



SerialLinc™

INSTEON® to 2-Way RS-232 Serial Converter

Model : 2410S



SMARTHOME™

INSTEON

SerialLinc Owner's Manual



TABLE OF CONTENTS

ABOUT SERIALINC	3
Key SerialLinc Features	3
What is Included with SerialLinc	3
System Requirements	3
WHAT IS INSTEON?.....	4
INSTALLATION	4
Preparing to Install SerialLinc.....	4
Creating a CSV File.....	5
Installing SerialLinc	6
ADVANCED FEATURES	7
Restoring Power to SerialLinc	7
Resetting SerialLinc to its Factory Default Settings	7
ABOUT INSTEON	7
Using Dual-Band INSTEON Devices to Upgrade Your Network.....	7
Important Note about INSTEON Networks; Split Single-Phase vs. 3-Phase Installation.....	8
Further Enhancing Reliability	8
TROUBLESHOOTING.....	8
SerialLinc Support	8
SPECIFICATIONS, CERTIFICATION, AND WARRANTY	9
Specifications	9
Certification.....	9
Limited Warranty	9

ABOUT SERIALINC

With SerialLinc, now you can connect serial and/or RS-232 compatible devices to your INSTEON network. From whole-home audio to security systems to automation controllers, you can now keep the equipment you already own and take advantage of a reliable INSTEON network. SerialLinc is a 2-way serial, so it can be used to control RS-232 devices or control INSTEON devices via RS-232 commands.



Key SerialLinc Features

- Controls most serial (RS-232) controllable devices from any INSTEON Controller by downloading a user-customized setup file
- Controls INSTEON scenes and devices using a serial command from most serial devices
- Supports a variety of INSTEON commands – ON/OFF, BRIGHT/DIM, FAST ON/FAST OFF
- Two-year warranty

What is Included with SerialLinc

- SerialLinc – INSTEON to RS-232 Serial Converter
- RJ-45 (male) to DB-9 (female) serial cable
- Null modem adapter
- Free software download
- Quick-Start Guide

System Requirements

- Windows 2000, XP, or Vista (32-bit)
- 15MB free disk space
- Minimum 128MB RAM



WHAT IS INSTEON?

Since its inception in 2005, INSTEON has become a best-selling home-control networking technology, offering more reliability and flexibility than any other home management system on the market. INSTEON systems are simple, reliable, and affordable. Simple, because each device takes mere minutes to install. Reliable, because every INSTEON device works as a network repeater, ensuring your commands will not be lost. Affordable, because INSTEON can be integrated into any number of devices easily and at a very low cost. An INSTEON home grows in value with each added INSTEON device, making life more convenient, safe, and fun.

How Does INSTEON Work?

What makes INSTEON the most reliable home automation network is its dual-mesh network. INSTEON devices use both radio frequency (RF) signals and the home's existing wiring to talk to each other. In an INSTEON network, every INSTEON device also acts as a repeater, receiving and sending every message to all other devices in the network. So by integrating more INSTEON devices you will strengthen the network and ensure no commands will be lost.

No central controller or networking setup is required with an INSTEON network. Simply install your devices and then use a series of button presses or taps to Link your devices together. Throughout this Owner's Manual, you may see the terms "Controller" or "Responder". These generic INSTEON terms refer to the components of an INSTEON scene, and are used on a scene-by-scene basis.

- **Controller** – sends INSTEON commands to other devices
- **Responder** – reacts to commands sent out by another INSTEON device

An INSTEON device may act as a Controller, Responder, or sometimes both.

INSTEON networks are also extremely secure. Each INSTEON device is assigned a unique INSTEON ID, so unless neighbors or would-be hackers have access to your particular device's INSTEON ID, they won't be able to control your home, even if they are using similar products.

INSTALLATION

Preparing to Install SerialLinc

CAUTION

Read and understand these instructions before installing and retain them for future reference.

SerialLinc is intended for installation in accordance with the National Electric Code and local regulations in the United States or the Canadian Electrical Code and local regulations in Canada. Use indoors only. SerialLinc is not designed nor approved for use on power lines other than 120V 60Hz, single phase. Attempting to use SerialLinc on non-approved power lines may have hazardous consequences.

Prior to installing SerialLinc, please review the entire installation procedure and take the following precautions:

- Use indoors or in a properly insulated and weatherproof electrical box only
- Don't plug SerialLinc into an outlet controlled by a switch because if the switch is inadvertently turned off, SerialLinc won't have power
- Don't plug SerialLinc into a filtered power strip or AC filter
- Don't stack INSTEON home automation devices together by plugging them into each other. Stacked devices may overheat and stop functioning. Also avoid using the pass-through outlets on INSTEON devices for other heat-generating power supplies.



- Some computers and their accessories can absorb SerialLinc signals off the power lines. Since SerialLinc will be so close to the computer, use a Smarthome FilterLinc (#1626) or filtered power strip for the computer to keep the SerialLinc signals from getting absorbed by the computer equipment.
- If the computer's serial port is shared with another hardware device (scanner, PDA, etc.), be sure to turn off the device's program on the PC. If left running, the home automation software will not be able to communicate with SerialLinc.

If you have any questions, please call:

INSTEON Gold Support Line
800-762-7845

Creating a CSV File

The SerialLinc Downloader takes CSV files with the following formatting as input:

- First line – baud rate of the device. It should contain the baud rate preceded by the '#' symbol. Allowable baud rates are: #2400, #4800, #9600, #14400, #19200, #28800, #38400, #57600, and #115200.

Example Line:

```
#9600
```

- Some number of lines defining the serial translation in the following format:

```
[1], [2], [3], [4], [5]
```

Line entries are defined as:

[1] – either '0' (INSTEON to serial), '1' (serial to INSTEON ON), or '2' (serial to INSTEON OFF)

[2] – INSTEON ID, which is printed on SerialLinc's label in the XX.XX.XX format

NOTE: This entry is ignored for serial to INSTEON commands.

[3] – group number (1 – 255, or in hex format 0x00 to 0xFF)

[4] – either 'ON' (respond to ON), OFF (respond to OFF), ON BRIGHT (ON as well as Start Bright), OFF DIM (OFF as well as Dim), FAST ON, FAST OFF, BRIGHT (incremental bright, sent from ControlLincs, RemoteLincs, and SmartLincs)

[5] – Serial data, either as quoted text, such as *Z01ON/r, or spaced hex bytes, such as 01 01 03 0A

```
INSTEON to serial, id: 01.01.03, group 1, respond to on, ASCII command from device 0, 01.02.03, 1, on, "Z01ON"
```

NOTE: Lines with blank space and lines where the first character is a semicolon will be ignored.

```
;comment line ignored by software
```

Example CSV File

Test_01.csv

```
#9600
```

```
1, , 1, on, "Test group 1 on"
```

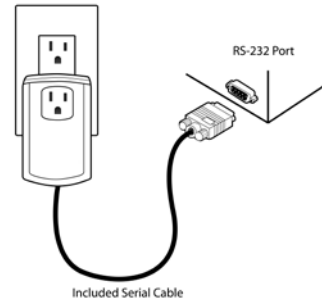
```
2, , 1, off, "Test group 1 off"/r"
```

Download the test CSV file at: http://www.insteon.net/software/serialincdownloader/test_01.csv

Installing SerialLinc

- 1) You will need a CSV file with your serial codes to download the SerialLinc Downloader Application.
See *Creating a CSV File*.
- 2) Download the SerialLinc Downloader application at:
http://www.insteon.net/software/serialincdownloader/serialinc_1_0_0_32.application

- 3) Plug SerialLinc into an electrical outlet (make sure SerialLinc will be able to reach your computer with the included serial cable or use an extension cord)
- 4) Tap the Set button on SerialLinc to enter Configuration Mode
The SerialLinc Status LED will begin blinking
- 5) Connect SerialLinc to your computer using the included serial cable



- 6) In the SerialLinc Downloader application, open the CSV file
- 7) Devices that are responding to serial codes (defined as 1 in the CSV file) will need to be Linked to SerialLinc according to their defined group number (third parameter on the same line in the CSV file)
 - A) Click the appropriate button on the right side of the application interface for SerialLinc to enter the defined group's Linking Mode
 - B) Press & hold the Responder's Set button for 3 seconds
 - C) Repeat steps A and B as needed
- 8) Choose the com port SerialLinc is connected to
- 9) Select "Download to SerialLinc"

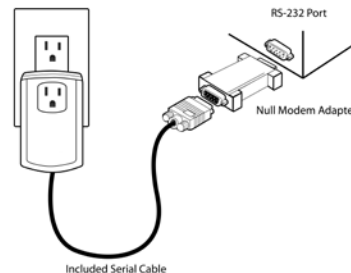


- 10) When prompted, unplug SerialLinc and plug it back in, making sure not to tap the Set button

The SerialLinc Status LED will stop blinking



- 11) Close the SerialLinc Downloader application
- 12) Plug SerialLinc into your RS-232 device using the included null modem adapter



ADVANCED FEATURES

Restoring Power to Serialinc

Serialinc stores all of its settings, such as Links to other INSTEON devices, etc., with non-volatile memory. Because settings are saved in this non-volatile memory, they will not be lost in the event of a power failure.

Resetting Serialinc to its Factory Default Settings

The factory reset procedure can be used to clear the Serialinc memory and restore its factory default settings.

- 1) Unplug Serialinc for about 10 seconds
- 2) While holding down the Set button on Serialinc, plug it back in, making sure not to let go of the Set button
- 3) Continue to hold down the Set button for 3 seconds and then release

After a few seconds, the Serialinc Status LED will turn on

ABOUT INSTEON

Using Dual-Band INSTEON Devices to Upgrade Your Network

What are phases?

The majority of single-family homes in North America have two phases (or “legs”) of 110 Volts coming into their electricity panels. From the panel, they are distributed throughout the home, providing power to outlets and wall switches. These phases come together in some parts of the home to provide 220 Volts of power to large appliances, such as an electric oven or pool pump.

Why do I need to bridge these phases?

Single-band power line devices send commands via the home’s electricity, but only on a single phase. If the command is intended for a device on the opposite phase, there is a good chance the command will go unnoticed. Installing dual-band INSTEON devices, such as Access Points (#2443), on each phase will allow for devices to communicate between the two phases via RF.

Dual-band INSTEON devices embody the full potential of a true INSTEON mesh network. Taking the power line band signal and working in conjunction with the RF band signal, its dual-band function plays out in two ways:

- Phase bridger – a receiver of commands, reacting to and translating signals sent from one power phase to the opposite via RF
- Signal repeater – a participant in an INSTEON network, repeating commands intended for other devices whether those commands are generated from RF or power line-only devices. To ensure reliability, every INSTEON device confirms that it has received a command. If a Controller does not receive this confirmation, it will automatically retransmit the command up to five times.

While using at least one dual-band device is required when using an RF-only device, at least two dual-band devices are recommended to ensure reliable communication across two-phase home wiring systems. For larger applications, it is recommended to install at least one dual-band device for every 750 – 1,000 square feet.

Search for dual-band INSTEON devices at: www.smarthome.com/dualband



Important Note about INSTEON Networks; Split Single-Phase vs. 3-Phase Installation

For the best INSTEON network performance, be sure you have properly installed at least two dual-band INSTEON devices. INSTEON has only been officially tested in a split single-phase residential environment but has been known to work in many 3-phase systems, where three dual-band devices are used (one on each phase). However, due to the potential complexity of its troubleshooting, the INSTEON Gold Support Line is unable to support INSTEON in 3-phase environments.

Further Enhancing Reliability

As signals travel via the power line or RF throughout the home, they naturally become weaker the farther they travel. The best way to overcome weakened signals is to increase the coverage of the mesh network by introducing more INSTEON devices.

It is possible that some audio-video devices, computers, power strips, or other electrical equipment may attenuate INSTEON signals on the power line. You can temporarily unplug suspected devices to test whether the INSTEON signal improves. If it does, then you can plug in filters that will permanently fix the problem.

TROUBLESHOOTING

SerialLinc Support

Information

SerialLinc is a Serial (RS-232) – INSTEON converter. It can translate INSTEON ON and OFF commands into serial output strings to a connected device. It can also accept serial input strings from the remote device and activate INSTEON Group ON and OFF commands. These serial commands will control devices such as Nuvo.

A PC and the SerialLinc Downloader application are required to set up SerialLinc.

To download to the device the user must connect the serial output of SerialLinc to the serial port on their PC. Within 4 seconds of power-up (before the LED turns on), the user should tap the Set button. This allows SerialLinc to enter Configuration Mode. After downloading to SerialLinc, unplugging and then powering up SerialLinc and NOT tapping the Set button will activate the Serial Translation Mode. An included null modem adapter is required to talk to most RS-232 devices. (NOTE: There is a 50 byte limit from the device.)

Software

SerialLinc Downloader

Download configuration files to SerialLinc:

http://www.insteon.net/software/serialincdownloader/serialinc_1_0_0_32.application

Additional Software

Useful for testing RS-232

- Docklight – RS-232 Terminal / RS-232 Monitor: www.fuh-edv.de/docklight

Supported Devices

Known Supported USB → Serial Adapters for Setup

- Belkin F5U409 USB to Serial Adapter
- FTDI US232R-10 (RS-232 cables, US232R-10 USB to RS-232 Converter, 10 com)

Security

- HAI Security Panel (Omni)
- HAI Lighting Panel (Lumina)
- SecureLinc



Audio

- Nuvo Systems including: Concerto, Grand Concerto, Essentia, Tuners
- HiFi by HAI

Automation

- Stargate
- Ocelot
- X10 (using 1132B)
- Rain8

IR

- Global Cache

A/V

- Blu-ray Player
- A/V Receiver
- Amplifier
- Media Center

SPECIFICATIONS, CERTIFICATION, AND WARRANTY

Specifications

View specifications for Serialinc at: www.smarthome.com/2410S.html

Certification

This product has been thoroughly tested by ITS ETL SEMKO, a nationally recognized independent third-party testing laboratory. The North American ETL Listed mark signifies that the device has been tested to and has met the requirements of a widely recognized consensus of U.S. and Canadian device safety standards, that the manufacturing site has been audited, and that the manufacturer has agreed to a program of quarterly factory follow-up inspections to verify continued conformance.

Limited Warranty

Seller warrants to the original consumer purchaser of this product that, for a period of two years from the date of purchase, this product will be free from defects in material and workmanship and will perform in substantial conformity to the description of the product in this Owner's Manual. This warranty shall not apply to defects or errors caused by misuse or neglect. If the product is found to be defective in material or workmanship, or if the product does not perform as warranted above during the warranty period, Seller will either repair it, replace it, or refund the purchase price, at its option, upon receipt of the product at the address below, postage prepaid, with proof of the date of purchase and an explanation of the defect or error. The repair, replacement, or refund that is provided for above shall be the full extent of Seller's liability with respect to this product. For repair or replacement during the warranty period, call the INSTEON Gold Support Line at 800-762-7845 with the Model # and Revision # of the device to receive an RMA# and send the product, along with all other required materials to:

Smarthome, Inc.
ATTN: Receiving Dept.
16542 Millikan Ave.
Irvine, CA 92606-5027

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Limitations

The above warranty is in lieu of and Seller disclaims all other warranties, whether oral or written, express or implied, including any warranty or merchantability or fitness for a particular purpose. Any implied warranty, including any warranty of merchantability or fitness for a particular purpose, which may not be disclaimed or supplanted as provided above shall be limited to the two-year of the express warranty above. No other representation or claim of any nature by any person shall be binding upon Seller or modify the terms of the above warranty and disclaimer.

Home automation devices have the risk of failure to operate, incorrect operation, or electrical or mechanical tampering. For optimal use, manually verify the device state. Any home automation device should be viewed as a convenience, but not as a sole method for controlling your home.

In no event shall Seller be liable for special, incidental, consequential, or other damages resulting from possession or use of this device, including without limitation damage to property and, to the extent permitted by law, personal injury, even if Seller knew or should have known of the possibility of such damages. Some states do not allow limitations on how long an implied warranty lasts and/or the exclusion or limitation of damages, in which case the above limitations and/or exclusions may not apply to you. You may also have other legal rights that may vary from state to state.

INSTEON Technology Patent

U.S Patent No. 7,345,998, International patents pending

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