1 Firmware Description

1.1 INSTEON Commands Supported

1.1.1 Standard length common INSTEON commands:

Assign to ALL-Link Group Command
Description: Sent when holding down the SET Button for 3 seconds on the device. Blinks the LED green for 4 minutes or until linked to another device.
Example (Hex): AA BB CC 01 0E XX CF 01 01 (where AA.BB.CC is the Device's ID)

SD Command	Message Direction	From Address (3 bytes)	To Address (3 bytes)	Message type	Cmd1 (1 byte)	Cmd2 (1 byte)	Notes
Assign to ALL-Link Group	From Device	Device's ID	0x01, 0x0E, 0xXX (firmware revision)	Broadcast	0x01	0x01	Sent when holding down SET Button for 3 seconds. Group number for 277V In-LineLinc Relay load is 0x01

Delete from ALL-Link Group Command
Description: Sent when holding down the SET Button for 3 seconds on the device, then pressing and holding the set button for 3 seconds. Blinks the LED red for 4 minutes or until unlinked from another device.
Example (Hex): AA BB CC 01 0E XX CF 02 01 (where AA.BB.CC is the Device's ID)

Delete from ALL-Link Group	From Device	Device's ID	0x01, 0xXX, 0xXX (firmware revision)	Broadcast	0x02	0x01	Group number for 277V In-LineLinc Relay load is 0x01

Enter Linking Mode Command
Description: Same as holding down the SET Button for 3 seconds on the device. Blinks the LED red for 4 minutes or until unlinked from another device.
Example (Hex): AA BB CC DD EE FF 0F 09 01 (where AA.BB.CC is the Device's ID, DD.EE.FF is the Sender's Id)

Enter Linking Mode	To device	Sender's ID	Device's ID	Direct	0x09	0x00 -> 0xFF (Don't Care Value; Always enter group 0x01 linking)	
	Response	Device's ID	Sender's ID	Ack	0x09	Same as sent	
	Sent from Device	Device's ID	0x01 0xXX 0xXX (firmware revision)	Broadcast	0x01	0x00	Same as holding down SET Button for 3 seconds

Enter Unlinking Mode Command
Description: Same as holding down the SET Button for 3 seconds on the device, then pressing and holding the set button for 3 seconds. Blinks the LED red for 4 minutes or until unlinked from another device.

Example (Hex): AA BB CC DD EE FF 0F 0A 01 (where AA.BB.CC is the Device's ID, DD.EE.FF is the Sender's Id)

Enter Unlinking Mode	To device	Sender's ID	Device's ID	Direct	0x0A	0x00 -> 0xFF (Don't Care Value; Always enter group 0x01 unlinking)	
	Response	Device's ID	Sender's ID	Ack	0x0A	Same as sent	
	Sent from Device	Device's ID	0x01 0x0E 0xXX (firmware revision)	Broadcast	0x01	0x00	Same as holding down SET Button for 3 seconds

Ping Command

Description: Same as holding down the SET Button for 3 seconds on the device, then pressing and holding the set button for 3 seconds. Blinks the LED red for 4 minutes or until unlinked from another device.

Example (Hex): AA BB CC DD EE FF 0F 0A 01 (where AA.BB.CC is the Device's ID, DD.EE.FF is the Sender's Id)

Ping	To device	Sender's ID	Device's ID	Direct	0x0F	0x00 -> 0xFF (Don't Care Value)	
	Response	Device's ID	Sender's ID	Ack	0x0F	Same as sent	

ID Request Command

Description: Same as holding down the SET Button for 3 seconds on the device, then pressing and holding the set button for 3 seconds. Blinks the LED red for 4 minutes or until unlinked from another device.

Example (Hex): AA BB CC DD EE FF 0F 0A 01 (where AA.BB.CC is the Device's ID, DD.EE.FF is the Sender's Id)

ID Request	To device	Sender's ID	Device's ID	Direct	0x10	0x00 -> 0xFF (Don't Care Value)	
	Response	Device's ID	Sender's ID	Ack	0x10	Same as sent	
	Sent from Device	Device's ID	0x01 0xXX 0xXX (firmware revision)	Broadcast	0x01	0x00	Same as holding down SET Button for 3 seconds, but device not in linking mode

Standard length 277V In-LineLinc Relay INSTEON commands:

SD Command	Message Direction	From Address (3 bytes)	To Address (3 bytes)	Message type	Cmd1 (1 byte)	Cmd2 (1 byte)	Notes
Light ON	To device	Sender's ID	Device's ID	Direct	0x11	0x00 -> 0xFF (on level)	Go to On-Level
	Response	Device's ID	Sender's ID	Ack	0x11	Same as sent	

Light ON	To device	Sender's	Device's ID	Direct	0x12	0x00 -> 0xFF	Go to On-

Fast		ID				(on level)	Level instantly
	Response	Device's ID	Sender's ID	Ack	0x12	Same as sent	

Light OFF	To device	Sender's ID	Device's ID	Direct	0x13	0x00 -> 0xFF (on level)	Go to Off at saved Ramp Rate
	Response	Device's ID	Sender's ID	Ack	0x13	Same as sent	

Light OFF Fast	To device	Sender's ID	Device's ID	Direct	0x14	0x00 -> 0xFF (Don't Care Value)	Go to Off instantly
	Response	Device's ID	Sender's ID	Ack	0x14	Same as sent	

Incremental Bright	To device	Sender's ID	Device's ID	Direct	0x15	0x00 -> 0xFF (Don't Care Value)	Brighten one step. There are 32 steps from off to full brightness
	Acknowledge	Device's ID	Sender's ID	Ack	0x15	Same as sent	

Incremental Dim	To device	Sender's ID	Device's ID	Direct	0x16	0x00 -> 0xFF (Don't Care Value)	Dim one step. There are 32 steps from off to full brightness
	Response	Device's ID	Sender's ID	Ack	0x16	Same as sent	

Start Manual Change	To device	Sender's ID	Device's ID	Direct	0x17	Direction 0x00 Down 0x01 Up 0x02 -> 0xFF Unused	Begin changing On-Level
	Response	Device's ID	Sender's ID	Ack	0x17	Same as sent	

Stop Manual Change	To device	Sender's ID	Device's ID	Direct	0x18	0x00 -> 0xFF (Don't Care Value)	Stop changing On-Level
	Response	Device's ID	Sender's ID	Ack	0x18	Same as sent	

SD Command	Message Direction	From Address (3 bytes)	To Address (3 bytes)	Message type	Cmd1 (1 byte)	Cmd2 (1 byte)	Notes
Read Operating Flags	To device	Sender's ID	Device's ID	Direct	0x1F	Operating Flags Command	See Read Operating Flags Table
	Response	Device's ID	Sender's ID	Ack	0x1F	Same as sent	

Read Operating Flags Table

0	bit 0 = Plock bit 1 = LED on TX bit 2 = Resume Dim bit bit 4 = LED OFF bit 5 = LoadSense
1	Data Base Delta flag….gets incremented with any change in the Database
2	s/n of last failure
3	s/n failure count
4	…
	bit 0 = TenD, bit 1 = NX10Flag, bit 2 = blinkonError, bit 3 = CleanupReport 0 = off 1 = On,
5	bit 4 = CS on Database/Property writes

SD Command	Message Direction	From Address (3 bytes)	To Address (3 bytes)	Message type	Cmd1 (1 byte)	Cmd2 (1 byte)	Notes
Set Operating Flags	To device	Sender's ID	Device's ID	Direct	0x20	Operating Flags Command	See Set Operating Flags Table below
	Response	Device's ID	Sender's ID	Ack	0x20	Same as sent	

Set Operating Flags Table

0	Programming lock On
1	**Programming lock off**
2	LED on with Insteon TX
3	**LED off with Insteon TX**
4	Resume Dim On
5	**Resume Dim Off**
6	…
7	**…**
8	Led Backlight Off
9	**Led Backlight On**
0A	KeyBeep On
0B	**KeyBeep Off**
0C	Rf Off…as an originator, will still hop messages
0D	**Rf On**
0E	Insteon Off
0F	**Insteon On….will go back to on every power cycle**
12	X10Offflag On Disables all X10 rx and tx
13	**X10Offflag Off**

SD Command	Message Direction	From Address (3 bytes)	To Address (3 bytes)	Message type	Cmd1 (1 byte)	Cmd2 (1 byte)	Notes
Instant On/Off	To device	Sender's ID	Device's ID	Direct	0x21	0x00 -> 0xFF (on level)	Uses instant Ramp Rate
	Response	Device's ID	Sender's ID	Ack	0x21	Same as sent	

Remote Tap of Set Button	To device	Sender's ID	Device's ID	Direct	0x25	0x00 = Set On Level, 0x02 = Set RR	Load must first be set to corresponding On Level (0x11)
	Response	Device's ID	Sender's ID	Ack	0x25	Same as sent	

Set Hi	To device	Sender's ID	Device's ID	Direct	0x28	0x00 -> 0xFF	Set EEAddrHi for Peek/Poke
	Response	Device's ID	Sender's ID	Ack	0x28	Same as sent	

Poke	To device	Sender's ID	Device's ID	Direct	0x29	0x00 -> 0xFF (LSB for Poke)	Poke at MSB/LSB
	Response	Device's ID	Sender's ID	Ack	0x29	Same as sent	

PeekEE	To device	Sender's ID	Device's ID	Direct	0x2B	0x00 -> 0xFF (LSB for Peek)	Peek at MSB/LSB
	Response	Device's ID	Sender's ID	Ack	0x2B	Same as sent	

RR On	To device	Sender's ID	Device's ID	Direct	0x2E	On level = 16*On + 0F RR = 2*RR+1	
	Response	Device's ID	Sender's ID	Ack	0x2E	Same as sent	

RR Off	To device	Sender's ID	Device's ID	Direct	0x2F	On level = 00 RR = 2*RR+1	
	Response	Device's ID	Sender's ID	Ack	0x2F	Same as sent	

Beep	To device	Sender's ID	Device's ID	Direct	0x30	0x00 -> 0xFF (Don't care value)	Beeps for standard duration (same as Set Button Pressed)
	Response	Device's ID	Sender's ID	Ack	0x30	Same as sent	

1.1.2 Extended length 277V In-LineLinc Relay INSTEON commands:

Extended Command	Message Direction	From Address (3 bytes)	To Address (3 bytes)	Message type	Cmd 1 (1 byte)	Cmd 2 (1 byte)	Data 1 (1 byte)	Data 2 (1 byte)
Get for Group/Button	To device	Sender's ID	Device's ID	Extended Direct	0x2E	0x00	0x00 -> 0xFF (Group/Button)	0x00
	Response	Device's ID	Sender's ID	Standard Ack	0x2E	0x00	N/A	N/A
	From device	Device's ID	Sender's ID	Extended Direct	0x2E	0x00	Same as sent	See Returned Extended Get Message Info

Returned Extended Get Message Info									
Data 2 (1 byte)	**Data 3**	**Data 4**	**Data 5**	**Data 6**	**Data 7**	**Data 8**	**Data 9**	**Data 10**	**Data 11**
0x01	Led Dimming	N/A	X10 House code (0x20 = none)	X10 Unit	Ramp Rate	On-Level	S/N	N/A	N/a

Extended Command	Message Direction	From Address (3 bytes)	To Address (3 bytes)	Message type	Cmd 1 (1 byte)	Cmd 2 (1 byte)	Data 1 (1 byte)	Data 2 (1 byte)
Set for LED Dimming for Group/Button	To device	Sender's ID	Device's ID	Extended Direct	0x2E	0x00	0x00 -> 0xFF (Group/Button)	See Set LED Dimming Info
	Response	Device's ID	Sender's ID	Standard Ack	0x2E	0x00	N/A	N/A

Set LED Dimming Info									
Data 2 (1 byte)	**Data 3**	**Data 4**	**Data 5**	**Data 6**	**Data 7**	**Data 8**	**Data 9**	**Data 10**	**Data 11**
0x03	0x00 -> 0xFF (Led Dimming, where 0x01 is the most dimming and FF is the least dimming 00 is no dimming so it is the brightest)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/a

Extended Command	Message Direction	From Address (3 bytes)	To Address (3 bytes)	Message type	Cmd 1 (1 byte)	Cmd 2 (1 byte)	Data 1 (1 byte)	Data 2 (1 byte)
Set X10 Address for Group/Button	To device	Sender's ID	Device's ID	Extended Direct	0x2E	0x00	0x00 -> 0xFF (Group/Button)	See Set X10 Address Info
	Response	Device's ID	Sender's ID	Standard Ack	0x2E	0x00	N/A	N/A

Set X10 Address Info									
Data 2 (1 byte)	**Data 3**	**Data 4**	**Data 5**	**Data 6**	**Data 7**	**Data 8**	**Data 9**	**Data 10**	**Data 11**
0x04	0x00 -> 0xFF (House Code, 0x20 for none)	0x00 -> 0xFF (Unit Code)	N/A	N/A	N/A	N/A	N/A	N/A	N/a

Extended Command	Message Direction	From Address (3 bytes)	To Address (3 bytes)	Message type	Cmd1 (1 byte)	Cmd2 (1 byte)	Data 1 (1 byte)	Data 2 (1 byte)
Set Ramp Rate for Group/Button	To device	Sender's ID	Device's ID	Extended Direct	0x2E	0x00	0x00 -> 0xFF (Group/Button)	See Set Ramp Rate Info
	Response	Device's ID	Sender's ID	Standard Ack	0x2E	0x00	N/A	N/A

Set Ramp Rate Info									
Data 2 (1 byte)	**Data 3**	**Data 4**	**Data 5**	**Data 6**	**Data 7**	**Data 8**	**Data 9**	**Data 10**	**Data 11**
0x05	0x01 -> 0x1F (Ramp Rate, 8 minutes to .1 seconds 0x00 = 2 seconds)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/a

Extended Command	Message Direction	From Address (3 bytes)	To Address (3 bytes)	Message type	Cmd1 (1 byte)	Cmd2 (1 byte)	Data 1 (1 byte)	Data 2 (1 byte)
Set On-Level for Group/Button	To device	Sender's ID	Device's ID	Extended Direct	0x2E	0x00	0x00 -> 0xFF (Group/Button)	See Set On-Level Info
	Response	Device's ID	Sender's ID	Standard Ack	0x2E	0x00	N/A	N/A

Set On-Level Info									
Data 2 (1 byte)	**Data 3**	**Data 4**	**Data 5**	**Data 6**	**Data 7**	**Data 8**	**Data 9**	**Data 10**	**Data 11**
0x06	0x00 -> 0xFF (On-level)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/a

Extended Command	**Message Direction**	**From Address (3 bytes)**	**To Address (3 bytes)**	**Message type**	**Cmd1 (1 byte)**	**Cmd2 (1 byte)**	**Data 1 (1 byte)**	**Data 2 (1 byte)**
Set LED Brightness	To device	Sender's ID	Device's ID	Extended Direct	0x2E	0x00	0x01	See Set LED Brightness Info
	Response	Device's ID	Sender's ID	Standard Ack	0x2E	0x00	N/A	N/A

Set LED Brightness Info									
Data 2 (1 byte)	**Data 3**	**Data 4**	**Data 5**	**Data 6**	**Data 7**	**Data 8**	**Data 9**	**…**	**Data 14**
0x07	0x11 -> 0x7F (for brightness)	0x00	0x00	0x00	0x00	0x00	0x00	0x00…	0x00

Extended Command	Message Direction	From Address (3 bytes)	To Address (3 bytes)	Message type	Cmd1 (1 byte)	Cmd2 (1 byte)	Data 1 (1 byte)	Data 2 (1 byte)
Set X10 All bit Mask	To device	Sender's ID	Device's ID	Extended Direct	0x2E	0x00	0x01	See Set X10 All bit Mask Info
	Response	Device's ID	Sender's ID	Standard Ack	0x2E	0x00	N/A	N/A

Set X10 All Bit Mask Info									
Data 2 (1 byte)	**Data 3**	**Data 4**	**Data 5**	**Data 6**	**Data 7**	**Data 8**	**Data 9**	**…**	**Data 14**
0x0A	Bit0 = 1:button1 will send All on/off instead of on/off	0x00	0x00	0x00	0x00	0x00	0x00	0x00…	0x00

Extended Command	Message Direction	From Address (3 bytes)	To Address (3 bytes)	Message type	Cmd1 (1 byte)	Cmd2 (1 byte)	Data 1 (1 byte)	Data 2 (1 byte)
Set on/off bit Mask	To device	Sender's ID	Device's ID	Extended Direct	0x2E	0x00	0x01	See Set on/off bit Mask Info
	Response	Device's ID	Sender's ID	Standard Ack	0x2E	0x00	N/A	N/A

Set on/off Bit Mask Info									
Data 2 (1 byte)	**Data 3**	**Data 4**	**Data 5**	**Data 6**	**Data 7**	**Data 8**	**Data 9**	**…**	**Data 14**
0x0B	Bit0 = 1:button1 non toggle button sending off, 0=off, 1=on…	0x00 (only if button set as non-toggle)	0x00	0x00	0x00	0x00	0x00	0x00…	0x00

Extended Command	Message Direction	From Address (3 bytes)	To Address (3 bytes)	Message type	Cmd1 (1 byte)	Cmd2 (1 byte)	Data 1 (1 byte)	Data 2 (1 byte)
Set Trigger group bit Mask	To device	Sender's ID	Device's ID	Extended Direct	0x2E	0x00	0x01	See Set Trigger group bit Mask Info
	Response	Device's ID	Sender's ID	Standard Ack	0x2E	0x00	N/A	N/A

Set Trigger Group Bit Mask Info									
Data 2 (1 byte)	**Data 3**	**Data 4**	**Data 5**	**Data 6**	**Data 7**	**Data 8**	**Data 9**	**…**	**Data 14**
0x0C	Bit0 = 1:button1 trigger button…	0x00	0x00	0x00	0x00	0x00	0x00	0x00…	0x00

Extended Command	Message Direction	From Address (3 bytes)	To Address (3 bytes)	Message type	Cmd1 (1 byte)	Cmd2 (1 byte)	Data 1 (1 byte)	Data 2 (1 byte)
Get Database	To device	Sender's ID	Device's ID	Extended Direct	0x2F	0x00	0x00 -> 0xFF (Don't Care Value)	See Get Database Info
	Response	Device's ID	Sender's ID	Standard Ack	0x2F	0x00	N/A	N/A
	From device	Device's ID	Sender's ID	Extended Direct	0x2E	0x00	Same as sent	See Returned Extended Get Database Info

Get Database Info									
Data 2 (1 byte)	**Data 3**	**Data 4**	**Data 5**	**Data 6**	**Data 7**	**Data 8**	**Data 9**	**Data 10**	**Data 11**
0x00	0x00 -> 0xFF (Hi Byte Address)	0x00 -> 0xFF (Lo Byte Address)	0x00 -> 0xFF (# of Records, 0x00 dumps all records	N/A	N/A	N/A	N/A	N/A	N/a

Returned Extended Get Database Info (will continue to be sent until # of records is sent or until the first never been used record is sent)									
Data 2 (1 byte)	**Data 3**	**Data 4 (1 byte)**	**Data 5**	**Data 6**	**Data 7**	**Data 8**	**Data 9**	**…**	**Data 13**
0x01	0x00 -> 0xFF (Hi Byte Address)	0x00 -> 0xFF (Lo Byte Address)	0x00	Byte 1 of record	Byte 2 of record	Byte 3 of record	Byte 4 of record		Byte 8 of record

Extended Command	Message Direction	From Address (3 bytes)	To Address (3 bytes)	Message type	Cmd1 (1 byte)	Cmd2 (1 byte)	Data 1 (1 byte)	Data 2 (1 byte)
Set Database	To device	Sender's ID	Device's ID	Extended Direct	0x2F	0x00	0x00 -> 0xFF (Don't Care Value)	See Set Database Info
	Response	Device's ID	Sender's ID	Standard Ack	0x2F	0x00	N/A	N/A

Set Database Info									
Data 2 (1 byte)	**Data 3**	**Data 4 (1 byte)**	**Data 5**	**Data 6**	**Data 7**	**Data 8**	**Data 9**	**…**	**Data 13**
0x02	0x00 -> 0xFF (Hi Byte Address)	0x00 -> 0xFF (Lo Byte Address)	0x01 -> 0x08 (# of bytes to write, over 0x08 is an error and ignored)	Byte 1 of data	Byte 2 of data	Byte 3 of data	Byte 4 of data		Byte 8 of data

Extended Command	**Message Direction**	**From Address (3 bytes)**	**To Address (3 bytes)**	**Message type**	**Cmd1 (1 byte)**	**Cmd2 (1 byte)**	**Data 1 (1 byte)**	**Data 2 (1 byte)**
Trigger Group	To device	Sender's ID	Device's ID	Extended Direct	0x30	0x00	0x00 -> 0xFF (Group/Button)	See Trigger Group Info
	Response	Device's ID	Sender's ID	Standard Ack	0x30	0x00	N/A	N/A

Trigger Group Info									
Data 2 (1 byte)	**Data 3**	**Data 4 (1 byte)**	**Data 5**	**Data 6**	**Data 7**	**Data 8**	**Data 9**	**…**	**Data 13**
0x00 = use local On-Level, 0x01 = use Data 3 Level (Note: The Command to the group is not parsed, so if you want the local load to go off, you must set data2 to 1 and data3 to 0)	0x00 -> 0xFF (On-Level if data2 = 0x01)	Cmd1	Cmd2	0x00 = local Ramp Rate, 0x01 = instant Ramp Rate	N/A	N/A	N/A		N/A