

EZBridgeTM

XML-based Ethernet to Insteon Bridge

Reference Manual

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EZBridge Firmware Version 1.13 Release Notes

- Corrected formatting for some XML messages
- Corrected a situation where a timer may fire on days it is not supposed to
- Added PLM communications timeout error message via XML
- Corrected reset to DHCP in some startup modes

EZBridge Firmware Version 1.12 Release Notes

- Added support for Zone Description
- Added support for detection and recording of Device Status
- Added support for UDP detection of module
- Added 0X leading character sequence for all fields that are hexadecimal
- Minor bug revision

EZBridge Firmware Version 1.10 Release Notes

- Added macro support
- Provided factory reset support
- Added device records and ability to refer to them either by labels (names) or Insteon/X10 IDs
- Changed timer database to conform with macro structure – THE PREVIOUS TIMER DATABASE MUST BE CLEARED PRIOR TO UPGRADING

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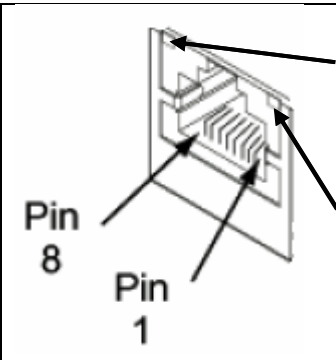
Overview

This document describes the operation of the Simplehomenet EZBridge, an Ethernet to Insteon / X10 communications bridge device. The purpose of this document is to enable a user to setup, program and operate EZBridge in order to allow monitoring and control of devices in a home automation network through an Ethernet connection. The EZBridge implements the following functions:

- A TCP/IP socket through which clients can connect to send and receive messages from home automation devices
- A serial (RS232C) interface to a SmartLabs, Inc. power line modem (PLM). The PLM is assumed to be connected to the powerline and joined through this connection to devices in the home automation network
- Reception of XML packets from the connected client(s) and translation of those packets into messages to the home automation devices (through the PLM) or into locally executed commands
- Reception of messages from the home automation devices (through the PLM) plus translation into XML and transmission to connected clients
- Maintenance of event timers to send Insteon or X10 commands at specified times of the week
- Maintenance of geographic location (latitude/longitude) and time zone
- Real-time clock automatically updated from an Internet time server
- Execution of macro commands that normally would require multiple messages with the PLM
- Ability to define Insteon and X10 home automation devices by name, ID, type and protocol

Ethernet Communications Port:

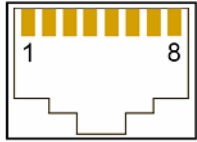
EZbridge connects to an Ethernet network through an RJ45 connector at an auto-sensing rate of 10 or 100MBPS (10/100). The pinout of the connector and the function of the 2 LEDs on this connector are shown below:

Ethernet Connector Pinout					LED Indication
Pin 1	Pin 2	Pin 3	Pin 6		Off – no link has been detected
TxD+	TXD-	RXD+	RXD-	On – a link has been detected	
Transmit Data +	Transmit Data -	Receive Data +	Receive Data -	Off – Serial/Network channel is idle	
				Blinking – Serial /Network data is being transmitted	

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PLM Serial Communications Port:

The module communicates via an RS-232 serial communications port through an RJ45 connector. Details on this port are shown below:

Communication Details				Connector Pinout	
Speed	Data Bits	Parity	Stop Bits	.1 - Rx (From PLM) 2 - 12 VDC 7 - Ground 8 - Tx (To PLM)	
19,200 baud	8	None	1		

Serial Data to the PLM must be controlled by the PLM due to the possibility of concurrent INSTEON activity. This flow is controlled by the PLM by echoing every byte. The EZBridge waits for the echo before sending the next byte.

Serial data from the PLM is not constrained and is transferred to the EZBridge at the full baud rate.

Power Supply:

The unit may be powered directly from the PLM connection or through a DC input jack located in the rear panel. The voltage input must be between 9 and 19 VDC for safe and proper operation. Total power consumption is about 1.2 Watts. Although a DC source can be connected permanently on the DC input jack, it is recommended that the unit be powered by the PLM.

The EZBridge real time clock depends on this power to keep track of time (no local battery back-up.) This clock must be reset in the event of loss of power or upon a hard reset.

PLM Power-up Behavior:

The pattern of the LED at power-up depends on the conditions encountered upon reset or power-up of the PLM. The LED behavior upon PLM power-up is as follows:

LED On Steady	PLM detected an external EEPROM (up to 32Kb) for storage of database links.
LED blinks six times	PLM has detected no external EEPROM and will use the internal EEPROM in the processor chip. In this case, a maximum of 31 links are permitted. An attempt to add a 32 nd link will result in the 31 st being erased.
LED is Off	While being plugged in, the user pressed and held the SET button for longer than 10 seconds causing the PLM to perform a factory reset. At the conclusion of the reset, the LED will operate as in one of the two modes above.

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Operation Notes:

Soft EZBridge Reset: Pressing and holding the RESET button for greater than two seconds and less than seven seconds will cause the unit to reset the IP settings to factory configuration. The unit will reboot after the soft reset.

Hard EZBridge Reset: Pressing and holding the RESET button for greater than seven seconds will cause the unit to reset all parameters. *Performing a hard reset will result in the loss of ALL records stored in the module.* The unit will reboot after the hard reset.

Software Upgrade: The unit also reboots itself when a new firmware image is downloaded to it during an upgrade. This reset takes up to 30 seconds during which there is no indication. Normally there is no loss of data when an upgrade is performed. It is still advised to backup all records on the module. If a database is not compatible, it will be stated in the release notes.

Manual PLM Reset: Pressing and holding the SET button on the PLM when power is first applied clears the entire database of the PLM. When this occurs, the LED will turn off for about 20 seconds, while the reset procedure is being processed. At the conclusion of the reset procedure, the LED will illuminate steadily. This procedure will initiate a Soft EZBridge Reset, similar to holding the EZBridge reset button for two seconds.

Linking Mode: Unless automatic linking has been turned off by a configuration command, pressing and holding the SET button on the PLM for more than 4 seconds will cause it to go into linking mode. This will make the LED blink continuously at a rate of ½ second on and ½ second off.

Monitor Mode: Normally, the application only receives INSTEON messages directed to it. That is either a direct (point-to-point) message or a control message from someone in the PLM's link database. In Monitor Mode, the EZBridge will also send received INSTEON messages that contain an ID in the FROM address if it is in the link database. If the Sender is in the PLM's link database, the message is passed to the application EVEN IF it is not for the application. This makes possible the monitoring of messages between other INSTEON devices as long as the sender is in the PLM link database.

Please be aware that the PLM may not always detect this traffic. The PLM is “looking” for the acknowledgement message sent from a responder back to an originator. If the responder and originator are reasonable close to one another and there are no additional Repeats needed, the PLM may not detect the message since both modules quickly received acknowledgements without multiple repeats. To know for sure a device's status, use the Insteon Status Request command (see Insteon Developer's Guide).

Link Data: Link data in response to the request to get link data for the last message received is only available if the message was from a device in the links database.

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Network IP settings: EZbridge defaults to use DHCP, and relies on a DHCP server to assign it an IP address on initialization. The assigned IP address may be found in the corresponding DHCP server (usually a router). To access the bridge, use the assigned IP address and the port assigned by EZBridge (default is 8002). By default security is not enabled. Once logged on to EZBridge, it is possible to change all network settings (DHCP, DNS, IP, Netmask and Port) with XML commands.

Device Identification: The ability to uniquely create records for each home automation device provides a means to call a device in your network by either a text string (label) or by an Insteon or X10 ID. For example, you can associate the name “Office Lamp” with an Insteon ID of 01.23.45. Thus, when adding timers or macros, the label can be used for a device id. Make sure when you add a device that its label is unique.

Macros: Macros provide a means to establish a response to an Insteon or X10 message. First, you define an Actor (the device with the event that will trigger the macro). The actor can be a device label, or an Insteon or X10 ID. You define the times to respond, as described below (use the letter 'A' for time to define “Always”). Then, you define the Responder (the device that will get the command when the macro is triggered), and what the responder's action will be. One can also add a delay on the action on the responder per the format illustrated in the command table. Macros make possible the conversion of X10 to Insteon and vice versa. For instance, you can turn on a light from an event triggered by an X10 remote control or motion sensor!

Timers: The timers in the EZBridge are straight forward. You define the device (label, or Insteon / X10 ID), the command to send, and when you want it to occur.

Discover: The EZBridge provides a mechanism to discover the EZBridge on the network. It provides a multicast (UDP) mechanism. The specifics are IP address 224.0.7.107, Port 2157. Broadcast the GUID {0xd769f6ae,0x8b08,0x4c2b,{0xb6,0xee,0x13,0x82,0x45,0xf6,0x3a,0x2e}} and the EZBridge will respond to the broadcaster with it's IP address.

Update: Updating the EZBridge simply consists of providing an FTP upload into the module. Be aware that if the wrong image is uploaded or is not uploaded in binary format, the module will require recovery. **To repeat, ensure that the file is uploaded in BINARY MODE and that you are uploading a valid image.** To update, ftp into the module using port 21. The default user name is *ezbridge*, and the password is *simplehome*. Both are lower case. Upon entering, just upload the “image.bin” file (you must use this name convention, you cannot rename the file). Then, once you exit the FTP server and there are no active sockets, the EZBridge will reboot and update itself automatically.

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Command Set – Messages from Client to EZBridge:

Command	XML Template	Notes
GetRevision	Requests the EZBridge firmware version <pre><?xml version="1.0"?> <command>GetRevision</command></pre>	
GetLatLong	Requests the currently set geographic latitude and longitude <pre><?xml version="1.0"?> <command>GetLatLong</command></pre>	
SetLatLong	Sets the geographic latitude and longitude <pre><?xml version="1.0"?> <command>SetLatLong <lat>39.05</lat> <long>-84.67</long> </command></pre>	Latitude and Longitude parameters in decimal format
SetPasswd	Sets a password and enables or disables security <pre><?xml version="1.0"?> <command>SetPasswd <Password>password</Password> <State>ON</State> </command></pre>	If password is enabled, then the last parameter in every command needs to be the password. If it is missing, the command will be ignored. <State> parameter is either ON or OFF
SetTimeZone	Sets the geographic time zone <pre><command>SetTimeZone <parameter1>-18000</parameter1> <parameter2>-14400</parameter2> <parameter3>3.2.0/02:00:00</parameter3> <parameter4>11.1.0/02:00:00</parameter4> </command></pre>	Parameter 1 is the time zone from GMT in seconds (-5 * 60 * 60). Parameter 2 is the time zone for DST. Parameter 3 is the spring time period, month.week.day / HH:MM:SS, parameter 4 is the fall time period, month.week.day / HH:MM:SS
GetClock	Requests the time currently set in the EZBridge internal clock <pre><?xml version="1.0"?> <command>GetClock</command></pre>	
SetClock	Sets the value in the EZBridge internal clock <pre><?xml version="1.0"?> <command>SetClock <time>1229515142006</time> </command></pre>	Format of <time>: AABBCDDEEFFFF Where AA = Mon (starting with 1 = Jan) BB = Date (starting with 1) C = Day of Week, 0 = sunday DD = Hour EE = Minute FFFF = Year
SetNTPServer	Sets the URL (or IP) for the NTP server to use (default is time.nist.gov) <pre><?xml version="1.0"?> <command>SetNTPServer <NTPServer>10.100.135.150</NTPServer> </command></pre>	<NTPServer> can be either an IP address or a URL
Upgrade	Loads a new firmware image to the EZBridge. The unit will restart after this command. <pre><?xml version="1.0"?> <command>Upgrade</command></pre>	
NetCfg	Sets the network configuration. EZbridge will require a restart after this command.	

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Command	XML Template	Notes
	<pre><?xml version="1.0"?> <command>NetCfg <dhcp>OFF</dhcp> <ip>10.100.135.23</ip> <netmask>255.255.255.0</netmask> <gateway>10.100.135.22</gateway> <port>8002</port> </command></pre>	<p><dhcp>: ON or OFF <IP Address>: <NetMask>: <Gateway>: <Port>: Internal EZBridge port (default is 8002)></p>
Reset	Restarts the EZBridge – Does a reboot	
	<pre><?xml version="1.0"?> <command>Reset</command></pre>	
LstTimers	Lists the timers stored in EZBridge	
	<pre><?xml version="1.0"?> <command>LstTimers</command></pre>	
ClrTimers	Clear all timers in EZBridge	
	<pre><?xml version="1.0"?> <command>ClrTimers</command></pre>	
AddTimer	Adds a timer to EZBridge	
	<pre><?xml version="1.0"?> <command>AddTimer <days>1234567</days> <time>R-0409</time> <moduleid>123456</moduleid> <cmd>C113C202</cmd> </command></pre>	<p><days>: List of days timer is active (1 = Sunday, 7 = Saturday) <Time>: format HHMM where HH is the hour, and MM is the minute; or ABHHMM where A can be T for sunset and R for sunrise, and B can be + or -. Using this format provide a delta from sunrise or sunset. <ModuleID>: ID of module to send action - Insteon format is XX.YY.ZZ, X10 is XAA where AA is the unit code, format can also be a label if created – if label is entered but does not exist in database, the timer is automatically deleted <Cmd>: Can be an Insteon command (format is C1XXC2YY) or an X10 command, just enter second byte value.</p>
GetTimer	Requests the given timer record	
	<pre><?xml version="1.0"?> <command>GetTimer <record>1</record> </command></pre>	<record>: Timer number (1-1024)
SetTimer	Sets specific record to timer values. Will create a new record or overwrite an existing one	
	<pre><?xml version="1.0"?> <command>SetTimer <record>05</record> <days>1234567</days> <time>R-0409</time> <moduleid>123456</moduleid> <cmd>C113C200</cmd> </command></pre>	<p><Record number>, <days>: List of days timer is active (1 = Sunday, 7 = Saturday) <Time>: format HHMM where HH is the hour, and MM is the minute; or ABHHMM where A can be T for sunset and R for sunrise, and B can be + or -. Using this format provide a delta from sunrise or sunset. <ModuleID>: ID of module to send</p>

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Command	XML Template	Notes
		action - Insteon format is XX.YY.ZZ, X10 is XAA where AA is the unit code, format can also be a label if created – if label is entered but does not exist in database, the timer is automatically deleted <Cmd>: Can be an Insteon command (format is C1XXC2YY) or an X10 command, just enter second byte value.
DelTimer	Deletes a specific timer record	
	<?xml version="1.0"?> <command>DelTimer <record>1</record> </command>	<record>: Timer number (1-200)
GetVersion	Identifies the PLM's 3 byte Insteon ID, device type, device subtype, and firmware version	
	<?xml version="1.0"?> <command>GetVersion</command>	
SndGrp	Sends a command to a linked group of responders	
	<?xml version="1.0"?> <command>SndGrp <parameter1>group</parameter1> <parameter2>command1</parameter2> <parameter3>command2</parameter3> </command>	See Appendix B for Insteon Commands The EZBridge provides an immediate response to this message, echoing the message with an ACK or NACK byte at the end (0x06 = ACK, 0x15 = NACK)
SndIns	Sends a raw standard or extended Insteon message to a specific device	
	<?xml version="1.0"?> <command>SndIns <parameter1>to id high byte</parameter1> <parameter2> to id high byte </parameter2> <parameter3> to id high byte </parameter3> <parameter4>flags</parameter4> <parameter5>Command1</parameter5> <parameter6>Command2</parameter6> </command>	See Appendix B for Insteon Commands and Appendix C for Flag information. The EZBridge provides an immediate response to this message, echoing the message with an ACK or NACK byte at the end (0x06 = ACK, 0x15 = NACK)
SndX10	Sends a raw X10 message	
	<?xml version="1.0"?> <command>SndX10 <Parameter1> rawX10</Parameter1> <Parameter2> X10Flag </Parameter2> </command>	<rawX10>: The four most significant bits indicate the House Code and the four least significant bits represent the Unit Code. <X10Flag>: The most significant byte denotes a command and unit address. See X10 translation table in Appendix A The EZBridge provides an immediate response to this message, echoing the message with an ACK or NACK byte at the end (0x06 = ACK, 0x15 = NACK)
StLnk	Starts electronic linking (same as doing a "Press & Hold" on the PLM pushbutton)	
	<?xml version="1.0"?> <command>StLnk	<code>: the type of link to establish 0x00 link as a Responder (slave)

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Command	XML Template	Notes
	<pre><Parameter1> code</Parameter1> <Parameter2>group</Parameter2> </command></pre>	<p>0x01 link as a Sender (master) 0x03 link as master or slave depending on whether the PLM initiates the link or not 0xFF will delete the link <i><group></i>: the group to be linked to or deleted</p> <p>The EZBridge provides an immediate response to this message, echoing the message with an ACK or NACK byte at the end (0x06 = ACK, 0x15 = NACK)</p>
CancelLnk	Stops (takes PLM out of) linking mode	
	<pre><?xml version="1.0"?> <command>CancelLnk</command></pre>	<p>The EZBridge provides an immediate response to this message, echoing the message with an ACK or NACK byte at the end (0x06 = ACK, 0x15 = NACK)</p>
SetDev	Allows for setting identification of the Host connected to the PLM (should be EZBridge)	
	<pre><?xml version="1.0"?> <command>Setdev <parameter1>device type</parameter1> <parameter2>device sub type</parameter2> <parameter3>version</parameter3> </command></pre>	<p>The EZBridge provides an immediate response to this message, echoing the message with an ACK or NACK byte at the end (0x06 = ACK, 0x15 = NACK)</p>
RstPLM	Clears the entire Links database from the PLM permanent storage	
	<pre><?xml version="1.0"?> <command>RstPLM</command></pre>	<p>This command is irreversible, so please use with care. The EZBridge provides an immediate response to this message, echoing the message with an ACK or NACK byte at the end (0x06 = ACK, 0x15 = NACK)</p>
GetLnk	Requests the first record in the links database of the PLM	
	<pre><?xml version="1.0"?> <command>GetLnk</command></pre>	<p>The EZBridge provides an immediate response to this message, echoing the message with an ACK or NACK byte at the end (0x06 = ACK, 0x15 = NACK)</p>
GetNext	Requests the next record in the links database of the PLM	
	<pre><?xml version="1.0"?> <command>GetNext</command></pre>	<p>The EZBridge provides an immediate response to this message, echoing the message with an ACK or NACK byte at the end (0x06 = ACK, 0x15 = NACK)</p>
SetCfg	Set the PLM configuration bits	
	<pre><?xml version="1.0"?> <command>SetCfg <parameter1>configuration</parameter1> </command></pre>	<p><i><Configuration></i>: Bit 7: disables automatic linking when the user pushes and holds the set button Bit 6: puts the PLM into “monitor” mode. Bit 5: Passes control of the LED</p>

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Command	XML Template	Notes
		from the PLM to the user The EZBridge provides an immediate response to this message, echoing the message with an ACK or NACK byte at the end (0x06 = ACK, 0x15 = NACK)
GetLnkData	Gets the link record from the PLM links database for the last received message.	
	<?xml version="1.0"?> <command>GetLnkData</command>	The EZBridge provides an immediate response to this message, echoing the message with an ACK or NACK byte at the end (0x06 = ACK, 0x15 = NACK)
LEDON	Turns the PLM LED on (assuming PLM is configured for user control of the LED)	
	<?xml version="1.0"?> <command>LEDON</command>	The EZBridge provides an immediate response to this message, echoing the message with an ACK or NACK byte at the end (0x06 = ACK, 0x15 = NACK)
LEDOFF	Turns the PLM LED off (assuming PLM is configured for user control of the LED)	
	<?xml version="1.0"?> <command>LEDOFF</command>	The EZBridge provides an immediate response to this message, echoing the message with an ACK or NACK byte at the end (0x06 = ACK, 0x15 = NACK)
MngLnk	Updates a link record in the PLM links database	
	<?xml version="1.0"?> <command>InsLnkSts <Parameter1>control flags</Parameter1> <Parameter2>link flags</Parameter2> <Parameter3>group</Parameter3> <Parameter4>id high byte</Parameter4> <Parameter5>id middle byte</Parameter5> <Parameter6>id low byte</Parameter6> <Parameter7>link data 1</Parameter8> <Parameter8> link data 2</Parameter9> <Parameter9> link data 3</Parameter10> </command>	<control flags>: 0x00 Does a record exist for this ID and Group 0x20 Update/Add Link 0x40 Add Master Link 0x41 Add Slave Link 0x80 Delete Link <link flags>: The link record flag as follows: bit 1: Set if record has been used before bit 2: Set if group follows slave change bit 3: Set if ID is X10 bit 4: Set if Slave reports local status change bit 5: Set if ACK required (currently always set to 1) bit 6: Set if Master of device ID, 0 if slave to ID bit 7: Set if record is in use <link data n>: device specific The EZBridge provides an immediate response to this message, echoing the message with an ACK or NACK byte

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Command	XML Template	Notes
		at the end (0x06 = ACK, 0x15 = NACK)
GetCfg	Requests PLM configuration message	
	<pre><?xml version="1.0"?> <command>GetCfg</command></pre>	The EZBridge provides an immediate response to this message, echoing the message with an ACK or NACK byte at the end (0x06 = ACK, 0x15 = NACK)
LstMacros	Lists the Macros stored in EZBridge	
	<pre><?xml version="1.0"?> <command>LstMacros</command></pre>	
ClrMacros	Clear all macros in EZBridge	
	<pre><?xml version="1.0"?> <command>ClrMacros</command></pre>	
AddMacro	Adds a macro to EZBridge	
	<pre><?xml version="1.0"?> <command>AddMacro <actor>X0E</actor> <actor_event>02</actor_event> <actor_time>A</actor_time> <actor_days>1234567</actor_days> <responder>00.4F.CC</responder> <responder_action>C111C2FF</responder_action> <responder_delay>00:00:00</responder_delay> </command></pre>	<p><Actor>: Label or ID (X10 is the letter X followed by house/unit code, Insteon is 01.23.45 format),</p> <p><actor_event>: event that occurred (for insteon format is C1XXC2YY where XX is the hex of command1 and YY is the hex for command2),</p> <p><actor_time>: time allowed (A for always, or a window – Format is R or S for sunrise or sunset, or an absolute time, followed by a + and or -, followed by another time period – example R+01:00 will be from sunrise to one hour after sunrise, 17:00+-00:30 will be a window from 4:30PM to 5:30PM)</p> <p><actor_days>: days to respond (1=Sunday)</p> <p><responder>: ID or label</p> <p><responder action>: action to take</p> <p><responder_delay>: delay if any to take, in the format HH:MM:SS</p>
GetMacro	Requests the given macro record	
	<pre><?xml version="1.0"?> <command>GetMacro <record>1</record> </command></pre>	
SetMacro	Sets specific record to macro values. Will create a new record or overwrite an existing one	
	<pre><?xml version="1.0"?> <command>SetTimer <record>05</record> <actor>X0E</actor> <actor_event>02</actor_event> <actor_time>S+-02:00</actor_time> <actor_days>1234567</actor_days> <responder>office lamp</responder> <responder_action>C111C200</responder_action> <responder_delay>00:00:00</responder_delay></pre>	<p><Record>: record number to modify.</p> <p><Actor>: Label or ID (X10 is the letter X followed by house/unit code, Insteon is 01.23.45 format),</p> <p><actor_event>: event that occurred (for insteon format is C1XXC2YY where XX is the hex of command1 and YY is the hex for command2),</p> <p><actor_time>: time allowed (A for always, or a window – Format is R or</p>

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Command	XML Template	Notes
	</command>	S for sunrise or sunset, or an absolute time, followed by a + and or -, followed by another time period – example R+01:00 will be from sunrise to one hour after sunrise, 17:00+-00:30 will be a window from 4:30PM to 5:30PM) <actor days>: days to respond (1=Sunday) <responder>: ID or label <responder action>: action to take <responder_delay>: delay if any to take, in the format HH:MM:SS
DelMacro	Deletes a specific macro record	
	<?xml version="1.0"?> <command>DelMacro <record>1</record> </command>	
LstDevices	Lists the devices stored in EZBridge	
	<?xml version="1.0"?> <command>LstDevices</command>	
ClrDevices	Clears (deletes) all devices in EZBridge	
	<?xml version="1.0"?> <command>ClrDevices</command>	
AddDevice	Adds a device to EZBridge	
	<?xml version="1.0"?> <command>AddDevice <label>mylabel</label> <id>01.23.45</id> <devcat>012</devcat> <protocol>INSTEON</protocol> </command>	<label>: character string – limited to 20 characters. <id>: Insteon ID (format is 01.23.45 or an X10 ID, format is X followed by the unit code). <Devcat>: Numeric field to identify the device type – currently not used. <protocol>: INSTEON or X10
GetDevice	Requests the given label record	
	<?xml version="1.0"?> <command>GetDevice <record>1</record> </command>	
SetDevice	Sets specific record to label values. Will create a new record or overwrite an existing one	
	<?xml version="1.0"?> <command>SetDevice <record>05</record> <label>mylabel</label> <id>X0E</id> <devcat>012</devcat> <protocol>X10</protocol> </command>	<record>: record number of the device to modify, <label>: character string – limited to 20 characters. <id>: is an Insteon ID (format is 01.23.45 or an X10 ID, format is X followed by the unit code). <Devcat>: Numeric field to identify the device type – currently not used. <protocol>: INSTEON or X10
DelDevice	Deletes a specific label record	
	<?xml version="1.0"?> <command>DelDevice <record>1</record>	

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Command	XML Template	Notes
	</command>	
LstZones	Lists the zones stored in EZBridge	
	<?xml version="1.0"?> <command>LstZones</command>	
ClrZones	Clears (deletes) all zones in EZBridge	
	<?xml version="1.0"?> <command>ClrZones</command>	
AddZone	Adds a zone to EZBridge	
	<?xml version="1.0"?> <command>AddZone <ZoneName>myzone</ZoneName> </command>	
GetZone	Requests the given zone record	
	<?xml version="1.0"?> <command>GetZone <record>1</record> </command>	
SetZone	Sets specific record to defined values. Will create a new record or overwrite an existing one	
	<?xml version="1.0"?> <command>SetZone <record>05</record> <ZoneName>myzone</ZoneName> </command>	
DelZone	Deletes a specific zone record	
	<?xml version="1.0"?> <command>DelZone <record>1</record> </command>	
AddDevZone	Adds a device reference to a zone	
	<?xml version="1.0"?> <command>AddDevZone <ZoneName>myzone</ZoneName> <Device>5</Device> </command>	<Device> refers to the device number in the device database. Zones allow for logical grouping of devices within the bridge.
DelDevZone	Deletes a specific label record	
	<?xml version="1.0"?> <command>AddDevZone <ZoneName>myzone</ZoneName> <Device>5</Device> </command>	See above for device number definition. Deletes device reference from zone.

Command Set – Messages Sent from EZBridge to Clients

Message	XML Template	Notes
InsStdMsg	Standard Insteon message received from a <u>linked</u> sender or responder. <pre><?xml version="1.0"?> <response>InstStdMsg <Parameter1>0x02</Parameter1> <Parameter2>0x50</Parameter2> <Parameter3>from id high byte</Parameter3> <Parameter4>from id middle byte</Parameter4> <Parameter5>from id low byte</Parameter5> <Parameter6>to id high byte</Parameter6> <Parameter7>to id middle byte</Parameter7> <Parameter8>to id low byte</Parameter8> <Parameter9>message flags</Parameter9> <Parameter10>command 1</Parameter10> <Parameter11>command 2</Parameter11> </response></pre>	<p>If the message is a group broadcast (bits 7 and 6 of the <message flags> byte are set), then:</p> <ul style="list-style-type: none"> <from id high byte>: Set to 0x00 <from id middle byte>: Set to 0x00 <from id low byte>: Indicates the group number <p>Messages from devices that are not in the PLM links database are not included.</p> <p>See appendix B and C for command and flag format</p>
InsExtMsg	Extended Insteon message received from a linked sender or responder <pre><?xml version="1.0"?> <response>InstStdMsg <Parameter1>0x02</Parameter1> <Parameter2>0x51</Parameter2> <Parameter3>from id high byte</Parameter3> <Parameter4>from id middle byte</Parameter4> <Parameter5>from id low byte</Parameter5> <Parameter6>to id high byte</Parameter6> <Parameter7>to id middle byte</Parameter7> <Parameter8>to id low byte</Parameter8> <Parameter9>message flags</Parameter9> <Parameter10>command 1</Parameter10> <Parameter11>command 2</Parameter11> <Parameter12:26>D1:D14</Parameter12:26> </response></pre>	<p><Parameter12:26>D1:D14</Parameter12:26> means that up to 14 bytes of extended data are received.</p> <p>See appendix B and C for command and flag format</p>
X10Msg	X10 Message Received <pre><?xml version="1.0"?> <response>X10Msg <Parameter1>0x02</Parameter1> <Parameter2>0x52</Parameter2> <Parameter3>rawX10</Parameter3> <Parameter4>X10Flag</Parameter4> </response></pre>	<p><rawX10>: The four most significant bits indicate the House Code and the four least significant bits represent the Unit Code.</p> <p><X10Flag>: The most significant byte denotes a command and unit address. See X10 translation table in Appendix A</p>
InsLnkSts	A link process has been completed between the PLM and either a controller or responder.	

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Message	XML Template	Notes
	<pre><?xml version="1.0"?> <response>InsLnkSts <Parameter1>0x02</Parameter1> <Parameter2>0x53</Parameter2> <Parameter3>code</Parameter3> <Parameter4>group</Parameter4> <Parameter5>id high byte</Parameter5> <Parameter6>id middle byte</Parameter6> <Parameter7>id low byte</Parameter7> <Parameter8>device type</Parameter8> <Parameter9>device subtype</Parameter9> <Parameter10>release</Parameter10> </response></pre>	<p><code>: Indicates the type of link made.</p> <ul style="list-style-type: none"> 0x00 - the PLM is a slave to this device 0x01 - the PLM is a master of this device 0xFF - the link to the device was deleted <p>If done manually (through set button) the relationship between the PLM and the device is determined automatically.</p> <p><group>: the group number that was assigned to this link. If done manually (through set button) the group number is automatically assigned by the PLM</p> <p>The <device type>, <device subtype> and <release> parameters are only valid when the PLM is a master to the linked device</p> <p>The master/slave designation and group number can be assigned by using the “Start Linking” command.</p>
BtnRpt	Reports when the user operates the SET pushbutton on the PLM.	
	<pre><?xml version="1.0"?> <response>BtnRpt <Parameter1>0x02</Parameter1> <Parameter2>0x54</Parameter2> </Parameter3> button event </Parameter3> </response></pre>	<p><button event>: The type of button event</p> <ul style="list-style-type: none"> 0x02 means the button was tapped 0x03 means the button has been pressed and held for more than three seconds (this automatically puts the PLM in linking mode) 0x04 means the button was released after a press and hold event was recorded.
UsrRst	The user held down the set button for at least 10 seconds when power was first applied.	
	<pre><?xml version="1.0"?> <response>UsrRst <Parameter1>0x02</Parameter1> <Parameter2>0x55</Parameter2> </response></pre>	
GrpEvtRpt	Reports a group member that you are trying to control did not acknowledge the command sent.	
	<pre><?xml version="1.0"?> <response>GrpEvtRpt <Parameter1>0x02</Parameter1> <Parameter2>0x56</Parameter2> <Parameter3>0x01</Parameter3> <Parameter4>group</Parameter4> <Parameter5>id high byte</Parameter5> <Parameter6>id middle byte</Parameter6> <Parameter7>id low byte</Parameter7> </response></pre>	
LnkData	Provides a record from the PLM Link Database in response to a GetLink or GetNext command	

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Message	XML Template	Notes
	<pre><?xml version="1.0"?> <response>LnkData <Parameter1>0x02</Parameter1> <Parameter2>0x57</Parameter2> <Parameter3>link flags</Parameter3> <Parameter4>group</Parameter4> <Parameter5>id high byte</Parameter5> <Parameter6>id middle byte</Parameter6> <Parameter7>id low byte</Parameter7> <Parameter8>link data 1</Parameter8> <Parameter9>link data 2</Parameter9> <Parameter10>link data 3</Parameter10> </response></pre>	<p><link flags>: The link record flag as follows:</p> <ul style="list-style-type: none"> bit 1: Set if record has been used before bit 2: Set if group follows slave change bit 3: Set if ID is X10 bit 4: Set if Slave reports local status change bit 5: Set if ACK required (currently always set to 1) bit 6: Set if Master of device ID, 0 if slave to ID bit 7: Set if record is in use <p><link data n>: device specific</p>
GetVersion Response	Returns the version information stored in the PLM	
	<pre><?xml version="1.0"?> <response>GetVersion <Parameter1>0x02</Parameter1> <Parameter2>0x60</Parameter2> <Parameter3>id high byte</Parameter3> <Parameter4>id middle byte</Parameter4> <Parameter5>id low byte</Parameter5> <Parameter6>device cat</Parameter6> <Parameter7>device subcat</Parameter7> <Parameter8>release</Parameter8> <Parameter9>ack</Parameter9> </response></pre>	
GetCfg Response	Returns the configuration message from the PLM	
	<pre><?xml version="1.0"?> <response>GetCfg <Parameter1>0x02</Parameter1> <Parameter2>0x73</Parameter2> <Parameter3>configuration</Parameter3> <Parameter4>id middle byte</Parameter4> <Parameter5>reserved1</Parameter5> <Parameter6>reserved2</Parameter6> <Parameter7>reserved3</Parameter7> <Parameter8>ack/nack</Parameter8> </response></pre>	<p><Configuration>:</p> <ul style="list-style-type: none"> Bit 7: disables automatic linking when the user pushes and holds the set button Bit 6: puts the PLM into "monitor" mode. Bit 5: Passes control of the LED from the PLM to the user
LstTimers Response	Returns all timers record in EZBridge	
	<pre><?xml version="1.0"?> <Response> LstTimers <Tr>0<D>1111111</D><T>R-409</T> <M>lamp</M><CMD>C111C2FF</CMD></Tr> <Tr>1<D>1111111</D><T>S</T><M>bed lamp</M><CMD>C111C2FF</CMD></Tr> </response></pre>	<p><D>: Days Active (seven numbers 1 or 0, first number represents Sunday. 1 is active)</p> <p><T>: Time in military format</p> <p><M>: Module ID</p> <p><CMD>: Command (Insteon or X10)</p>
GetTimer Response	Returns a specified timer record	

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Message	XML Template	Notes
	<pre><?xml version="1.0"?> <Response> GetTimer <Tr>1<D>1111111</D><T>S</T><M>bed lamp</M><CMD>C111C2FF</CMD></Tr> </Response></pre>	See LstTimers Response above
GetRevision Response	Returns current revision of EZBridge	
	<pre><?xml version="1.0"?> <Response> GetRevision <Parameter1>Revision 1.00</Revision> </Response></pre>	<Revision>
GetLatLong Response	Returns the currently set latitude / longitude	
	<pre><?xml version="1.0"?> <DS>LatLong <Lat>33.50182</Lat> <Long>-117.661652</LongT> </DS></pre>	
GetClock Response	Returns the currently set time	
	<pre><?xml version="1.0"?> <response>GetClock <Parameter1>01/21/2007 02:23:25</Parameter1> </response></pre>	
LstMacros Response	Returns all macro records in EZBridge	
	<pre><?xml version="1.0"?> <Response> LstMacros <MR>0<AID>X0E</AID><AEvent>02</AEve nt><ATime>A</ATime><ADays>1111111</ ADays><RID>00.4F.CC</RID><RAction>C 111C200</RAction><RDelay>00:00:00</ RDelay></MR> <MR>1<AID>X0E</AID><AEvent>02</AEve nt><ATime>A</ATime><ADays>1111111</ ADays><RID>00.4F.CC</RID><RAction>C 111C2FF</RAction><RDelay>00:00:00</ RDelay></MR> </Response></pre>	<p><MR>: Record Number <AID>: Actor ID <AEvent>: Actor Event <Atime>: Actor Window <Adays>: are the days the macro is active, 1 is active, 0 is inactive, starting with Sunday <RID>: Responder ID <RACTION>: Responder Action <RDELAY>: Responder delay</p>
GetMacro Response	Returns a specified macro record	
	<pre><?xml version="1.0"?> <Response> GetMacro <MR>0<AID>X0E</AID><AEvent>02</AEve nt><ATime>A</ATime><ADays>1111111</ ADays><RID>00.4F.CC</RID><RAction>C 111C200</RAction><RDelay>00:00:00</ RDelay></MR> </Response></pre>	See above
LstDevices Response	Returns all label records in EZBridge	

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Message	XML Template	Notes
	<pre> <?xml version="1.0"?> <Response> LstDevices <DR>0<Label>mylabel</Label> <ID>X0E</ID> <DevCat>012</DevCat> <Protocol>X10</Protocol> <DeviceStatus>OnLevel=100</DeviceStatus></D DR> <DR>1<Label>mylabel</Label> <ID>Lamp</ID> <DevCat>123</DevCat> <Protocol>INSTEON</Protocol> <DeviceStatus>OnLevel=0</DeviceStatus></D R> </Response> </pre>	<p> <DR>: Device record <ID>: Device ID <DevCat>: Device category <Protocol>: Protocol for this device <DeviceStatus>: String reflecting the current status of the device </p>
GetDevice Response	Returns a specified macro record	
	<pre> <?xml version="1.0"?> <Response> GetDevice <DR>1<Label>mylabel</Label> <ID>X0E</ID> <DevCat>012</DevCat> <Protocol>X10</Protocol> <DeviceStatus>OnLevel=0</DeviceStatus></D R> </Response> </pre>	See Above

Appendix A - X10 Translation Table

	Four most significant bits of <raw X10>		Four least significant bits of <raw X10>	
4-bit code	House Code	Unit Code (<X10 Flag = 0x00>)	Command (<X10 Flag = 0x80>)	
0x6	A	1	All Lights Off	
0xE	B	2	Status=off	
0x2	C	3	On	
0xA	D	4	Pre-Set Dim	
0x1	E	5	All Lights On	
0x9	F	6	Hail Acknowledge	
0x5	G	7	Bright	
0xD	H	8	Status=on	
0x7	I	9	Extended Code	
0xF	J	10	Status Request	
0x3	K	11	Off	
0xB	L	12	Pre-Set Dim	
0x0	M	13	All Units Off	
0x8	N	14	Hail Request	
0x4	O	15	Dim	
0xC	P	16	Extended Data (analog)	

Appendix B - Insteon Commands¹Insteon Commands²

Command Name	Command 1	Command 2	Description
Assign to Group	0x01	Group Number	Used during INSTEON Device Linking session.
Delete from Group	0x02	Group Number	Used during unlinking session.
Ping	0x10		Receiving device first returns an ACK message, then it sends a Device Identification Broadcast.
ON	0x11	On Level (0x00 - 0xFF), or Group number	
OFF	0x13	None, or Group number	
Bright	0x15	None, or Group number	Brighten one step. There are 32 steps from off to full brightness. Returned ACK message will contain the On-Level in Command 2.
Dim	0x16	None, or Group number	Dim one step. There are 32 steps from off to full brightness. Returned ACK message will contain the On-Level in Command 2.
Start Manual Change	0x17	1 = Up, 0 = Down	Begin changing On-Level.
Stop Manual Change	0x18	None	Stop changing On-Level.
Status Request	0x19	None	Returned ACK message will contain the status (often the On-Level) in Command 2. Command 1 will contain a Link Database Delta number that increments every time there is a change in the addressee's INSTEON Link Database.
Do Read EE	0x24	None	Read initialization values from EEPROM, so that they will take effect after being poked.
Set Address MSB	0x28	High byte of 16-bit address	Set Most-significant Byte of EEPROM address for peek or poke.

¹ This information if obtained from Smart Labs Insteon documentation

² See device specific documentation for device specific commands

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Command Name	Command 1	Command 2	Description
Poke	0x29	Byte to write	Poke Data byte into address previously loaded with Set Address MSB and Peek commands (Peek sets LSB).
Poke Extended	0x2A	LSB of address to begin writing up to 13 bytes to	Poke up to 13 bytes starting at the address whose high byte was previously set using Set Address MSB. This command must be sent within an Extended message. Put the number of bytes to poke in the first byte of User Data, and the actual bytes to poke in the remaining 13 bytes.
Peek	0x2B	LSB of address to peek or poke	Peek can be sent within a Standard or an Extended message. If Extended, put the number of bytes to peek in the first byte of User Data. The returned ACK message will contain the first peeked byte in Command 2. The Extended ACK message to an Extended Peek will return up to 14 remaining bytes in User Data. Peek is also used to set the LSB for one-byte pokes.
Peek Internal	0x2C	LSB of internal memory address to read from	Works like Peek, except only used to read from internal memory of a Smarthome ControlLinc V2.
Poke Internal	0x2D	Byte to write	Works like Poke, except only used to write one byte into internal EEPROM of a Smarthome ControlLinc V2.

Appendix C - Insteon Flag Definition³

Flag Structure (flag is a single byte, defined below):

<i>Bit Position</i>	<i>Flag</i>	<i>Meaning</i>
Bit 7 (Broadcast /NAK) (MSB)	Message Type Bit 6 (group) Bit 5 (Acknowledge)	100 = Broadcast Message 000 = Direct Message 001 = ACK of Direct Message 101 = NAK of Direct Message 110 = Group Broadcast Message 010 = Group Cleanup Direct Message 011 = ACK of Group Cleanup Direct Message 111 = NAK of Group Cleanup Direct Message
Bit 6 (Group)		
Bit 5 (Acknowledge)		
Bit 4		Extended 1 = Extended Message 0 = Standard Message
Bit 3	Hops Left Bit 2	00 = 0 message retransmissions remaining 01 = 1 message retransmission remaining 10 = 2 message retransmissions remaining 11 = 3 message retransmissions remaining
Bit 2		
Bit 1	Max Hops Bit 0 (LSB)	00 = Do not retransmit this message 01 = Retransmit this message 1 time maximum 10 = Retransmit this message 2 times maximum 11 = Retransmit this message 3 times maximum
Bit 0 (LSB)		

³ This information if obtained from Smart Labs Insteon documentation

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Document change log

Date	File Version	Changes
1/25/07	1.0	Initial release
2/27/07	1.1	Modified for EZBridge firmware release 1.1 – See release notes in front of document
3/20/07	1.2	Modified for EZBridge firmware release 1.12 – ToDo for Manual include explanation of ACK messages from EZBridge on send commands
4/1/07	1.3	Added Information regarding INSTEON messaging and PLM messaging
6/12/07	1.4	Corrected documentation errors, provided firmware release 1.13 information. Added information regarding updating the EZBridge and the UDP method of locating the EZBridge on the network.