number.

4.35.1.2 Reply - M1 Version Number (VN)

```

36 - Length as ASCII hex
VN - Reply with the M1's version number data
UUMMLL - M1 version, UU=Most, MM=Middle, LL=Least Significant Version
          Number, ASCII Hex as UU.MM.LL version
uummll - M1XEP version as ASCII hex, uu.mm.ll
D[36] - 36 ASCII zeros for future use
00     - future use
CC - Checksum
Example: 36VN05010C01030200000000000000000000000000000000074
           M1 version number 05.01.12(0C), M1XEP version 01.03.02

```

4.36 Request Valid User Code Areas (ua)

This request command allows automation equipment to send a user code to the control and have returned what areas the code is valid in. The returned value is an 8 bit masked value with bit 0 corresponding to area 1, up to bit 7 corresponding to area 8. If the returned value is 0, then the code is not valid in any area. Eff. in M1 Version 4.2.5 but the type of code is not available until M1 Ver. 4.3.6 and later.

4.36.1 Request Valid User Code Areas (ua)

0C - Length as ASCII hex
ua - Request valid user code areas
DDDDDD - 6 bytes of user code data. 4 digit codes are left padded with zeros.
00 - future use
CC - Checksum

Example 1: 0Cua0034560025 Request valid user code areas for code 3456.

4.36.2 Reply - Valid User Code Areas (UA)

19 - Length as ASCII hex
 UA - Returned valid user code areas
 DDDDDD - 6 bytes of user code data that was requested.

NN - 8 bits of Hex Area Mask Data, using two ASCII Hex bytes,
 0-9,A-F. Bit 0 = Area 1, code valid if set.
 UUUUUUUU - 8 bytes diagnostic data, factory use only.
 N - Number of digits in user code. "4" or "6" digits, Ver 4.2.8
 L - Type of code, "1"= User, "2"= Master, "3" = Installer,
 "4" = ELKRP, Ver 4.3.6 or later
 T - F=Fahrenheit temperature mode, C=Celcius temperature mode.
 M1 Ver. 4.3.9 or later
 00 - future use
 CC - Checksum

Example: 19UA123456C30000000041F00CA Returned value = Code 123456 is valid
 in Areas 1, 2, 7, and 8 (0xC3), 4 digit user codes, User Code Type,
 Fahrenheit Temperature Mode.

4.37 Alarm Memory Update (AM)

Command sent by M1 to inform User Interfaces that an alarm memory is present and must be cleared before
 an arm command will arm the system.

0CAMSSSSSSCC

0A - Length as ASCII hex
 AM - Alarm Memory Message Command
 SSSSSSSS - Alarm Memory for each of 8 Areas
 CC - Checksum

S=0 No Alarm Memory
 S=1 Alarm Memory Present

4.38 Zone Change Update (ZC)

Optional command sent by M1 containing the status and identify of Zone status changes as they occur. To
 enable this set the location TRUE in the M1 Control **Global Programming Location 36."Xmit
 Zone Chgs-ASCII" (Yes or No)**

0AZCZZZS00CC

0A - Length as ASCII hex
 ZC - Zone Change Message Command
 ZZZ - Zone Number, 1 based
 S - Zone Status, ASCII HEX, see Zone Status Table below
 00 - future use
 CC - Checksum

Zone Status Table, S Value, hex lower nibble

Hex

Value

0=	Normal	Unconfigured	0000
1=	Normal	Open	0001
2=	Normal	EOL	0010
3=	Normal	Short	0011
4=	not used		
5=	Trouble	Open	0101
6=	Trouble	EOL	0110
7=	Trouble	Short	0111
8=	not used		

9=	Violated	Open	1001
A(10)=	Violated	EOL	1010
B(11)=	Violated	Short	1011
C(12)=	not used		
D(13)=	Bypassed	Open	1101
E(14)=	Bypassed	EOL	1110
F(15)=	Bypassed	Short	1111

Example: 0AZC002200CE Zone change - zone 2, restored to Normal EOL

4.39 Zone Status Messages

You can send a query to the control panel for its zone status (open, closed, trouble, alert, bypassed). The control panel will respond with a Zone Status or Zone Partition Status message for all 208 zones.

In addition, the control panel can be programmed with Global Programming Location 30 to automatically send zone status messages whenever there is a change of status.

4.39.1 Zone Bypass Request (zb)

This command allows for bypassing/unbypassing a zone. Zone = 000 will unbypass all burglar zones in the. Zone = 999 will bypass all violated burglar zones. Area to bypass/unbypass is required if Zone equals 000 or 999 otherwise it is ignored.

10 - Length as ASCII hex
zb - Request zone bypass
ZZZ - Zone number
A - Area to change bypass in if zone = 000 or 999, otherwise not referenced.
C[6] - Pin Code array valid in the area that the zone is valid in.
This is an array of 6 ascii digits. Array index 0 is the most significant digit and array index 5 is the least significant digit of the PIN Code.
00 - future use
CC - Checksum

Example: 10zb0051003456006B Request zone bypass/unbypass toggle.
Area 1, Bypass zone 5 with user code 003456

4.39.2 Reply - Bypassed Zone State (ZB)

0A - Length as ASCII hex
ZB - Returned Bypassed Zone Command
ZZZ - Zone number
N - Zone bypass state. '0' = unbypassed, '1' = bypassed
00 - future use
CC - Checksum

Example: 0AZB123100CC Returned value = zone 123 is bypassed.

4.39.3 Zone Partition Request (zp)

06zp0050(CR-LF)

The Control panel responds with a Zone Partition Report which tells what Area is assigned to each zone.

4.39.4 Reply - Zone Partition Report (ZP)

D6ZPD...00CC(CR-LF)

The control panel sends this message in response to a Zone Partition Request. The data portion, D, of this message is 208 characters long, one character for each zone in order. The value will be from 1-8.

Example: a Zone Partition Report for a system in which Zone 1 is assigned to Partition 2. Zone 2 is assigned to no partition, and Zone 3 is assigned to Partition 8, would begin D7ZP208....

4.39.5 Zone Status Request (zs)

06zs004D(CR-LF)

The control panel responds with a Zone Status Report.

Note: This message should be sent only when an initial connection is made with the control panel. It is not to be used as a 'polling' command. The control can be programmed to send zone and system status messages whenever the status changes with Global Programming Location 33 – 37 in the M1 Control.

4.39.6 Reply - Zone Status Report (ZS)

D6ZSD...000CC(CR-LF)

The control panel sends this message in response to a Zone Status Request. The data portion of this message is 208 characters long, one character for each zone in order. Each character is the *sum* of all applicable status values, expressed in hexadecimal, using ASCII characters 0-9 and A-F.

Status Values:

Bits 0 & 1 binary values are the physical zone state

- 0 Unconfigured
- 1 Open
- 2 EOL
- 3 Short

Bits 2 & 3 binary values are the logical zone status

- 0 Normal
- 1 Trouble
- 2 Violated
- 3 Bypassed

4.39.7 Zone Status Table

HexValue

0 =	Normal	Unconfigured	0000
1 =	Normal	Open	0001
2 =	Normal	EOL	0010
3 =	Normal	Short	0011
4 =	not used		
5 =	Trouble	Open	0101
6 =	Trouble	EOL	0110
7 =	Trouble	Short	0111
8 =	not used		
9 =	Violated	Open	1001
A(10)=	Violated	EOL	1010
B(11)=	Violated	Short	1011
C(12)=	Soft Bypassed		1000 temporary bypass of zone until normal
D(13)=	Bypassed	Open	1101 not implemented through M1 version 4.2.6
E(14)=	Bypassed	EOL	1110 not implemented through M1 version 4.2.6
F(15)=	Bypassed	Short	1111 not implemented through M1 version 4.2.6

Example: D6ZS2500.... a Zone Status Report for a system in which:

Zone 1 is Normal, EOL

Zone 2 is Trouble, Open

All the rest are Normal, Unconfigured

4.40 Zone Definition (zd)

This command allows automation equipment to request the zone definitions. M1 Version 4.2.6 and after.

4.40.1 Request Zone Definition (zd)

06 - Length as ASCII hex
zd - Get zone definition data
00 - future use
CC - Checksum

Example: 06zd005C Zone Definition, request data

4.40.2 Reply - Zone Definition Report (ZD)

D6 - Length as ASCII hex
ZD - Reply with zone definition data
D[208] - Array of all 208 zones with the zone definition. Subtract 48 decimal or 0x30 hex from each array element to get the zone definition number as described below.
00 - future use
CC - Checksum

Example: D6ZD123....00CC Zone 1 Definition = Burglar Entry/Exit 1,
Zone Definition 2 = Burglar Entry/Exit 2,
Zone Definition 3 = Burglar Perimeter Instant...

4.40.3 Zone Definition Number List: Character - Definition Number

'0' - 00 = Disabled	'C' - 19 = Freeze Alarm
'1' - 01 = Burglar Entry/Exit 1	'D' - 20 = Gas Alarm
'2' - 02 = Burglar Entry/Exit 2	'E' - 21 = Heat Alarm
'3' - 03 = Burglar Perimeter Instant	'F' - 22 = Medical Alarm
'4' - 04 = Burglar Interior	'G' - 23 = Police Alarm
'5' - 05 = Burglar Interior Follower	'H' - 24 = Police No Indication
'6' - 06 = Burglar Interior Night	'I' - 25 = Water Alarm
'7' - 07 = Burglar Interior Night Delay	'J' - 26 = Key Momentary Arm / Disarm
'8' - 08 = Burglar 24 Hour	'K' - 27 = Key Momentary Arm Away
'9' - 09 = Burglar Box Tamper	'L' - 28 = Key Momentary Arm Stay
':' - 10 = Fire Alarm	'M' - 29 = Key Momentary Disarm
',' - 11 = Fire Verified	'N' - 30 = Key On/Off
'<' - 12 = Fire Supervisory	'O' - 31 = Mute Audibles
'=' - 13 = Aux Alarm 1	'P' - 32 = Power Supervisory
'>' - 14 = Aux Alarm 2	'Q' - 33 = Temperature
'?' - 15 = Keyfob	'R' - 34 = Analog Zone
'@' - 16 = Non Alarm	'S' - 35 = Phone Key
'A' - 17 = Carbon Monoxide	'T' - 36 = Intercom Key
'B' - 18 = Emergency Alarm	

4.41 Zone Trigger (zt)

This command allows a 3rd party integration device to trigger an alarm condition on a EOL hardwired zone defined with any of the Burglary zone types and many other zone types up to zone type 26. This command creates a virtual momentary open condition on the zone as if the EOL hardwired loop had been physically opened. This requires M1 Ver. 4.5.23, 5.1.23 or later.

NOTE: The zt command cannot create a virtual short condition and therefore cannot trigger an alarm condition for zone types that require a short. E.G. Fire zone alarms cannot be triggered via this command.

4.41.1 Zone Trigger (zt)

09 - Length as ASCII hex
zt - Get command for zone trigger violation
ZZZ - Zone number 001 to 208 as 3 ASCII decimal characters
00 - future use
CC - Checksum

Example: 09zt12300B3 Zone 123 momentarily violate zone.

4.42 Zone Analog Voltage (zv)

This command allows 3rd party equipment to request a zone analog voltage level. Eff. Ver. 4.2.8 and after.

4.42.1 Request Zone Voltage (zv)

09 - Length as ASCII hex
zv - Get command for zone analog voltage data
ZZZ - Zone number 001 to 208 as 3 ASCII decimal characters
00 - future use
CC - Checksum

Example: 09zv12300B1 Zone 123 analog voltage request data

4.42.2 Reply - Zone Analog Voltage Report (ZV)

0C - Length as ASCII hex
ZV - Reply with zone definition data
ZZZ - Zone number 001 to 208 as 3 ASCII decimal characters
DDD - Zone voltage data as 3 decimal ASCII characters. Divide data value by 10. Right character is the tenths decimal place.
00 - future use
CC - Checksum

Example: 0CZV123072004E Zone 123 , voltage is 7.2 volts

5. Interpreting M1/EZ8 Event Log Extended Data

M1 and EZ8 event log data may be read from the control using the “ld” command. If enabled (via programming G35), control will transmit events out the serial port as they are written to the log. Some events store extended information like user, zone, or keypad number. The following table lists events that may contain extended information. If an event is not listed in the table, its extended info does not apply and should be ignored. The “Ext Info Type” column references Table 2 below which describes how to interpret the extended data.

Event	Ext Info Type	Event	Ext Info Type
1001 - 1110	1	1313 – 1329	2
1128 - 1129	1	1350	1
1131	1	1351 – 1352	2
1132 – 1135	3	1356	1
1136	4	1365 – 1366	1
1141	3	1367	3
1144 - 1156	1	1377	3
1161	3	1378	5
1173 - 1238	2	1379	2
1239 - 1240	1	1381 – 1382	1
1294 – 1295	2	1385 – 1386	1
1297	2	4001 – 4208	1
1298	1	5001 – 5208	1
1299 – 1301	2	6001 – 6208	1
1303	2	7001 – 7208	1
1304	1		

Table 1 - Log Events with extended information

Type	Meaning	Interpretation of Ext Info Field in Log Entries
1	Zone Number or Keypad Number and F-Key	If 1-208, interpret as zone number. If > 400, 401=KP1-F1, 402=KP1-F2, ... 407=KP2-F1, ... 496=KP16-F6.
2	User Number	If control's firmware is older than 4.4.0, the ext info is 1-99; and 101=Installer, 102=ElkRP, 103=NoCode. If control's firmware is 4.4.0 or higher, the ext info is 1-199; and 201=Installer, 202=ElkRP, 203=NoCode.
3	Expander Type	For events of this type, ignore the “Area” field on the log entry. It does not apply. If the event is 1367 or the ext info is 0, this log entry applies to the control. Otherwise: 1 = Keypad 2 = Input Expander 3 = Output Expander 4 = <i>Reserved</i> 5 = Serial Expander
4	EEPROM Address	Address of a memory location in the EEPROM.
5	Voice message to play when dialing phone #	0 = play default message (VM278) 209-323 = play VM209-VM323

Table 2 – How to interpret extended information

6. Word and Phrase Table

6.1 Words

1- Custom1	64-Alert.wav	127-Day.wav	190-Game.wav
2- Custom2	65-All.wav	128-Deck.wav	191-Garage.wav
3- Custom3	66-AM.wav	129-Decrease.wav	192-Gas.wav
4- Custom4	67-An.wav	130-Defective.wav	193-Gate.wav
5- Custom5	68-And.wav	131-Degrees.wav	194-Glass.wav
6- Custom6	69-Answer.wav	132-Delay.wav	195-Go.wav
7- Custom7	70-Any.wav	133-Den.wav	196-Good.wav
8- Custom8	71-Are.wav	134-Denied.wav	197-Goodbye.wav
9- Custom9	72-Area.wav	135-Detected.wav	198-Great.wav
10- Custom10	73-Arm.wav	136-Detector.wav	199-Group.wav
11-Not Implemented	74-Armed.wav	137-Device.wav	200-Guest.wav
12-Not Implemented	75-At.wav	138-Dial.wav	201-Gun.wav
13-Not Implemented	76-Attic.wav	139-Dialing.wav	202-Hall.wav
14-Not Implemented	77-Audio.wav	140-Dim.wav	203-Hallway.wav
15-Not Implemented	78-Auto.wav	141-Dining_room.wav	204-Hanging_up.wav
16-Not Implemented	79-Authorized.wav	142-Disable.wav	205-Hang_up.wav
17-Not Implemented	80-Automatic.wav	143-Disarm.wav	206-Has.wav
18-Not Implemented	81-Automation.wav	144-Disarmed.wav	207-Has_Expired.wav
19-Not Implemented	82-Auxiliary.wav	145-Dock.wav	208-Have.wav
20-Not Implemented	83-Away.wav	146-Door.wav	209-Hear_menu_options.wav
21-Zero.wav	84-B.wav	147-Doors.wav	210-Heat.wav
22-One.wav	85-Back.wav	148-Down.wav	211-Help.wav
23-Two.wav	86-Barn.wav	149-Driveway.wav	212-High.wav
24-Three.wav	87-Basement.wav	150-East.wav	213-Hold.wav
25-Four.wav	88-Bathroom.wav	151-Emergency.wav	214-Home.wav
26-Five.wav	89-Battery.wav	152-Enable.wav	215-Hot.wav
27-Six.wav	90-Bedroom.wav	153-End.wav	216-Hottub.wav
28-Seven.wav	91-Been.wav	154-Energy.wav	217-House.wav
29-Eight.wav	92-Bell.wav	155-Enrollment.wav	218-Humidity.wav
30-Nine.wav	93-Bottom.wav	156-Enter.wav	219-HVAC.wav
31-Ten.wav	94-Break.wav	157-Entering.wav	220-If.wav
32-Eleven.wav	95-Breakfast.wav	158-Entertainment.wav	221-Immediately.wav
33-Twelve.wav	96-Bright.wav	159-Enter_the.wav	222-In.wav
34-Thirteen.wav	97-Building.wav	160-Entry.wav	223-Inches.wav
35-Fourteen.wav	98-Burglar.wav	161-Environment.wav	224-Increase.wav
36-Fifteen.wav	99-Button.wav	162-Equipment.wav	225-Inner.wav
37-Sixteen.wav	100-By.wav	163-Error.wav	226-Input.wav
38-Seventeen.wav	101-Bypassed.wav	164-Evacuate.wav	227-Inside.wav
39-Eighteen.wav	102-Cabinet.wav	165-Event.wav	228-Instant.wav
40-Nineteen.wav	103-Call.wav	166-Exercise.wav	229-Interior.wav
41-Twenty.wav	104-Camera.wav	167-Expander.wav	230-In_The.wav
42-Thirty.wav	105-Cancel.wav	168-Exit.wav	231-Intruder.wav
43-Fourty.wav	106-Carbon_monoxide.wav	169-Exterior.wav	232-Intrusion.wav
44-Fifty.wav	107-Card.wav	170-F.wav	233-Invalid.wav
45-Sixty.wav	108-Center.wav	171-Fail.wav	234-Is.wav
46-Seventy.wav	109-Central.wav	172-Failure.wav	235-Is_about_to_expire.wav
47-Eighty.wav	110-Change.wav	173-Family_room.wav	236-Is_active.wav
48-Ninety.wav	111-Check.wav	174-Fan.wav	237-Is_armed.wav
49-Hundred.wav	112-Chime.wav	175-Feed.wav	238-Is_canceled.wav
50-Thousand.wav	113-Circuit.wav	176-Fence.wav	239-Is_closed.wav
51-[200ms_Silence].wav	114-Clear.wav	177-Fire.wav	240-Is_disarmed.wav
52-[500ms_Silence].wav	115-Closed.wav	178-First.wav	241-Is_low.wav
53-[800hz_Tone].wav	116-Closet.wav	179-Flood.wav	242-Is_off.wav
54-A.wav	117-Code.wav	180-Floor.wav	243-Is_OK.wav
55-Access.wav	118-Cold.wav	181-Followed.wav	244-Is_on.wav
56-Acknowledged.wav	119-Condition.wav	182-Force.wav	245-Is_open.wav
57-AC_power.wav	120-Connect.wav	183-Fountain.wav	246-Jacuzzi.wav
58-Activate.wav	121-Control.wav	184-Foyer.wav	247-Jewelry.wav
59-Activated.wav	122-Cool.wav	185-Freeze.wav	248-Keep.wav
60-Active.wav	123-Cooling.wav	186-Front.wav	249-Key.wav
61-Adjust.wav	124-Corner.wav	187-Full.wav	250-Keypad.wav
62-Air.wav	125-Crawlspace.wav	188-Furnace.wav	251-Kitchen.wav
63-Alarm.wav	126-Danger.wav	189-Fuse.wav	252-Lamp.wav

253-Laundry.wav	309-On.wav	365-Return.wav	421-Temperature.wav
254-Lawn.wav	310-Online.wav	366-Right.wav	422-Test.wav
255-Leak.wav	311-Only.wav	367-Roof.wav	423-Thank_you.wav
256-Leave.wav	312-Open.wav	368-Room.wav	424-That.wav
257-Left.wav	313-Operating.wav	369-Running.wav	425-The.wav
258-Less.wav	314-Option.wav	370-Safe.wav	426-Theater.wav
259-Level.wav	315-Or.wav	371-Save.wav	427-Thermostat.wav
260-Library.wav	316-Other.wav	372-Screen.wav	428-Third.wav
261-Light.wav	317-Out.wav	373-Second.wav	429-Time.wav
262-Lights.wav	318-Outlet.wav	374-Secure.wav	430-Toggle.wav
263-Line.wav	319-Output.wav	375-Security.wav	431-Top.wav
264-Living_room.wav	320-Outside.wav	376-Select.wav	432-Transformer.wav
265-Loading.wav	321-Over.wav	377-Sensor.wav	433-Transmitter.wav
266-Lobby.wav	322-Overhead.wav	378-Serial.wav	434-Trespassing.wav
267-Location.wav	323-Panel.wav	379-Service.wav	435-Trouble.wav
268-Lock.wav	324-Panic.wav	380-Set.wav	436-Turn.wav
269-Low.wav	325-Parking.wav	381-Setback.wav	437-Twice.wav
270-Lower.wav	326-Partition.wav	382-Setpoint.wav	438-Type.wav
271-M.wav	327-Patio.wav	383-Setting.wav	439-Under.wav
272-Machine.wav	328-Pause.wav	384-Shed.wav	440-Unit.wav
273-Mail.wav	329-Perimeter.wav	385-Shipping.wav	441-Unlocked.wav
274-Main.wav	330-Personal.wav	386-Shock.wav	442-Unoccupied.wav
275-Mains.wav	331-Phone.wav	387-Shop.wav	443-Up.wav
276-Manual.wav	332-Place.wav	388-Shorted.wav	444-User.wav
277-Master.wav	333-Play.wav	389-Shunted.wav	445-Utility.wav
278-Max.wav	334-Please.wav	390-Side.wav	446-Vacation.wav
279-Media.wav	335-Plus.wav	391-Silence.wav	447-Valve.wav
280-Medical.wav	336-PM.wav	392-Siren.wav	448-Video.wav
281-Medicine.wav	337-Police.wav	393-Sliding.wav	449-Violated.wav
282-Memory.wav	338-Pool.wav	394-Smoke.wav	450-Visitor.wav
283-Menu.wav	339-Porch.wav	395-Someone.wav	451-Wake_up.wav
284-Message.wav	340-Port.wav	396-South.wav	452-Walk.wav
285-Middle.wav	341-Pound.wav	397-Spare.wav	453-Wall.wav
286-Minute.wav	342-Pounds.wav	398-Speaker.wav	454-Warehouse.wav
287-Missing.wav	343-Power.wav	399-Sprinkler.wav	455-Warning.wav
288-Mode.wav	344-Press.wav	400-Stairs.wav	456-Water.wav
289-Module.wav	345-Pressure.wav	401-Stairway.wav	457-Way.wav
290-Monitor.wav	346-Problem.wav	402-Star.wav	458-Welcome.wav
291-More.wav	347-Program.wav	403-Start.wav	459-West.wav
292-Motion.wav	348-Protected.wav	404-Status.wav	460-What.wav
293-Motor.wav	349-Pump.wav	405-Stay.wav	461-When.wav
294-Next.wav	350-Radio.wav	406-Stock.wav	462-Where.wav
295-Night.wav	351-Raise.wav	407-Stop.wav	463-Will.wav
296-No.wav	352-Ready.wav	408-Storage.wav	464-Window.wav
297-Normal.wav	353-Rear.wav	409-Storm.wav	465-Windows.wav
298-North.wav	354-Receiver.wav	410-Studio.wav	466-With.wav
299-Not.wav	355-Record.wav	411-Study.wav	467-Work.wav
300-Notified.wav	356-Recreation.wav	412-Sump.wav	468-Yard.wav
301-Now.wav	357-Relay.wav	413-Sun.wav	469-Year.wav
302-Number.wav	358-Remain_calm.wav	414-Switch.wav	470-You.wav
303-Nursery.wav	359-Remote.wav	415-System.wav	471-Zone.wav
304-Of.wav	360-Repeat.wav	416-Tamper.wav	472-Zones.wav
305-Off.wav	361-Report.wav	417-Tank.wav	473-[Intruder_Message].wav
306-Office.wav	362-Reporting.wav	418-Task.wav	
307-Oh.wav	363-Reset.wav	419-Telephone.wav	
308-OK.wav	364-Restored.wav	420-Television.wav	

6.2 Phrases

The (vm..) is the voice phrase number. These are six (6) word phrases that may be customized using the ELK-RP Software.

SilenceDelay (vm0)	Zone 6 (vm6)	Z Zone 12 (vm12)	Zone 18 (vm18)
Zone 1 (vm1)	Zone 7 (vm7)	Zone 13 (vm13)	Zone 19 (vm19)
Zone 2 (vm2)	Zone 8 (vm8)	Zone 14 (vm14)	Zone 20 (vm20)
Zone 3 (vm3)	Zone 9 (vm9)	Zone 15 (vm15)	Zone 21 (vm21)
Zone 4 (vm4)	Zone 10 (vm10)	Zone 16 (vm16)	Zone 22 (vm22)
Zone 5 (vm5)	Zone 11 (vm11)	Zone 17 (vm17)	Zone 23 (vm23)

Zone 24 (vm24)	Zone 94 (vm94)	Zone 164 (vm164)	(Area X) Is Disarmed (vm226)
Zone 25 (vm25)	Zone 95 (vm95)	Zone 165 (vm165)	Input Expander Missing (vm227)
Zone 26 (vm26)	Zone 96 (vm96)	Zone 166 (vm166)	Keypad Missing (vm228)
Zone 27 (vm27)	Zone 97 (vm97)	Zone 167 (vm167)	No Zones Violated (vm229)
Zone 28 (vm28)	Zone 98 (vm98)	Zone 168 (vm168)	Output Expander Missing (vm230)
Zone 29 (vm29)	Zone 99 (vm99)	Zone 169 (vm169)	Welcome System Is On (vm231)
Zone 30 (vm30)	Zone 100 (vm100)	Zone 170 (vm170)	Start Module Enrollment (vm232)
Zone 31 (vm31)	Zone 101 (vm101)	Zone 171 (vm171)	Stop Module Enrollment (vm233)
Zone 32 (vm32)	Zone 102 (vm102)	Zone 172 (vm172)	System Battery Is Low (vm234)
Zone 33 (vm33)	Zone 103 (vm103)	Zone 173 (vm173)	Press Transmitter Button (vm235)
Zone 34 (vm34)	Zone 104 (vm104)	Zone 174 (vm174)	Receiver Program Invalid (vm236)
Zone 35 (vm35)	Zone 105 (vm105)	Zone 175 (vm175)	Test Volume (vm237)
Zone 36 (vm36)	Zone 106 (vm106)	Zone 176 (vm176)	Say Time (vm238)
Zone 37 (vm37)	Zone 107 (vm107)	Zone 177 (vm177)	Miscellaneous 1 (vm239)
Zone 38 (vm38)	Zone 108 (vm108)	Zone 178 (vm178)	Miscellaneous 2 (vm240)
Zone 39 (vm39)	Zone 109 (vm109)	Zone 179 (vm179)	Miscellaneous 3 (vm241)
Zone 40 (vm40)	Zone 110 (vm110)	Zone 180 (vm180)	Miscellaneous 4 (vm242)
Zone 41 (vm41)	Zone 111 (vm111)	Zone 181 (vm181)	Miscellaneous 5 (vm243)
Zone 42 (vm42)	Zone 112 (vm112)	Zone 182 (vm182)	Miscellaneous 6 (vm244)
Zone 43 (vm43)	Zone 113 (vm113)	Zone 183 (vm183)	Miscellaneous 7 (vm245)
Zone 44 (vm44)	Zone 114 (vm114)	Zone 184 (vm184)	Miscellaneous 8 (vm246)
Zone 45 (vm45)	Zone 115 (vm115)	Zone 185 (vm185)	Miscellaneous 9 (vm247)
Zone 46 (vm46)	Zone 116 (vm116)	Zone 186 (vm186)	Miscellaneous 10 (vm248)
Zone 47 (vm47)	Zone 117 (vm117)	Zone 187 (vm187)	Enter Pass Code (vm249)
Zone 48 (vm48)	Zone 118 (vm118)	Zone 188 (vm188)	Access Allowed (vm250)
Zone 49 (vm49)	Zone 119 (vm119)	Zone 189 (vm189)	System Not Ready (vm251)
Zone 50 (vm50)	Zone 120 (vm120)	Zone 190 (vm190)	Select Task Number (vm252)
Zone 51 (vm51)	Zone 121 (vm121)	Zone 191 (vm191)	Select Light Number (vm253)
Zone 52 (vm52)	Zone 122 (vm122)	Zone 192 (vm192)	Select Output Number (vm254)
Zone 53 (vm53)	Zone 123 (vm123)	Zone 193 (vm193)	Select Temperature Sensor (vm255)
Zone 54 (vm54)	Zone 124 (vm124)	Zone 194 (vm194)	Select Keypad Number (vm256)
Zone 55 (vm55)	Zone 125 (vm125)	Zone 195 (vm195)	Select Thermostat Number (vm257)
Zone 56 (vm56)	Zone 126 (vm126)	Zone 196 (vm196)	Press To Change (vm258)
Zone 57 (vm57)	Zone 127 (vm127)	Zone 197 (vm197)	Press To End Message (vm259)
Zone 58 (vm58)	Zone 128 (vm128)	Zone 198 (vm198)	Phone Menu 0 - Hear Menu Options (vm260)
Zone 59 (vm59)	Zone 129 (vm129)	Zone 199 (vm199)	Phone Menu 1 - Arm/Disarm Status (vm261)
Zone 60 (vm60)	Zone 130 (vm130)	Zone 200 (vm200)	Phone Menu 2 - Automation Control (vm262)
Zone 61 (vm61)	Zone 131 (vm131)	Zone 201 (vm201)	Automation Menu 1 - Automation Task (vm263)
Zone 62 (vm62)	Zone 132 (vm132)	Zone 202 (vm202)	Automation Menu 2 - Lighting Control (vm264)
Zone 63 (vm63)	Zone 133 (vm133)	Zone 203 (vm203)	Automation Menu 3 - Output Control (vm265)
Zone 64 (vm64)	Zone 134 (vm134)	Zone 204 (vm204)	Automation Menu 4 - Temperature Sensor (vm266)
Zone 65 (vm65)	Zone 135 (vm135)	Zone 205 (vm205)	Automation Menu 5 - Keypad Temperature (vm267)
Zone 66 (vm66)	Zone 136 (vm136)	Zone 206 (vm206)	Automation Menu 6 - Thermostat Temperature (vm268)
Zone 67 (vm67)	Zone 137 (vm137)	Zone 207 (vm207)	Phone Menu 3 - System Summary (vm269)
Zone 68 (vm68)	Zone 138 (vm138)	Zone 208 (vm208)	Phone Menu 4 - Zone Status (vm270)
Zone 69 (vm69)	Zone 139 (vm139)	Keypad Panic Alarm (vm209)	Phone Menu 7 - Page (vm271)
Zone 70 (vm70)	Zone 140 (vm140)	AC Power Failure (vm210)	
Zone 71 (vm71)	Zone 141 (vm141)	Telephone Line Trouble (vm211)	
Zone 72 (vm72)	Zone 142 (vm142)	Alarm Silence (vm212)	
Zone 73 (vm73)	Zone 143 (vm143)	Alarm Acknowledged (vm213)	
Zone 74 (vm74)	Zone 144 (vm144)	(Area X) Is Armed Away Mode (vm214)	
Zone 75 (vm75)	Zone 145 (vm145)	(Area X) Is Armed Stay Mode (vm215)	
Zone 76 (vm76)	Zone 146 (vm146)	(Area X) Is Armed Stay Instant (vm216)	
Zone 77 (vm77)	Zone 147 (vm147)	(Area X) Is Armed Night Mode (vm217)	
Zone 78 (vm78)	Zone 148 (vm148)	(Area X) Is Armed Night Instant (vm218)	
Zone 79 (vm79)	Zone 149 (vm149)	(Area X) Is Armed Vacation Mode (vm219)	
Zone 80 (vm80)	Zone 150 (vm150)	(Area X) Exit Delay Is About To Expire (vm220)	
Zone 81 (vm81)	Zone 151 (vm151)	Auto Arm In 1 Minute (vm221)	
Zone 82 (vm82)	Zone 152 (vm152)	Exit Error (vm222)	
Zone 83 (vm83)	Zone 153 (vm153)	Closing Ring Back (vm223)	
Zone 84 (vm84)	Zone 154 (vm154)	Audio Module Missing (vm224)	
Zone 85 (vm85)	Zone 155 (vm155)	System Is Armed (vm225)	
Zone 86 (vm86)	Zone 156 (vm156)		
Zone 87 (vm87)	Zone 157 (vm157)		
Zone 88 (vm88)	Zone 158 (vm158)		
Zone 89 (vm89)	Zone 159 (vm159)		
Zone 90 (vm90)	Zone 160 (vm160)		
Zone 91 (vm91)	Zone 161 (vm161)		
Zone 92 (vm92)	Zone 162 (vm162)		
Zone 93 (vm93)	Zone 163 (vm163)		

Phone Menu 8 - Adjust Volume (vm272)	Phone Arm Level 4 - Night Mode (vm282)	Water (vm294)	Violated (vm308)
Phone Menu 9 - Exit and Hangup (vm273)	Phone Arm Level 5 - Night Instant Mode (vm283)	Auxiliary 1 (vm295)	Normal (vm309)
Phone Arming (vm274)	Phone Arm Level 6 - Vacation Mode (vm284)	Auxiliary 2 (vm296)	On (vm310)
Phone Disarm (vm275)	Fire (vm285)	Key Switch (vm297)	Off (vm311)
Phone Hangup (vm276)	Medical (vm286)	Fire Message 1 (vm298)	Say Name of Area 1 (vm312)
To Turn On (vm277)	Police (vm287)	Fire Message2 (vm299)	Say Name of Area 2 (vm313)
To Turn Off (vm278)	Emergency (vm288)	Burglary Message 1 (vm300)	Say Name of Area 3 (vm314)
Phone Arm Level 1 - Away Mode (vm279)	Burglary (vm289)	Burglary Message 2 (vm301)	Say Name of Area 4 (vm315)
Phone Arm Level 2 - Stay Mode (vm280)	Carbon Monoxide (vm290)	Alarm (vm302)	Say Name of Area 5 (vm316)
Phone Arm Level 3 - Stay Instant Mode (vm281)	Freeze (vm291)	Alarm Memory (vm303)	Say Name of Area 6 (vm317)
	Gas (vm292)	Bypassed (vm304)	Say Name of Area 7 (vm318)
	Heat (vm293)	Auto Bypassed (vm305)	Say Name of Area 8 (vm319)
		Transmitter Low Battery (vm306)	
		Trouble (vm307)	

7. ASCII Table

Dec	Hex	Ct1	Chr	Dec	Hex	Chr	Dec	Hex	Chr	Dec	Hex	Chr
0	00h	NUL	^@	32	20h	SP	64	40h	@	96	60h	`
1	01h	SOH	^A	33	21h	!	65	41h	A	97	61h	a
2	02h	STX	^B	34	22h	"	66	42h	B	98	62h	b
3	03h	ETX	^C	35	23h	#	67	43h	C	99	63h	c
4	04h	EOT	^D	36	24h	\$	68	44h	D	100	64h	d
5	05h	ENQ	^E	37	25h	%	69	45h	E	101	65h	e
6	06h	ACK	^F	38	26h	&	70	46h	F	102	66h	f
7	07h	BEL	^G	39	27h	'	71	47h	G	103	67h	g
8	08h	BS	^H	40	28h	(	72	48h	H	104	68h	h
9	09h	HT	^I	41	29h	)	73	49h	I	105	69h	i
10	0Ah	LF	^J	42	2Ah	*	74	4Ah	J	106	6Ah	j
11	0Bh	VT	^K	43	2Bh	+	75	4Bh	K	107	6Bh	k
12	0Ch	FF	^L	44	2Ch	,	76	4Ch	L	108	6Ch	l
13	0Dh	CR	^M	45	2Dh	-	77	4Dh	M	109	6Dh	m
14	0Eh	SO	^N	46	2Eh	.	78	4Eh	N	110	6Eh	n
15	0Fh	SI	^O	47	2Fh	/	79	4Fh	O	111	6Fh	o
--	----	----	--	--	----	--	--	----	-	----	----	----
16	10h	DLE	^P	48	30h	0	80	50h	P	112	70h	p
17	11h	DC1	^Q	49	31h	1	81	51h	Q	113	71h	q
18	12h	DC2	^R	50	32h	2	82	52h	R	114	72h	r
19	13h	DC3	^S	51	33h	3	83	53h	S	115	73h	s
20	14h	DC4	^T	52	34h	4	84	54h	T	116	74h	t
21	15h	NAK	^U	53	35h	5	85	55h	U	117	75h	u
22	16h	SYN	^V	54	36h	6	86	56h	V	118	76h	v
23	17h	ETB	^W	55	37h	7	87	57h	W	119	77h	w
24	18h	CAN	^X	56	38h	8	88	58h	X	120	78h	x
25	19h	EM	^Y	57	39h	9	89	59h	Y	121	79h	y
26	1Ah	SUB	^Z	58	3Ah	:	90	5Ah	Z	122	7Ah	z
27	1Bh	ESC	^[	59	3Bh	;	91	5Bh	[	123	7Bh	{
28	1Ch	FS	^\	60	3Ch	<	92	5Ch	\	124	7Ch	
29	1Dh	GS	^]	61	3Dh	=	93	5Dh	]	125	7Dh	}
30	1Eh	RS	^^	62	3Eh	>	94	5Eh	^	126	7Eh	~
31	1Fh	US	^_	63	3Fh	?	95	5Fh	_	127	7Fh	DEL

8. Event Table

1000 = No Event	1068 = EMERGENCY ALARM IN AREA 6
1001 = FIRE ALARM	1069 = EMERGENCY ALARM IN AREA 7
1002 = FIRE SUPERVISORY ALARM	1070 = EMERGENCY ALARM IN AREA 8
1003 = BURGLAR ALARM, ANY AREA	1071 = FREEZE ALARM IN AREA 1
1004 = MEDICAL ALARM, ANY AREA	1072 = FREEZE ALARM IN AREA 2
1005 = POLICE ALARM, ANY AREA	1073 = FREEZE ALARM IN AREA 3
1006 = AUX1 24 HR, ANY AREA	1074 = FREEZE ALARM IN AREA 4
1007 = AUX2 24 HR, ANY AREA	1075 = FREEZE ALARM IN AREA 5
1008 = CARBON MONOXIDE ALARM, ANY AREA	1076 = FREEZE ALARM IN AREA 6
1009 = EMERGENCY ALARM, ANY AREA	1077 = FREEZE ALARM IN AREA 7
1010 = FREEZE ALARM, ANY AREA	1078 = FREEZE ALARM IN AREA 8
1011 = GAS ALARM, ANY AREA	1079 = GAS ALARM IN AREA 1
1012 = HEAT ALARM, ANY AREA	1080 = GAS ALARM IN AREA 2
1013 = WATER ALARM, ANY AREA	1081 = GAS ALARM IN AREA 3
1014 = ALARM, ANY AREA	1082 = GAS ALARM IN AREA 4
1015 = BURGLAR ALARM IN AREA 1	1083 = GAS ALARM IN AREA 5
1016 = BURGLAR ALARM IN AREA 2	1084 = GAS ALARM IN AREA 6
1017 = BURGLAR ALARM IN AREA 3	1085 = GAS ALARM IN AREA 7
1018 = BURGLAR ALARM IN AREA 4	1086 = GAS ALARM IN AREA 8
1019 = BURGLAR ALARM IN AREA 5	1087 = HEAT ALARM IN AREA 1
1020 = BURGLAR ALARM IN AREA 6	1088 = HEAT ALARM IN AREA 2
1021 = BURGLAR ALARM IN AREA 7	1089 = HEAT ALARM IN AREA 3
1022 = BURGLAR ALARM IN AREA 8	1090 = HEAT ALARM IN AREA 4
1023 = MEDICAL ALARM IN AREA 1	1091 = HEAT ALARM IN AREA 5
1024 = MEDICAL ALARM IN AREA 2	1092 = HEAT ALARM IN AREA 6
1025 = MEDICAL ALARM IN AREA 3	1093 = HEAT ALARM IN AREA 7
1026 = MEDICAL ALARM IN AREA 4	1094 = HEAT ALARM IN AREA 8
1027 = MEDICAL ALARM IN AREA 5	1095 = WATER ALARM IN AREA 1
1028 = MEDICAL ALARM IN AREA 6	1096 = WATER ALARM IN AREA 2
1029 = MEDICAL ALARM IN AREA 7	1097 = WATER ALARM IN AREA 3
1030 = MEDICAL ALARM IN AREA 8	1098 = WATER ALARM IN AREA 4
1031 = POLICE ALARM IN AREA 1	1099 = WATER ALARM IN AREA 5
1032 = POLICE ALARM IN AREA 2	1100 = WATER ALARM IN AREA 6
1033 = POLICE ALARM IN AREA 3	1101 = WATER ALARM IN AREA 7
1034 = POLICE ALARM IN AREA 4	1102 = WATER ALARM IN AREA 8
1035 = POLICE ALARM IN AREA 5	1103 = ANY ALARM IN AREA 1
1036 = POLICE ALARM IN AREA 6	1104 = ANY ALARM IN AREA 2
1037 = POLICE ALARM IN AREA 7	1105 = ANY ALARM IN AREA 3
1038 = POLICE ALARM IN AREA 8	1106 = ANY ALARM IN AREA 4
1039 = AUX1 24 HR IN AREA 1	1107 = ANY ALARM IN AREA 5
1040 = AUX1 24 HR IN AREA 2	1108 = ANY ALARM IN AREA 6
1041 = AUX1 24 HR IN AREA 3	1109 = ANY ALARM IN AREA 7
1042 = AUX1 24 HR IN AREA 4	1110 = ANY ALARM IN AREA 8
1043 = AUX1 24 HR IN AREA 5	1111 = CODE LOCKOUT, ANY KEYPAD
1044 = AUX1 24 HR IN AREA 6	1112 = KEYPAD 01 CODE-LOCKOUT
1045 = AUX1 24 HR IN AREA 7	1113 = KEYPAD 02 CODE-LOCKOUT
1046 = AUX1 24 HR IN AREA 8	1114 = KEYPAD 03 CODE-LOCKOUT
1047 = AUX2 24 HR IN AREA 1	1115 = KEYPAD 04 CODE-LOCKOUT
1048 = AUX2 24 HR IN AREA 2	1116 = KEYPAD 05 CODE-LOCKOUT
1049 = AUX2 24 HR IN AREA 3	1117 = KEYPAD 06 CODE-LOCKOUT
1050 = AUX2 24 HR IN AREA 4	1118 = KEYPAD 07 CODE-LOCKOUT
1051 = AUX2 24 HR IN AREA 5	1119 = KEYPAD 08 CODE-LOCKOUT
1052 = AUX2 24 HR IN AREA 6	1120 = KEYPAD 09 CODE-LOCKOUT
1053 = AUX2 24 HR IN AREA 7	1121 = KEYPAD 10 CODE-LOCKOUT
1054 = AUX2 24 HR IN AREA 8	1122 = KEYPAD 11 CODE-LOCKOUT
1055 = CO ALARM IN AREA 1	1123 = KEYPAD 12 CODE-LOCKOUT
1056 = CO ALARM IN AREA 2	1124 = KEYPAD 13 CODE-LOCKOUT
1057 = CO ALARM IN AREA 3	1125 = KEYPAD 14 CODE-LOCKOUT
1058 = CO ALARM IN AREA 4	1126 = KEYPAD 15 CODE-LOCKOUT
1059 = CO ALARM IN AREA 5	1127 = KEYPAD 16 CODE-LOCKOUT
1060 = CO ALARM IN AREA 6	1128 = FIRE TROUBLE, ANY ZONE
1061 = CO ALARM IN AREA 7	1129 = BURGLAR TROUBLE, ANY ZONE
1062 = CO ALARM IN AREA 8	1130 = FAIL TO COMMUNICATE TROUBLE
1063 = EMERGENCY ALARM IN AREA 1	1131 = RF SENSOR LOW BATTERY TROUBLE
1064 = EMERGENCY ALARM IN AREA 2	1132 = LOST ANC MODULE TROUBLE
1065 = EMERGENCY ALARM IN AREA 3	1133 = LOST KEYPAD TROUBLE
1066 = EMERGENCY ALARM IN AREA 4	1134 = LOST INPUT EXPANDER TROUBLE
1067 = EMERGENCY ALARM IN AREA 5	1135 = LOST OUTPUT EXPANDER TROUBLE

1136 = EEPROM MEMORY ERROR TROUBLE
1137 = FLASH MEMORY ERROR TROUBLE
1138 = AC FAILURE TROUBLE
1139 = CONTROL LOW BATTERY TROUBLE
1140 = CONTROL OVER CURRENT TROUBLE
1141 = EXPANSION MODULE TROUBLE
1142 = OUTPUT 2 SUPERVISORY TROUBLE
1143 = TELEPHONE LINE FAULT TROUBLE1
144 = RESTORE FIRE ZONE
1145 = RESTORE FIRE SUPERVISORY ZONE
1146 = RESTORE BURGLAR ZONE
1147 = RESTORE MEDICAL ZONE
1148 = RESTORE POLICE ZONE
1149 = RESTORE AUX1 24 HR ZONE
1150 = RESTORE AUX2 24 HR ZONE
1151 = RESTORE CO ZONE
1152 = RESTORE EMERGENCY ZONE
1153 = RESTORE FREEZE ZONE
1154 = RESTORE GAS ZONE
1155 = RESTORE HEAT ZONE
1156 = RESTORE WATER ZONE
1157 = COMMUNICATION FAIL RESTORE
1158 = AC FAIL RESTORE
1159 = LOW BATTERY RESTORE
1160 = CONTROL OVER CURRENT RESTORE
1161 = EXPANSION MODULE RESTORE
1162 = OUTPUT2 RESTORE
1163 = TELEPHONE LINE RESTORE
1164 = ALARM MEMORY, ANY AREA
1165 = ALARM MEMORY, AREA 1
1166 = ALARM MEMORY, AREA 2
1167 = ALARM MEMORY, AREA 3
1168 = ALARM MEMORY, AREA 4
1169 = ALARM MEMORY, AREA 5
1170 = ALARM MEMORY, AREA 6
1171 = ALARM MEMORY, AREA 7
1172 = ALARM MEMORY, AREA 8
1173 = AREA ARMED
1174 = AREA DISARMED
1175 = AREA 1 ARM STATE
1176 = AREA 2 ARM STATE
1177 = AREA 3 ARM STATE
1178 = AREA 4 ARM STATE
1179 = AREA 5 ARM STATE
1180 = AREA 6 ARM STATE
1181 = AREA 7 ARM STATE
1182 = AREA 8 ARM STATE
1183 = AREA 1 IS ARMED AWAY
1184 = AREA 2 IS ARMED AWAY
1185 = AREA 3 IS ARMED AWAY
1186 = AREA 4 IS ARMED AWAY
1187 = AREA 5 IS ARMED AWAY
1188 = AREA 6 IS ARMED AWAY
1189 = AREA 7 IS ARMED AWAY
1190 = AREA 8 IS ARMED AWAY
1191 = AREA 1 IS ARMED STAY
1192 = AREA 2 IS ARMED STAY
1193 = AREA 3 IS ARMED STAY
1194 = AREA 4 IS ARMED STAY
1195 = AREA 5 IS ARMED STAY
1196 = AREA 6 IS ARMED STAY
1197 = AREA 7 IS ARMED STAY
1198 = AREA 8 IS ARMED STAY
1199 = AREA 1 IS ARMED STAY INSTANT
1200 = AREA 2 IS ARMED STAY INSTANT
1201 = AREA 3 IS ARMED STAY INSTANT
1202 = AREA 4 IS ARMED STAY INSTANT
1203 = AREA 5 IS ARMED STAY INSTANT
1204 = AREA 6 IS ARMED STAY INSTANT
1205 = AREA 7 IS ARMED STAY INSTANT

1206 = AREA 8 IS ARMED STAY INSTANT
1207 = AREA 1 IS ARMED NIGHT
1208 = AREA 2 IS ARMED NIGHT
1209 = AREA 3 IS ARMED NIGHT
1210 = AREA 4 IS ARMED NIGHT
1211 = AREA 5 IS ARMED NIGHT
1212 = AREA 6 IS ARMED NIGHT
1213 = AREA 7 IS ARMED NIGHT
1214 = AREA 8 IS ARMED NIGHT
1215 = AREA 1 IS ARMED NIGHT INSTANT
1216 = AREA 2 IS ARMED NIGHT INSTANT
1217 = AREA 3 IS ARMED NIGHT INSTANT
1218 = AREA 4 IS ARMED NIGHT INSTANT
1219 = AREA 5 IS ARMED NIGHT INSTANT
1220 = AREA 6 IS ARMED NIGHT INSTANT
1221 = AREA 7 IS ARMED NIGHT INSTANT
1222 = AREA 8 IS ARMED NIGHT INSTANT
1223 = AREA 1 IS ARMED VACATION
1224 = AREA 2 IS ARMED VACATION
1225 = AREA 3 IS ARMED VACATION
1226 = AREA 4 IS ARMED VACATION
1227 = AREA 5 IS ARMED VACATION
1228 = AREA 6 IS ARMED VACATION
1229 = AREA 7 IS ARMED VACATION
1230 = AREA 8 IS ARMED VACATION
1231 = AREA 1 IS FORCE ARMED
1232 = AREA 2 IS FORCE ARMED
1233 = AREA 3 IS FORCE ARMED
1234 = AREA 4 IS FORCE ARMED
1235 = AREA 5 IS FORCE ARMED
1236 = AREA 6 IS FORCE ARMED
1237 = AREA 7 IS FORCE ARMED
1238 = AREA 8 IS FORCE ARMED
1239 = ZONE BYPASSED
1240 = ZONE UNBYPASSED
1241 = ANY BURGLAR ZONE IS FAULTED
1242 = BURGLAR STATUS OF ALL AREAS
1243 = AREA 1 BURGLAR STATUS
1244 = AREA 2 BURGLAR STATUS
1245 = AREA 3 BURGLAR STATUS
1246 = AREA 4 BURGLAR STATUS
1247 = AREA 5 BURGLAR STATUS
1248 = AREA 6 BURGLAR STATUS
1249 = AREA 7 BURGLAR STATUS
1250 = AREA 8 BURGLAR STATUS
1251 = AREA 1 CHIME MODE
1252 = AREA 2 CHIME MODE
1253 = AREA 3 CHIME MODE
1254 = AREA 4 CHIME MODE
1255 = AREA 5 CHIME MODE
1256 = AREA 6 CHIME MODE
1257 = AREA 7 CHIME MODE
1258 = AREA 8 CHIME MODE
1259 = AREA 1 CHIME ALERT
1260 = AREA 2 CHIME ALERT
1261 = AREA 3 CHIME ALERT
1262 = AREA 4 CHIME ALERT
1263 = AREA 5 CHIME ALERT
1264 = AREA 6 CHIME ALERT
1265 = AREA 7 CHIME ALERT
1266 = AREA 8 CHIME ALERT
1267 = ENTRY DELAY, ANY AREA
1268 = AREA 1 ENTRY DELAY
1269 = AREA 2 ENTRY DELAY
1270 = AREA 3 ENTRY DELAY
1271 = AREA 4 ENTRY DELAY
1272 = AREA 5 ENTRY DELAY
1273 = AREA 6 ENTRY DELAY
1274 = AREA 7 ENTRY DELAY
1275 = AREA 8 ENTRY DELAY

1276 = EXIT DELAY, ANY AREA
 1277 = AREA 1 EXIT DELAY
 1278 = AREA 2 EXIT DELAY
 1279 = AREA 3 EXIT DELAY
 1280 = AREA 4 EXIT DELAY
 1281 = AREA 5 EXIT DELAY
 1282 = AREA 6 EXIT DELAY
 1283 = AREA 7 EXIT DELAY
 1284 = AREA 8 EXIT DELAY
 1285 = AREA 1 EXIT DELAY ENDS
 1286 = AREA 2 EXIT DELAY ENDS
 1287 = AREA 3 EXIT DELAY ENDS
 1288 = AREA 4 EXIT DELAY ENDS
 1289 = AREA 5 EXIT DELAY ENDS
 1290 = AREA 6 EXIT DELAY ENDS
 1292 = AREA 8 EXIT DELAY ENDS
 1293 = AUTOMATIC CLOSING
 1294 = EARLY CLOSING
 1295 = CLOSING TIME EXTENDED
 1296 = FAIL TO CLOSE
 1297 = LATE TO CLOSE
 1298 = KEYSWITCH CLOSING
 1299 = DURESS
 1300 = EXCEPTION OPENING
 1301 = EARLY OPENING
 1302 = FAIL TO OPEN
 1303 = LATE TO OPEN
 1304 = KEYSWITCH OPENING
 1305 = AREA 1 CLOSING RING BACK
 1306 = AREA 2 CLOSING RING BACK
 1307 = AREA 3 CLOSING RING BACK
 1308 = AREA 4 CLOSING RING BACK
 1309 = AREA 5 CLOSING RING BACK
 1310 = AREA 6 CLOSING RING BACK
 1311 = AREA 7 CLOSING RING BACK
 1312 = AREA 8 CLOSING RING BACK
 1313 = ACCESS KEYPAD 01
 1314 = ACCESS KEYPAD 02
 1315 = ACCESS KEYPAD 03
 1316 = ACCESS KEYPAD 04
 1317 = ACCESS KEYPAD 05
 1318 = ACCESS KEYPAD 06
 1319 = ACCESS KEYPAD 07
 1321 = ACCESS KEYPAD 09
 1322 = ACCESS KEYPAD 10
 1323 = ACCESS KEYPAD 11
 1324 = ACCESS KEYPAD 12
 1325 = ACCESS KEYPAD 13
 1326 = ACCESS KEYPAD 14
 1327 = ACCESS KEYPAD 15
 1328 = ACCESS KEYPAD 16
 1329 = ACCESS ANY KEYPAD
 1330 = BEEP AREA 1 KEYPAD(S)
 1331 = BEEP AREA 2 KEYPAD(S)
 1332 = BEEP AREA 3 KEYPAD(S)
 1333 = BEEP AREA 4 KEYPAD(S)
 1334 = BEEP AREA 5 KEYPAD(S)
 1335 = BEEP AREA 6 KEYPAD(S)
 1336 = BEEP AREA 7 KEYPAD(S)
 1337 = BEEP AREA 8 KEYPAD(S)
 1338 = AREA 1 EXIT ERROR
 1339 = AREA 2 EXIT ERROR
 1340 = AREA 3 EXIT ERROR
 1341 = AREA 4 EXIT ERROR

1342 = AREA 5 EXIT ERROR
 1343 = AREA 6 EXIT ERROR
 1344 = AREA 7 EXIT ERROR
 1345 = AREA 8 EXIT ERROR
 1346 = AUDIO AMPLIFIER STATUS
 1347 = CONTROL POWER STATUS
 1348 = LIGHT
 1349 = DARK
 1350 = SECURITY (DAY) ALERT
 1351 = DIALER ABORT
 1352 = DIALER CANCEL
 1353 = DIALER AUTO TEST
 1354 = LOCAL PROGRAMMING
 1355 = LOCAL PROGRAMMING ENDS
 1356 = KEYSWITCH ZN TAMPER ALERT
 1357 = EVENT LOG, 80% FULL
 1358 = TELEPHONE LINE IS RINGING
 1359 = TELEPHONE LINE SEIZE
 1360 = TELEPHONE LINE OFF/ON HOOK
 1361 = TELEPHONE LOCAL ACCESS
 1362 = TELEPHONE REMOTE ACCESS
 1363 = REMOTE PROGRAMMING
 1364 = REMOTE PROGRAMMING ENDS
 1365 = AC FAIL TBL - POWER SUPV ZN
 1366 = LOW BATTERY TBL - POWER SUPV ZN
 1367 = SYSTEM START UP
 1368 = CONTROL LOW VOLTAGE SHUTDOWN
 1369 = RF KEYFOB BUTTON 1
 1370 = RF KEYFOB BUTTON 2
 1371 = RF KEYFOB BUTTON 3
 1372 = RF KEYFOB BUTTON 4
 1373 = RF KEYFOB BUTTON 5
 1374 = RF KEYFOB BUTTON 6
 1375 = RF KEYFOB BUTTON 7
 1376 = RF KEYFOB BUTTON 8
 1377 = LOST SERIAL PORT EXPANDER TROUBLE
 1378 = RULE TRIGGERED VOICE TELEPHONE DIAL
 1379 = DIALER REPORT CLEARED
 1380 = CENTRAL STATION KISSOFF
 1381 = TRANSMITTER SUPERVISION LOSS
 1382 = 2-WIRE SMOKE DET. CLEAN TRBL
 1383 = ETHERNET TROUBLE
 1384 = ETHERNET RESTORE
 1385 = RESTORE REMOTE AC POWER
 1386 = RESTORE REMOTE BATTERY
 2001-2032 = Automation Tasks
 3001 = F1 Key, keypad 1
 3002 = F2 Key, keypad 1
 3003 = F3 Key, keypad 1
 3004 = F4 Key, keypad 1
 3005 = F5 Key, keypad 1
 3006 = F6 Key, keypad 1
 ...
 3091 = F1 Key, keypad 16
 3092 = F2 Key, keypad 16
 3093 = F3 Key, keypad 16
 3094 = F4 Key, keypad 16
 3095 = F5 Key, keypad 16
 3096 = F6 Key, keypad 16
 4001 – 4208 = Zone status, normal = 0, violated = 1
 5001 – 5208 = Zone bypassed, 1 = bypassed
 6001 – 6208 = Alarm Memory, 1 = alarm activated
 7001 – 7208 = Output status, 1 = On

9. Calculate Checksum

Calculate checksum on received and transmitted ASCII string
Example C code program

```
//INT8U is an 8 bit unsigned integer.
INT8U itAscRecBuf[82]; //ASCII receive
character buffer
INT8U AscHexToBin(INT8U, INT8U *); //ASCII hex to binary
conversion
INT8U AsciiToHex( INT8U); //Ascii to Hex conversion

//Calculate checksum on a received ASCII string, return checksum
value. //It should equal 0 if good.
INT8U CalcChecksum(void)
{
    INT8U i,length, cc;

    length = AscHexToBin(2, &itAscRecBuf[0]);
//get length value,
//first two characters

    cc = AscHexToBin(2, &itAscRecBuf[length]);
//get checksum value
//at end of string.
    for (i=0;i<length;i++)
    {
        cc += itAscRecBuf[i]; //get string value and
add it to
//checksum
    }
    return(cc); //good checksum should equal 0
}

//ascii hex to binary, width 1 or 2
INT8U AscHexToBin(INT8U Width, INT8U * DataPtr) //
{
    INT8U aVal; // accumulated value

    aVal = AsciiToHex(*DataPtr);
    DataPtr++;
    if (Width == 2)//two digits wide, else 1 digit wide
    {
        aVal = aVal << 4;
        aVal += AsciiToHex(*DataPtr);
    }
    return(aVal);
}

//Ascii to Hex conversion
INT8U AsciiToHex( INT8U Value )
{
    switch ( Value )
    {
        case 'A':
            return( 10 );
        case 'B':
```

```
            return( 11 );
        case 'C':
            return( 12 );
        case 'D':
            return( 13 );
        case 'E':
            return( 14 );
        case 'F':
            return( 15 );
        default:
            return( Value - 0x30 );
    }
}

/*
*****
*****
To generate the checksum for an ASCII string to be transmitted,
clear the checksum value (CC = 0;)
Add each byte of the string to be transmitted to the checksum value
(CC += ASCII byte).
Do a two's compliment of the checksum (CC = (CC ^ 0xff) + 1;).
Convert the checksum's upper and lower nibble's to ASCII hex.
Send a carriage return (0x0D) and line feed (0x0A).
The following is an example C code for sending the checksum after
building the initial checksum value.

*/
//send checksum + carriage return, line feed
//Comm2_Put_Ch() sends the byte out the serial data port.

INT8U NibToAsc(INT8U);

void SendChecksum(INT8U CC) //enter with checksum value
added up
{
    CC = (CC ^ 0xFF) + 1; //calculate two's compliment
    Comm2_Put_Ch(NibToAsc(CC >> 4));
    Comm2_Put_Ch(NibToAsc(CC & 0x0F));
    Comm2_Put_Ch(0x0D);
    Comm2_Put_Ch(0x0A);
}

INT8U NibToAsc(INT8U Nib)
{
    if (Nib < 0x0A)
        return( (INT8U)(Nib + 0x30));
    else if (Nib <= 0x0F)
        return(Nib + 0x37); //converts to 0x0A -> 0x0F
hex value
    return(0x20); //error
}
}
```

10. Contact Information

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11. Revision History:

Rev. 0.1_1/13/04	Changed Task Number ASCII reply from 2 digits to 3 digits and changed command from "R" to "T".
Rev. 0.2_2/17/04	Added Keypad key pressed ASCII transmission.
Rev. 0.3_3/23/04	Changed Tasks from a state on/off to a one-shot button.
Rev. 1.1_3/24/04	Removed ON/OFF Task commands.
Rev. 1.2_3/25/04	Added Request ASCII Names to protocol.
Rev. 1.3_3/29/04	Added Request Temperatures
Rev. 1.4_3/30/04	Added Keypad Key Change, word and phrase table to specification.
Rev. 1.5_4/15/04	Added Read and Write Custom Values to protocol.
Rev. 1.6_6/07/04	Added note about high bit of ASCII names may be set to indicate "Show On Keypad".
Rev. 1.7_6/15/04	Added Request for User Code valid areas.
Rev. 1.8_6/28/04	Task Change typo - Command from RC to TC, status byte set to 0.
Rev. 1.9_7/12/04	Added All_Lights_On, All_Lights_Off, All_Units_Off to PLC Update for Serial Port Expander and Zensys
Rev. 1.10_7/16/04	Request and return for what area a keypad is valid in, ability to activate keypad function key, ability to bypass a zone.
Rev. 1.11_7/19/04	Added Request Function Key names, Request Keypad Areas, Activate Keypad function keys, bypass a zone, send arming status on keypad arm/disarm.
Rev. 1.12_8/4/04	Changed Zone Temperature Probe subtract value to 60 from 40.
Rev. 1.14_8/6/04	Document correction in Log Data command, changed NQ to LD. Added PLC Status example.
Rev. 1.15_8/20/04	Added ASCII Thermostat control.
Rev. 1.16_8/24/04	Added Thermostat Humidity support
Rev. 1.17_8/27/04	Enhanced Arming Status Request, Added Zone Definition data.
Rev. 1.18_9/21/04	Requesting Names, sd command, returns name whose first character is > "space" or last name in name array.
Rev. 1.19_10/15/04	Added checksum C code routines.
Rev. 1.20_10/22/04	PLC reply, "PS" command, replies with light level value to 48 (0x30) added to the value.
Rev.1.21_10/26/04	Added '*' key to "4.21 Keypad Function Key Press", fixed task number to 3 digits in "Task Change Update".
Rev. 1.22_11/15/04	Added Type of data to the Custom Values response. Implemented factory use date to Request Valid User Code Areas.
Rev. 1.23_12/09/04	Corrected length of request and reply temperature data, command "st" and "ST".
Rev. 1.24_12/17/04	Added command summary

Rev. 1.25_1/5/05 Added email trigger, "EM", command

Rev. 1.26_1/11/05 Modified "KC" command to add keypad function key LED status.

Rev. 1.27_1/12/05 Corrected length of alarm reporting acknowledge from 04 to 06.

Rev. 1.28_1/12/05 Corrected Alarm report acknowledge command AR to ar, added Alarm Test AR and at commands, fix Task Change Update length to 0x0A

Rev. 1.29_1/17/05 Added "IE" Installer Program Mode Exited.

Rev. 1.30_1/31/05 Changed "IC" Invalid User Code from 6 digits to 12 digits data for 26 bit Weigand prox card data. Added Zone Analog Voltage Data Request command.

Rev. 1.31_2/21/05 Corrected Alarm Reporting packet length in description from 21 to 22 bytes.

Rev. 1.32_2/22/05 Added "kc" command to request keypad F key illumination status. Returns "KC" command data.

Rev. 1.33_3/16/05 Added Armed Away Mode stepping and Armed Stay Mode stepping. "a7" & "a8" commands. Added number of user code digits to "UA" command. Added "XK" and "xk" command for Ethernet Module Test.

Rev. 1.34_3/17/05 Fixed "Reply Thermostat Data (TR)" description. Added automatic temperature updates on change. Version 4.2.8

Rev. 1.35_3/24/05 Added byte to indicate if code required to bypass in the "KC" command.

Rev. 1.36_4/28/05 Fixed error in length of Custom Value Reply. Version 4.3.1

Rev. 1.37_5/2/05 "SD" command, explain the search for names to be returned. Explained dims, brights, and preset dim in "pc" command.

Rev. 1.38_5/11/05 "RR" command to request and write real time clock data added to protocol.

Rev. 1.39_5/12/05 Added if in Daylight Savings Time Mode to "RR" command. Added 'C' character to "kf" command to control chime.

Rev. 1.40_5/20/05 Changed "IC" command so that valid user code number is broadcast.

Rev. 1.41_5/23/05 Fixed "pf" documentation's example code.

Rev. 1.42_5/26/05 Added Real Time Clock time data to "XK" command and corrected response in document.

Rev. 1.43_6/2/05 Documented the "RP" command which is sent from XEP upon ELK RP connection. Added clock and date display mode to the "XK" command. Added Chime Mode status to "KF" command

Rev. 1.44_6/7/05 Added the "ld", request log data command and added the index number to the "LD" log data command.

Rev. 1.45_6/10/05 Added day of week and year to "LD" log data reply.

Rev. 1.46_6/16/05 Added Keypad Number to "IC" command. Added Event Table.

Rev. 1.47_6/30/05 Added lw and LW command to request temperature sensor and keypad temperature.

Rev. 1.48_7/12/05 Added M1SDK software documentation.

Rev. 1.49_8/15/05 Corrected length of "ZC" example. Added "cp" command to request all custom values.

Rev. 1.50_8/22/05 Added user code type to "UA" reply. Added "RE" Command to reset Ethernet Module. Ver. 4.3.7

Rev. 1.51_12/5/05 Added "ds" and "DS" for lighting device poll. This command is only used by the M1XSP Serial Port Expander. Added "cu", "CU" change user code.

Rev. 1.52_12/9/05 Added 'F' or 'C' to UA command for Fahrenheit or Celcius temperature mode. Added "az" and "AZ" alarm by zone commands

Rev. 1.53_12/22/05 Added ability to program what areas the user code is valid in on the "CU" command.

Rev. 1.54_2/03/06 Add response on "cu" command that if code to be programmed is a duplicate and denied, the returned user code is 255.

Rev. 1.55_3/03/06 Documented softbypass in ZS command.

Rev. 1.56_3/21/06 Added Entrance and Exit time to AS command.

Rev. 1.57_5/26/06 Added M1XSP remote programming for Insteon Setup.

Rev. 1.58_6/1/06 Changed number of packets from 9 to 8 on Insteon Setup. Added Null Modem.

Rev. 1.59_6/5/06 Added RP documentation.

Rev. 1.60_10/26/06 Corrected "IC" command user numbers

Rev. 1.61_07/02/07 Correct number of user names of reading user names from 99 to 199. Added 'le' command to force log entry for dialer reporting. M1 version 4.1.2 and 5.1.2 or later.

Rev. 1.6.2_08/21/07 Added "SS" command to poll for system troubles.

Rev. 1.6.3_08/24/07 Added code restriction disable/enable to the “cu” command.
 Rev. 1.6.5_11/27/07 “ZC” documentation clarification.
 Rev. 1.6.6_12/12/07 “SS” further explained fire trouble zone decode.
 Rev. 1.6.7_3/19/08 Fixed documentation error in the “AZ” command.
 Rev. 1.6.8_5/2/08 Added in “ts” ASCII thermostat command the ability to set the thermostat temperature from a controller with a thermostat connected to it.
 Rev. 1.6.9_5/6/08 Added “CV”, “cv”, “cx” command to read and write counter values.
 Rev. 1.70_6/20/08 Fixed documentation error on “CR” command using the “NN” value.
 Rev. 1.71_10/10/08 Added “Interpreting M1/EZ8 Event Log Extended Information”.
 Rev. 1.72_10/27/08 Added “AP” commands to send ASCII strings to outside IP address. Added “CD” commands to control audio equipment. Remapped document by commands.
 Rev. 1.73_10/29/08 Corrected “Interpreting M1/EZ8 Event Log Extended Information” involving extended function key code from 500 to 400 range.
 Rev. 1.74_11/06/08 Added Omnistat 2 documentation, added SD commands 18 & 19, EE command, CA command. VN version number. Version 5.1.12 or later
 Rev. 1.75_11/14/08 Modified the CA and CD commands.
 Rev. 1.76_4/21/09 Modified XK description.
 Rev. 1.77_5/04/09 Modified EE command to add Armed State to command string.
 Rev. 1.78_7/08/09 Removed ASCII audio commands (CD) and use numbers in command strings
 Rev. 1.79_7/16/09 Explained the SS command of extracting zone troubles from string.
 Rev. 1.80_11/19/09 Added “zt” command to violate a zone. Noted the “le” command event and central station reporting.
 Rev. 1.81_8/8/11 Explained AP command in more detail.
 Rev. 1.82_5/15/15 Added Alarm Memory command to allow devices using this protocol to know if an alarm must be acknowledged before arming.
 Rev. 1.83_10/19/15 Added warning to avoid buffer overflow and references to M1XEP and C1M1 in M1 Serial Electrical/Mechanical Specifications section.
 Rev. 1.84_2/26/16 Modified instructions related to Zone Trigger (zt) command.
 Rev. 1.85_5/10/16 Corrected max. number of ASCII chars in AP command from 200 to 72.
 Rev. 1.86_2/22/17 Added note to zt command, added note to AP command, enhanced explanation of ar & ax responses, modified description of XK command.