



HOME AUTOMATION FOR ALL
Dependable. Useable. Affordable.



Insteon Integration Notes

Table of Contents

- 1. INTRODUCTION3**
- 2. FEATURES.....3**
- 3. WHAT IS NEEDED3**
- 4. CONNECTION PROCEDURE4**
- 5. ADDING DEVICE TO THE CORTEXA5**
 - 5.1 USING DEVICE DISCOVERY TO ADDED INSTEON DEVICES TO THE CORTEXA.....5
 - 5.2 ADDING A DEVICE TO THE CORTEXA MANUAL5
- 6. INSTEON LINK MANAGER.....6**
 - 6.1 UNDERSTANDING INSTEON GROUPS/LINKS6
 - 6.2 WORKING WITH LINKS IN THE CORTEXA7
 - 6.3 LINKING ONE DEVICE TO ANOTHER WITH THE CORTEXA LINK MANAGER8
 - 6.4 LINKING A DEVICE SO THAT THE CORTEXA CAN TRACK MANUAL CHANGES.8
 - 6.5 CONTROLLING INSTEON GROUPS FOR THE CORTEXA8
 - 6.6 CONTROLLING A CORTEXA EVENT WITH AN INSTEON GROUP9
- 7. INDIVIDUAL INSTEON DEVICE SPECIAL CONSIDERATIONS.....9**
 - 7.1 SWITHLINC.....9
 - 7.2 KEYPADLINC.....9
 - 7.3 HOUSELINC IMPORTING9

1. Introduction

This documentation supports the installation and setup of the Smartlab Insteon products within the Cortexa system. Insteon is a robust, redundant, dual-band mesh network that combines wireless radio frequency (RF) with the existing electrical wiring.

2. Features

Insteon delivers a powerful, wireless control networking technology that is simple, affordable and reliably integrates systems in the home for improved comfort, safety, convenience and value.

- Setup is easy – Insteon installs in minutes
- Controls X10 devices

Reliable

Reliability is a hallmark of INSTEON Networks. Building on a peer-to-peer mesh network foundation, INSTEON confirms every message to insure that messages are received error-free, and automatically re-transmits corrupted messages. Because every INSTEON device acts as a two-way repeater, the INSTEON Network becomes stronger and more reliable as it grows.

Affordable

INSTEON is an inexpensive lighting solution for manufacturers to integrate into a wide variety of home devices from light switches to appliances.

Fast

INSTEON uses advanced digital signal processing to encode and transmit messages, enabling rapid transmission of control data between INSTEON devices. Individual INSTEON messages can also carry up to 14 bytes of arbitrary user data to support unlimited home-control applications from developers.

Works with legacy X10

INSTEON technology allows manufacturers to develop products that are both INSTEON-compatible and X10-ready. Homeowners with existing X10 networks can easily migrate to an INSTEON network without having to discard all their existing X10 devices. Please note that INSTEON devices repeat INSTEON signals and not X10.

3. What is needed

Communications between the Cortexa and Insteon devices are achieved through a Powerline V2 Controller Serial interface module. The Powerline V2 communicates with the Cortexa on one of the Cortexa's RS232 ports. The other end of the Powerline then plugs directly into any AC outlet.

<http://www.smarthome.com/2414s.html>

To use the Radio Frequency (RF) component of Insteon, two INSTEON Signalinc RF devices are required.

<http://www.smarthome.com/2442p.html>



Important: Proper installation of at least two Signalinc RF Signal Enhancers is required prior to installing and using other INSTEON devices.

4. Connection Procedure

1. Follow the Insteon documentation provided to properly install your Insteon devices before connecting the PowerLinc V2 to the Cortexa.
2. For best Insteon network performance, be sure you have properly installed at least two PowerLinc RF Signal Enhancers.
3. Plug the PowerLinc V2 into an un-switched wall receptacle. The white Status LED will illuminate steadily. (Note: The PowerLinc comes with a pass-through outlet, and you may plug the Cortexa into this outlet).
4. Use the supplied RS-232 cable adapter that came with the Insteon PowerLinc and connect the DB9 side to a RS232 port on the Cortexa, taking note which port you plugged the PowerLinc into.
5. Log into the Cortexa Tools page. (Refer to the Cortexa Owners Guide on how to login to the Tools page). Then go to the Sub-System page.
6. For Insteon, select which RS232 port the PowerLinc is plugged into, then click **Save**.
7. Now download the Insteon CoreApp into the new PowerLinc. This is done by clicking on the Advanced button on the Insteon line and then click Download PLC Firmware. (Note: This will take 2-3 minutes to download)
8. Now follow the steps below to enroll your Insteon devices.

PowerLinc Installation Tips

- Do not plug PowerLinc into an outlet controlled by a switch. If the switch is inadvertently turned off, PowerLinc won't have power and will not function.
- Do not plug PowerLinc into a filtered power strip or AC line filter.

5. Adding Device to the Cortexa

For the Cortexa to control or listen to a device, you will need to add the Insteon device to the Cortexa link database. The Powerline will mask out all communication from a device if the device is not listed in its link table. By following one of the next two procedures to add a device to the Cortexa, you will also add the needed links to the Powerline to enable the Cortexa to listen to a device communication.



The Cortexa will not receive manual device changes until you enable a device to communicate with another device or the Cortexa. Please refer to the link management for further details.

5.1 Using Device Discovery to add Insteon devices to the Cortexa

You may need to refer to the Insteon Users Guide for more detailed instructions.

1. Go into the Insteon Advance page under Sub-System page.
2. Click on **Discover Device**.
3. Now follow the linking method for the device that you would like to be added to the Cortexa. You have about 4 minutes to perform this step before Cortexa Discover device times out.
 - a. **LampLinc V2 Dimmer** - press and hold the **SET Button** on the side of LampLinc V2 dimmer for 3 seconds, then release. To confirm linking, the LampLinc V2 dimmer will blink the Status LED and also the light that it is controlling.
 - b. **ApplianceLinc V2** - press and hold the **SET Button** on the side of ApplianceLinc V2 for 3 seconds, then release. To confirm linking, ApplianceLinc V2 will blink its Status LED.
 - c. **SwitchLinc V2 Dimmer** - press and hold SwitchLinc V2 Dimmer's **Paddle Top** for 10 seconds, then release. To confirm linking, SwitchLinc V2 Dimmer will blink the top LED in its LED Bar and also the light that it is connected to.
 - d. **KeypadLinc V2** - press and hold the **ON Button** at the top of KeypadLinc V2 for 10 seconds, then release. To confirm linking, KeypadLinc V2 will blink the light that it is controlling.
 - e. **Other Insteon Devices** - refer to the relevant Insteon Users Guide.
4. After the device has blinked letting you now that it is in link mode, the Cortexa should have already discovered the device, so you need to push the set button on the device to tell the device to exit link mode, because if you do not, the next device that you try to discover will enroll itself into this device.
5. After the Cortexa has discovered the device, you will be prompted to fill in the device specific information like the name of the device.
6. Test all Insteon devices are working as expected by turning the devices on and off using the Cortexa the User Interface.

5.2 Adding a Device to the Cortexa manual

If you know the address of the device, you may add the address into the Cortexa manually so that you do not have to go out and discover the device.

1. Go into the Device Manager page in the Cortexa tools section.
2. Click **Add New Device** at the top of the page.
3. In the Hardware Type pull down, select Insteon.
4. Fill in the device main information.
5. Select the appropriate **Insteon Hardware Type**.
6. Enter in the **Insteon Address**.
7. Then click **Create**.
8. Now go to the Cortexa User Interface and try turning the device On and Off to make sure the Cortexa is communicating with it properly.

6. Insteon Link Manager

The Cortexa can manage the links in each Insteon device allowing you to setup how each device communicates with each other, and the Cortexa.

6.1 Understanding Insteon Groups/Links

Before we get started in modifying the links in each Insteon device, we would like to go through how Insteon works with links. Each Insteon device holds a link table which tells each device how to control other devices and how to respond to a group command.

There are three different types of links in each device. You have a Controlling link, Responding link, and Not used link which we will explain what each link does.

Each Insteon device can only control certain groups with each button, so like on the ControlLink it only allows you to control groups 1-4.

Controlling Link:

When a group button on the device is pushed, and if it is supposed to control another device for that group, it will send out a broadcast message notifying all of the responding devices of the link command. After the broadcast, the controlling device will go down its list of devices it is to control and make sure each device received the command, and if it the device did not, it will tell the device what it should have done.

Responding Link:

When the device receives a broadcast message from another device, it will go down its list of link to see if it is supposed to respond to the controlling device group command. If it is, it will adjust to the appropriate level, at the specific rate that is programmed for that link.

Not Used Link:

The device will stop reading the link table at the last link in the table. So if you are not using a link in the middle anymore, then you need to create a not used link so that it will put in a place hold to keep from losing the rest of the links.

6.2 Working with Links in the Cortexa

Each device in the Cortexa has a link table. Before you start modifying the link table of a device in the Cortexa for the first time, you should read the device so that the Cortexa will be in sync with the device.

Computer Room Main Light [06:07:53]							
Control	Flags	Group	ID	On Level	Ramp Rate	LED Group	
Save & Update	Save	Controlling	4	Computer Room Hall Light	100 %	0.1 Sec	4
Save & Update	Save	Controlling	1	Cortexa	100 %	0.1 Sec	1
Add Link							
Control	Flags	Group	ID	On Level	Ramp Rate	LED Group	
Add & Update	Add	Controlling	1	Computer Room ControlLinc	100	0.1 Sec	1
Link Tools							
<input type="button" value="Read Links"/> <input type="button" value="Write Links"/> <input type="button" value="Clear All"/>							

There are three sections. The top section is used to update the links in a device, the middle section is used to add links to a device, and the bottom section is used to read and write to all links in a device.



Note: It takes around 15 Seconds to read or write one link to and from each device.

Save & Update is used to save the current link to the Cortexa database and update the link in the device. This is useful if you won't to update one link at a time.

Save will only save the changes to the Cortexa database, and not update the device. Since it takes 15 Seconds to write a link this option is useful if you would like to update several links at one time.

Add & Update is used to add a new link to both the device and the Cortexa database. This is useful if you won't to add one link at a time.

Add will only add the changes to the Cortexa database, and not add new the link to the device. Since it takes 15 Seconds to write a link this option is useful if you would like to add several links at one time.

Read Links is used to read all link currently programmed in the device and updates the Cortexa database.

Write Links is used to write the Cortexa database to the device link table.

Clear All is used to clear this device link table and to update the Cortexa database.

6.3 Linking one device to another with the Cortexa Link Manager

Here is an example on how to link one device to another device with the Cortexa link Manager.

For an example we will link **SwitchLinc A** to **Switchlin B** so that when **SwitchLinc A** top paddle is single clicked **Swithlinc B** will go to 50% level at a rate of 2 seconds.

Note: This example assumes you have already setup **SwitchLinc A** and **Swithlinc B** as a device in the Cortexa and the device is working properly from the Cortexa User Interface.

1. First you will need to open up **SwitchLinc A** link table in the Cortexa.
2. Set the flags to Controlling.
3. Set Group to 1 since a single click for switchlinc is group 1.
4. Select **SwithLinc B** from the ID table.
5. Set the on level to 50%.
6. Set Ramp Rate to 2 Seconds
7. Since we are adding just one link lets click on Add & Update.
8. Now close the **SwithLinc A** link table.
9. Now you will need to open up **SwitchLinc B** link table in the Cortexa.
10. Set the flags to Responding.
11. Set Group to 1 since a single click for switchlinc is group 1.
12. Select **SwithLinc A** from the ID table.
13. Set the on level to 50%.
14. Set Ramp Rate to 2 Seconds
15. Since we are adding just one link lets click on Add & Update.
16. Now close the **SwithLinc B** link table.
17. That is it.

6.4 Linking a device so that the Cortexa can track manual changes.

When Insteon devices are first installed, they do not transmit data when they are controlled manual.

Note: If the once device is already controlling another device, the Cortexa will track its changes. The main goal here is to trick the Insteon device to send out a broadcast when it is being manual controlled.

1. First you will need to open up the devices link table in the Cortexa.
2. Set the flags to Controlling.
3. Set the group number to any number.
4. Select **Cortexa** from the ID table.
5. Set the on level to anything.
6. Set Ramp Rate to anything.
7. Since we are adding just one link lets click on Add & Update.

6.5 Controlling Insteon Groups for the Cortexa

The Cortexa can send out a Broadcast message to control a group of devices.

1. You will need to add an Insteon Group in the Cortexa Device manager.
2. Next you will need to open up each of the devices to be controlled link table in the Cortexa.
3. Set the flags to Responding.
4. Set Group to the number that was giving in the device manager.
5. Select **Cortexa** from the ID table.
6. Set the on level to the desired level.
7. Set Ramp Rate to the desired ramp rate level
8. Since we are adding just one link lets click on Add & Update.
9. Now test your group from the Cortexa User Interface.

6.6 Controlling a Cortexa Event with an Insteon Group

You can control an event in the Cortexa based on a group command that comes from an Insteon Device.

1. You will need to create an event that has a trigger set to Insteon Group with the device to receive the message from and the group number.
2. Now you will need to open up the controlling device link table in the Cortexa.
3. Set the flags to Controlling.
4. Set Group to the group 1.
5. Select **Cortexa** from the ID table.
6. Set the on level to anything. This is ignored.
7. Set Ramp Rate to anything. This is ignored
8. Since we are adding just one link lets click on Add & Update.
9. That is it.

7. Individual Insteon Device Special Considerations

Each Insteon devices can control only the groups that are given to them. This note will try to explain this.

7.1 SwithLinc

The Swithlinc can only control Group 1, 2, and 3.

Group one is sent when the switch is tapped once.

Group two is sent when the switch is tapped twice.

Group three is sent when the switch is tapped three times.

7.2 KeypadLinc

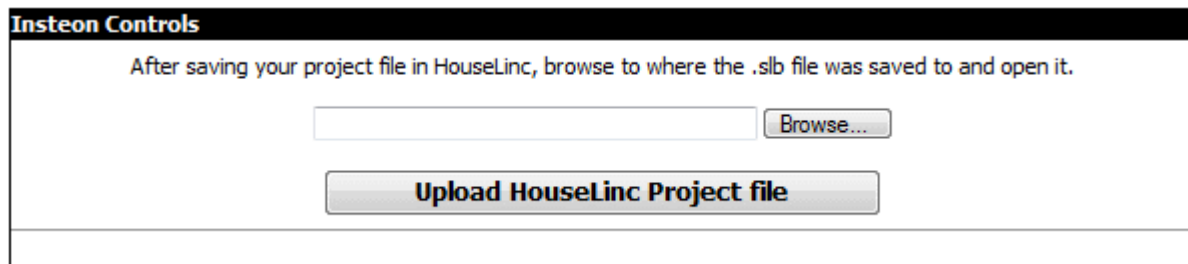
The KeypadLinc will control Group 1 – 8.

If the Keypad link is setup up as a six button device it will ignore group 2 and 7.

You can control each of the LEDS buy setting the LED Group in the Cortexa Link manager.

7.3 HouseLinc Importing

You can use the Smartlab HouseLinc program to setup all of your links and then import the saved project file into the Cortexa. To import the saved file, go to the Device manager in the Cortexa. Use the Browse button to find the project file on your local machine, and the select Upload HouseLinc Project file.





All newly discovered device will be placed in the Insteon Group in the device manager. You should edit each device to move them to the desired group and make any other desired changes. If a device is already in the Cortexa, this device will just get updated with the latest changes, and it will not be moved to the Insteon group. If a device is missing in the project file, the Cortexa will not delete it from the device manager. All links will be replaced with the link table that comes from the project file.