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I/O Linc Datasheet

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Change Log

Date	Description	Author
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1 Introduction

This document contains information on the INSTEON I/O Linc. It is geared towards developers and lists the features and available serial commands.

2 Features

- Monitor and control pool valves, electric door strikes, garage doors and more using your INSTEON or X10 network
- 4 output relay modes allow you to control many different types of devices
- Control INSTEON lights and appliances using standard sensors
- Contains 1 sensor input and 1 output relay (NO/NC)
- Warranted for two years

3 Commands

3.1 Bit Flag Definition

	Name of bit								
	XRx (MomentaryC)	TrigOff	Xsend	MomentaryB	MomentaryA	InputRelay	TxLed	Lock	
Bit Flag 1									
Default	0	0	0	0	0	0	1	0	= 02
Bit Flag 2	-	-	-	-	-	-	KeyBeep	LedOff	
Default	0	0	0	0	0	0	0	0	= 00

3.2 Commands

Name	Command 1	Command 2	Comments
Status Request	19	0	The ACK returns in CMD1 the database delta increase and in CMD2 the relay status (00 or FF)
	19	1	The ACK returns in CMD1 the database delta increase and in CMD2 the sensor status (0 or 1)
Read Operating flags	1F	0	The ACK returns in CMD2 Bit Flag 1 : bit 0 = Plock bit 1 = LED on TX bit 2 = InputRelay bit 3 = MomentaryA bit 4 = MomentaryB bit 5 = xSendOnOff bit 6 = TrigOff 0 = on is on 1 = on is off bit 7 = MomentaryC
	1F	1	Returns the Data Base Delta flag which gets incremented with any change in the Database
	1F	2	Returns in CMD2 Bit Flag 2 : if bit 0 then LED OFF if bit 1 then KeyBeep bit
Set Operating flags	20	0	Sets Programming lock On
<i>Lock bit¹</i>	20	1	Sets Programming lock off
<i>TxLED bit¹</i>	20	2	Sets LED on with Insteon TX
<i>TxLED bit¹</i>	20	3	Sets LED off with Insteon TX
<i>InputRelay bit¹</i>	20	4	Sets Relay to follow Input ⁱ
<i>InputRelay bit¹</i>	20	5	Sets Relay to not follows Input

¹ Name of the affected bit

MomentaryA bit ⁱ	20	6	Sets Momentary Switch ⁱⁱ
MomentaryA bit ⁱ	20	7	Sets Not Momentary
LED bit ⁱ	20	8	Sets Led Off
LED bit ⁱ	20	9	Sets Led On
Beep bit ⁱ	20	0A	Sets Key Beep On
Beep bit ⁱ	20	0B	Sets Key Beep Off
XSend bit ⁱ	20	0C	Will Send X10 On when Off ⁱⁱⁱ
XSend bit ⁱ	20	0D	Will Send X10 On when On
TrigOff bit ⁱ	20	0E	Will Send On when Input is open (Led Off) ^{iv}
TrigOff bit ⁱ	20	0F	Will Send On when Input is shorted (Led On)
XRx bit ⁱ	20	10	Will Rx X10 On is Off ^v
XRx bit ⁱ	20	11	Will Rx X10 On is On
MomentaryB bit ⁱ	20	12	Sets Momentary Both on ^{vi}
MomentaryB bit ⁱ	20	13	Sets Momentary Both Off
MomentaryC bit ⁱ	20	14	Momentary look at sensor
MomentaryC bit ⁱ	20	15	Momentary Sensor ignored
Extended messages			
Set/Get for group/button	2E	Command 2 = 0 Data 1: Group/Button # 0-FF	If Data 2 = 0, then user is requesting data (Rx unit will send back a Data 2 = 1 below)
	2E	Command 2 = 0 Data 1: Group/Button # 0-FF	If Data 2 = 1 Rx unit returned data with Data 3: ? Data 4: Closure time Data 5: X10 House code (20h = none) In Data 6: X10 Unit In Data 7: House Out Data 8: Unit Out Data 9: S/N
	2E	Command 2 = 0 Data 1: Group/Button # 0-FF	If Data 2 = 4 sets the Responder X10 Address with the following data: Data 3: House (20h for none) Data 4: Unit Responder Address
	2E	Command 2 = 0 Data 1: Group/Button # 0-FF	If Data 2 = 5 sets the Sender X10 Address with the following data: Data 3: House (20h for none) Data 4: Unit Sender Address
	2E	Command 2 = 0 Data 1: Group/Button # 0-FF	If Data 2 = 6 sets the Momentary time with the following data: Data 3: 02-FF in 10ths of a second time the relay stays closed (Non 0 sets Momentary bit flag / 0 clears it see command 0x20 ^{vii})
Database	2F	Command 2 = 0 Data 1: Group/Button # 0-FF	If Data 2 = 0 then user is requesting records (number defined in Data5) from the database starting at address [Data3 Data4] with Data 3 = High byte Address Data 4 = Low Byte Address Data 5: # of records
		Command 2 = 0 Data 1: Group/Button # 0-FF	If Data 2 = 1 then unit is responding to user request and returning data in Data6-Data13. Depending on the number of records requested, the unit will continue to send records incrementing Data3Data4 until the first never been used record is sent
		Command 2 = 0 Data 1: Group/Button # 0-FF	If Data 2 = 2 user is requesting to write a data record declaring the memory location in Data 3: High Bytes and Data 4: Low Byte with Data 5 = # of bytes Data6-Data13 data
			Note: the Group is ignored...# of records = 0 dumps all else you get 1 record the number of bytes > 8 is an error and ignored

3.3 Memory locations

Name	Value	Comments
EEVersion	0x02	; Version of firmware
EELast	0x20	; Last Level it was left on
EERamp	0x21	; Ramp Level
EEX10InBaseHouse	0x2E	
EEX10InBaseUnit	0x2F	
EEX10BaseHouse	0x30	
EEX10BaseUnit	0x31	
EEX10Last	0x32	; Local On Level
EEMomentaryl	0x33	; Duration of the momentary state

These memory locations can be modified using I1 (e.g: peek and poke – 0x28, 0x2B) commands. Refer to the Developer's Guide for more information on I1 commands.

ⁱ Relevant when I/O Linc is a Controller.

If the InputRelay bit is set, the relay doesn't follow the switch

If the InputRelay bit is clear, the relay changes when the switch changes.

The InputRelay bit can be toggled manually (Press and Hold followed by three taps)

ⁱⁱ Relevant when I/O Linc is a responder

If the MomentaryA bit is clear (default),

IOLink will respond to ON moving to and stay at the position it was linked in

IOLink will respond to OFF moving to the opposite position it was linked in

If the MomentaryA bit is set

IOLink will always move from open to closed and then back to open

If it is Linked while On it will respond to On

If it is Linked while Off it will respond to Off

Note: If you are setting up DataBase records, FF and 00 are the only values that should be used for the ON value. Any other value and the I/O Linc will respond to On and Off by closing the relay.

ⁱⁱⁱ When I/O Linc is an X10 sender:

When setting X10 Sender Address (in this case A1) (P&H Tap then send House Code/Unit Code 3 times with On/Off)

A1 A1 A1 On clears Xsend

A1 A1 A1 Off sets Xsend

If Xsend bit is clear, closing the Switch sends A1AOn

If Xsend bit is set, opening the Switch sends A1AOff

Note: Since A1AOn and X10 have independent polarity flags, you can set the I/O Linc to send an ON INSTEON command followed by an Off X10 command.

^{iv} Relevant when I/O Linc is a Controller.

If the TrigOff bit is set, Close Switch sends an OFF and Open Switch sends an ON

If the TrigOff bit is clear, Close Switch sends an ON and Open Switch sends an OFF.

TrigOff bit is set based on the state of the unit it is linked to. It can change with every new link.

If the link was made when Switch was Closed, the TrigOff bit will be clear.

If the link was made when Switch was Open, the TrigOff bit will be set.

^v When I/O Linc is a X10 Responder

When setting X10 Responder Address (in this case A1) (P&H then send House/Unit 3 times with On/Off)

A1 A1 A1 On clears XR_x
A1 A1 A1 Off sets XR_x

If XR_x bit is clear, A1Aon *Closes Relay*

If XR_x bit is set, A1Aon *Opens Relay*

^{vi} Relevant when I/O Linc is a responder

If the MomentaryB bit is set (as well as the Momentary bit)

I/O Linc will respond to On and Off moving from open to close and then back to open

Each series of Press & Hold (P&H) P&H P&H moves through the next of the three Relay options:

Continuous/MomentaryA/MomentaryB.

Setting MomentaryA then MomentaryB then clearing both bit flags changes back to continuous mode.

Since Momentary relay always moves back to open, you should link the I/O Linc before you change to Momentary so you can control the state of the relay during the linking process. (This is not a concern if you are using a PC to setup records in the I/O Linc's database.)

^{vii} The default amount of time the relay is closed is 2 seconds. For more or less time you can use the PC Command 2E 00 00 06 XX or use P&H P&H TAP P&H for X seconds.