

1.1 INSTEON Commands Supported

1.1.1 Standard length common INSTEON commands:

ID Request Command

Description: Same as tapping a button on the device, then pressing and holding the set button for 3 seconds. Blinks the LED green for 4 minutes or until linked to 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	0x00 0x10 0xXX (firmware revision)	Broadcast	0x01	0x00	Same as holding down SET Button for 3 seconds, but device not in linking mode

Standard length RemoteLinc2 INSTEON commands:

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, bit 2 = Beeper on, bit bit 3 = Stay Awake, bit 4 = Listen only, bit 5 = No I'm Alive broadcasts, bit 6 = Grouped
1	Data Base Delta flag....gets incremented with any change in the Database

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
3	LED off
4	Beeper On
5	Beeper Off
6	Stayawake On uses FF for the awake interval
7	Stayawake Off
8	Keyfob: toggle buttons (Not used ListenOnly On in remotelinc)
9	KeyFob Toggle Off (RemoteLinc not used ListenOnly Off) sends a message upon waking up
0x0A	NolmAlive On doesn't wake up on its own
0B	NolmAlive Off
0E	Grouped Off
0F	Grouped On

Note: In Grouped On mode the groups for each button are as follows:

Top of RemoteLinc2

Group 1 off Group 1 On
Group 2 off Group 2 On
Group 3 off Group 3 On
Group 4 off Group 4 On

For Grouped Off mode the groups for each button are as follows:

Top of RemoteLinc2

Group 1 on/Off Group 2 on/Off
Group 3 on/Off Group 4 on/Off
Group 5 on/Off Group 6 on/Off
Group 7 on/Off Group 8 on/Off

1.1.2 Extended length RemoteLinc2 INSTEON commands:

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 for Group/Button	To device	Sender's ID	Device's ID	Extended Direct	0x2E	0x00	0x01	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	Awake Interval	Sleep Interval	Broadcast Number	Trigger Group bit mask	LSB of sleep interval	App Retries	Config	Battery Level	See Returned Extended Get Message Info 2

Returned Extended Get Message Info 2									
Data 11 (1 byte)	Data 12	Data 13	Data 14						
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 Awake Interval	To device	Sender's ID	Device's ID	Extended Direct	0x2E	0x00	0x01	See Set Awake Interval Info
	Response	Device's ID	Sender's ID	Standard Ack	0x2E	0x00	N/A	N/A

Set Awake Interval Info									
Data 2 (1 byte)	Data 3	Data 4	Data 5	Data 6	Data 7	Data 8	Data 9	...	Data 14
0x02	0x00 -> 0xFF (in seconds)	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 Sleep Interval	To device	Sender's ID	Device's ID	Extended Direct	0x2E	0x00	0x01	See Set Sleep Interval Info
	Response	Device's ID	Sender's ID	Standard Ack	0x2E	0x00	N/A	N/A

Set Sleep Interval Info									
Data 2 (1 byte)	Data 3	Data 4	Data 5	Data 6	Data 7	Data 8	Data 9	...	Data 14
0x03	0x00 -> 0xFF (in 755.2 second intervals or 12.5 minute intervals)	0x00 -> 0xFF (in 2.3 second intervals)	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 Broadcast Number	To device	Sender's ID	Device's ID	Extended Direct	0x2E	0x00	0x01	See Set Broadcast Number Info
	Response	Device's ID	Sender's ID	Standard Ack	0x2E	0x00	N/A	N/A

Set Broadcast Number Info									
Data 2 (1 byte)	Data 3	Data 4	Data 5	Data 6	Data 7	Data 8	Data 9	...	Data 14
0x04	0x00 -> 0xFF (number of times I'm Alive will be broadcast)	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 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
0x05	Bit0 = 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)
Set App Retries	To device	Sender's ID	Device's ID	Extended Direct	0x2E	0x00	0x01	See Set App Retries Info
	Response	Device's ID	Sender's ID	Standard Ack	0x2E	0x00	N/A	N/A

Set App Retries Info									
Data 2 (1 byte)	Data 3	Data 4	Data 5	Data 6	Data 7	Data 8	Data 9	...	Data 14
0x06	0x00 -> 0xFF (default: 0x01, 0x00 = none and 0xFF = broadcast only)	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 Battery Low Level Trigger	To device	Sender's ID	Device's ID	Extended Direct	0x2E	0x00	0x01	See Set Battery Low Level Trigger Info
	Response	Device's ID	Sender's ID	Standard Ack	0x2E	0x00	N/A	N/A

Set Battery Low Level Trigger Info									
Data 2 (1 byte)	Data 3	Data 4	Data 5	Data 6	Data 7	Data 8	Data 9	...	Data 14
0x07	0x00 -> 0xFF (default: 0x00, 0x00 = none and 0xFF = use default level for device (i.e.A3), 0x01 -> 0xFF = custom level)	0x00	0x00	0x00	0x00	0x00	0x00	0x00...	0x00

1.1.3 Extended length RemoteLinc2 INSTEON database commands:

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
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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 14
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

1.2 Memory Map

1.2.1 All-Link Database (ALDB/L) Overview

The ALDB/L starts at the top of external (serial) EEPROM and grows downward. In the device, top of memory is 0x0FFF. Each ALDB/L Record is 8 bytes long, so the first record starts at 0x0FF8, the second record starts at 0x0FF0, and so on down to 0x0300 for a total of 416 links. In what follows, the 3-byte INSTEON Address contained in a record is called the *Device ID* or sometimes just the *ID*. The high byte (MSB) of the Device ID is *ID2*, the middle byte is *ID1*, and the low byte (LSB) is *ID0*.

1.2.2 Remotelinc2 External EEPROM Structure Overview

Location		Comments
0x0FF8	0xE2 01 AA BB CC 00 00 01	All-Link Database Controller Record
0x0FF0		
0x0FD8		
.....		
0x0300		Last Record, 416 total links allowed
0x02XX	N/A	Addressing below 0x0300 is ignored by database

1.2.3 ALDB/L Record Format

Remotelinc2 ALDB Record Format

Database entries with Record Control Bit 6: 0 = Responder and Group 1 will control the local load.

Linear ALL-Link Database (ALDB/L) Record Format		
Field	Length (bytes)	Description
Record Control	1	Record Control Flag Bits: Bit 7: 1 = Record is in use, 0 = Record is available Bit 6: 1 = Controller (Master) of Device ID Bit 5: Not used Bit 4: Not used Bit 3: Not used Bit 2: Not used Bit 1: 1 = Record has been used before, 0 = 'High-water Mark' Bit 0: Not used
Group	1	ALL-Link Group Number
ID	3	Device ID (ID2, ID1, ID0 in that order)
Data 1	1	0x00
Data 2	1	0x00
Data 3	1	0x00

To add a record to an ALDB/L, you search for an existing record that is marked available. (Available means the same as empty, unused or deleted.) If none is available, you create a new record at the end of the ALDB/L.

An unused record will have bit 7 of the *Record Control* byte set to zero. The last record in an ALDB/L will have bit 1 of the *Record Control* byte set to zero.

1.2.4 Overwriting an Empty ALDB/L Record

If you found an empty record, you simply overwrite it with your new record data.

Change bit 7 of the *Record Control* byte from zero to one to show that the record is now in use.

Set bit 6 of the *Record Control* byte to one if the device containing the ALDB/L is an INSTEON Controller of the INSTEON Responder Device whose *ID* is in the record. If instead the device containing the ALDB/L is an INSTEON Responder to the INSTEON Controller Device whose *ID* is in the record, then clear bit 6 of the *Record Control* byte to zero. In other words, within an ALDB/L, setting bit 6 means "I'm a Controller," and clearing bit 6 means "I'm a Responder."

Put the ALL-Link Group number in the *Group* field, and put the *Device ID* in the *ID* field. Finally, set the *Data 1*, *Data 2*, and *Data 3* fields appropriately for the *Record Class* you are storing.

1.2.5 Creating a New ALDB/L Record

To create a new record at the end of the ALDB/L, find the record with bit 1 of the *Record Control* byte set to zero, indicating that it is the last record in the ALDB/L. Flip that bit to one.