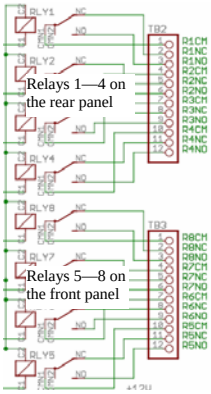
Quick-Start Guide EZIO8SA 7-Input/8-Relay INSTEON/X10 Controller - Model #EZIO8SA

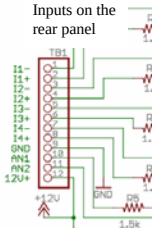
Your EZIO8SA puts control and monitoring of external loads and signals where you need it, thus simplifying your wiring. The unit has 8 SPDT relays rated 3 Amps @ 120VAC/24VDC to control AC or DC loads with INSTEON or X10 commands. Timers can be enabled to individually turn the relays off automatically after 1-255 seconds or minutes. External signals such as those from contact closures, voltage, and temperature values can send INSTEON messages on their on and off transitions to cause INSTEON events only limited by your imagination. External sensing flexibility is provided by four opto-isolated, two analog/digital and one digital-only set of inputs. A dedicated connector may be used for monitoring sensors via the Dallas Semiconductor 1-Wire bus. This input is pre-programmed for a DS18B20 temperature sensor. EZIO8SA requires a SmartLabs, Inc. PLM as a power source and to communicate with other INSTEON and X10 devices over the power lines.

Installation

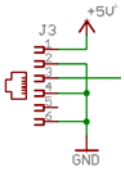
- Select a suitable power outlet that is close to the loads and sensors to be connected. Avoid exposure to moisture. If installing outdoors, use only an approved outdoor weather-proof enclosure.
- **Connection of the Output Relays:** Follow the picture on the label and note the naming (CM for common, NC for normally closed, and NO for normally closed) for the relays. Note that each relay acts as a switch (rated 3A at 24VDC or 120VAC.) Connect the controlled loads (e.g. valve motors, curtain actuators, door lock solenoids, garage door switches, etc.) to relay terminals as desired. Each relay is individually controlled by either direct or group INSTEON messages, or by X10 commands. A subsequent section of this guide describes how to link an INSTEON sender or X10 controller to each relay. Using INSTEON, it is also possible to take a "snapshot" of the state of the relays for single command "recollection" of the snapshot as part of a scene.



- **Connecting the Inputs:** Two sets of inputs to your EZIO8SA are available through the same terminal connector pictured and described separately below. Notice also that separate terminals are provided for +12VDC (unregulated, 50 mA. maximum) and Ground.
  - **Opto-Isolated Inputs:** Inputs I1 - I4 can be used in a way that the signal source is totally isolated from the EZIO8SA, as may be the requirement for certain alarm panel monitoring. In this case, the input must provide a voltage between 3 and 30 VDC, connected between the positive (Ix+) and negative (I1– or I2-) terminals. If isolation is not required, these inputs can easily be connected to "dry" contact closures such as those from external relays, proximity detectors or door closure sensors. In this case, connect the positive (I1+ or I2+) terminal to the +12V terminal, and the contact closure between the negative (I1- or I2-) terminal and the GND terminal.



  - **AN1 and AN2 as Digital Inputs:** As configured by default, inputs AN1 and AN2 can be used to monitor voltage levels that have distinct thresholds (0—1VDC for ON, and 2.5—5VDC for OFF.) These are the levels typically produced by digital devices such as a control output from a liquid level detector or telephone answering device. Keep in mind that the device output can not be of the "dry" type; in other words, the output connecting to the EZIO8SA AN1 or AN2 inputs must provide a voltage level required to cause a change that the EZIO8SA can recognize. If needed, a "pull-up" resistor can be connected between AN1 or AN2 and a +3.3VDC source.
  - **AN1 and AN2 as Analog Inputs:** A software program such as our free utility or a home automation program may be used to configure AN1 and AN2 as inputs that respond to and measure the level of voltages between 0 and 3.3VDC. Typical uses for this type of monitoring could be light, temperature, pressure, humidity, or other slowly and discretely varying levels. The value of the voltage at each of the inputs is internally converted to a number between 0 and 1023 (10 bits) which can be read via INSTEON commands or used to trigger alarm conditions. Alarms are simply events when the EZIO8SA sends a group message to the INSTEON network. Using this facility, an alarm can be set to send an INSTEON OFF group command when the voltage on the given input goes over a certain level, and an INSTEON ON group command when the voltage falls below a different level. This allows many possibilities for closed-loop control such as for maintaining the level of a pool, the temperature in a room, the humidity in a greenhouse, etc.
  - **1-Wire Input:** Your EZIO8SA accommodates the versatile Dallas Semiconductor 1-Wire bus for interfacing sensors. The RJ12 connector permits the use of either a 6-pin connector (RJ12) or 4-pin connector (RJ11). The unit comes pre-programmed to support one DS18B20 temperature sensor. Other sensors will be supported in the future or units may be custom-programmed at the factory. The sensor is set for 8 bits of resolution (values range from 0 to 255 degrees centigrade) and alarms may be set for both low to high and high to low trip points. This programmability allows a simple thermal controller to be easily implemented. If so desired, this input can be used as a regular digital input. An internal pull-up resistor is provided so the input can accommodate a "dry" contact.



Plug your EZIO8SA PLM into an AC outlet. The LED on the PLM will flash on and off rapidly a few times, then turn on and off for about 1 second (indicating successful internal diagnostics), and finally glow steadily.

Programming Your EZIO8SA

EZIO8SA can be set up as a "Sender" that sends INSTEON group commands or broadcast messages upon changes on any of its inputs (OFF to ON or ON to OFF), or as a "Responder" that activates one or both of its relays in response to a command from a controller such as a KeypadLinc or ControlLinc. The relays on the EZIO8SA can also be controlled with INSTEON direct commands.

The many features of the EZIO8SA are best exploited with an automation PC/Server application or our free Windows-XP configuration and setup utility. The PC application can be used to alter the behavior of the inputs, such as, what command is sent on the detection of an OFF or ON condition, the INSTEON group number, a timer to delay the input OFF response, and/or the alarms on the 1-Wire and Analog inputs.

The unit is usable out-of-the-box manually as described below. Please note that a "Press and Hold" refers to pushing and holding, then releasing the set-button on the side of the PLM attached to the EZIO8SA. A "Tap" refers to gently and rapidly depressing and releasing the button.

Controlling One or Multiple INSTEON Devices with Signals on the Inputs

1) Put the EZIO8SA PLM in linking mode by pressing the set-button and releasing it after **10-12** seconds. The PLM will turn off its LED indicating it is waiting to be told which input is to be used for this link.
2) Tap the set-button on the PLM a number of times corresponding to the input to be used for control (e.g. once for input 1, twice for input 2, etc.) After the last tap, press the set-button on the PLM and release it after **3-4** seconds. Its LED will begin to flash about once per second indicating it is listening for an INSTEON device to link with.
3) On the INSTEON device to be controlled, press its set-button and release it after 3-4 seconds (or use method specific to device.) A successful link will be indicated by a flash of the LED on the controlled device (device

specific) and by the LED on the EZIO8SA PLM flashing, then continuing to blink about once per second.
4) Continue to link additional INSTEON devices using step 3 above, or end the linking session by holding the set-button on the EZIO8SA PLM for **3-4** seconds.

Stopping (Unlinking) an INSTEON Responder Device from being controlled by the EZIO8SA

1) Put the EZIO8SA PLM in unlinking mode by pressing its set-button and releasing it after **10-12** seconds. The PLM will turn off its LED indicating it is waiting to be told which input the INSTEON device is to be unlinked from.
2) Tap the set-button on the EZIO8SA PLM a number of times corresponding to the input to be unlinked (e.g. once for input 1, twice for input 2, etc.) After the last tap, press the set-button on the PLM and release it after **18-20** seconds. Its LED will begin to flash about once per second indicating it is listening for an INSTEON device to unlink from.
3) On the INSTEON device to be unlinked, press its set-button and release it after **3-4** seconds (or use method specific to device.) A successful unlink will be indicated by a flash of the LED on the controlled device (device specific) and by the LED on the EZIO8SA PLM turning on solidly.

Triggering EZIO8SA Inputs from another INSTEON Controller

1) Put controller in linking mode by holding the button to be used for controlling until it indicates linking mode (4-10 seconds depending on controller.) Usually its LED will blink or a light connected to it will flash.
2) Hold the set-button on the EZIO8SA PLM and release it after **3-4** seconds. The LED on the EZIO8SA PLM will turn off when the link is established with the controller. The controller will also give an indication of a successful link by flashing its LED or a load connected to it.
3) The EZIO8SA must be told which input to link by tapping the set-button on its PLM a number of times corresponding to the input number (e.g. once for input 1, twice for input 2, etc.) After the last tap, press the set-button on the EZIO8SA PLM and release it after **10-12** seconds. Its LED will turn on solidly indicating the end of the linking process.

Controlling the Relays with an INSTEON Controller

1) Put controller in linking mode by holding the button to be used for controlling until it indicates linking mode (4-10 seconds depending on controller.) Usually its LED will blink or a light connected to it will flash.
2) Hold the set-button on the EZIO8SA PLM and release it after **3-4** seconds. Its LED will turn off when the link is established with the controller. The controller will also give an indication of a successful link by flashing its LED or a load connected to it.
3) To link the current status of all the relays (status snapshot) to be recalled by a command from the controller, hold the set-button on the EZIO8SA PLM and release it after **3-4** seconds. Its LED will turn on solidly indicating the end of the linking process.
4) Alternatively to step 3 above, an individual relay is linked by tapping the set-button on the EZIO8SA PLM a number of times corresponding to the relay number (e.g. once for relay 1, twice for relay 2, etc.) After the last tap, press the set-button on the EZIO8SA PLM and release it after **3-4** seconds. Its LED will turn on solidly indicating the end of the linking process.

Unlinking the Relays from an INSTEON Controller

1) Follow the instructions specific to the INSTEON controller in use to place it in unlinking mode.
2) Press the set-button on the EZIO8SA PLM and release it after **3-4** seconds. Its LED will flash briefly and then go solid indicating a successful unlink. The LED on the controller will also go solid.

About the Links Database

The EZIO8SA maintains an internal table of up to 128 links where the information on each linked device is stored. The database can be accessed and altered with the use of our PC utility such that links can be entered, modified or deleted without having to use the "press and hold" method described earlier.

Controlling the Relays with X10 Controllers

EZIO8SA allocates all 16 units of a house code. Relays 1 through 8 respond to commands on X10 units 1 through 8. To setup the unit to respond to X10 commands follow these steps:

1) Press and hold the set-button on the EZIO8SA PLM and release it after about 4 seconds—the LED will now blink at a low rate;
2) Enter an ON (or OFF for disabling) command from your X10 controller—the LED will stop flashing indicating X10 enabling or disabling was successful. The outputs will now respond to X10 ON and OFF commands.

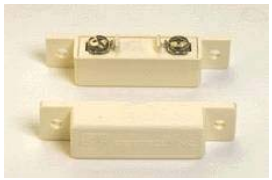
- To **disable X10 control**, substitute an OFF command in step 2 above.

Restoring All Parameters to Default Values (Factory Reset)

To restore all settings to their original factory values and to reset the links database, unplug your EZIO8SA PLM for about 10 seconds. Then, plug it back in WHILE HOLDING ITS SET-BUTTON for about 10 seconds. Upon release of the set-button, the unit will go through the normal power on sequence, and all parameters will be reset.

Possible Applications for your EZIO8SA

Given its ability to send INSTEON commands in response to events, and to cause actions upon receiving X10 or INSTEON messages, the possible applications for your EZIO8SA are practically limitless. The complement of relays, digital inputs, analog inputs, and temperature sensor bus allow for a wide variety of applications. The following are summaries of some possibilities. Please note that these are given as possibilities and Simplehomenet makes no claims as to the suitability or accuracy on the implementation of these ideas:



Complete Garage Manager: In this example the EZIO8SA is used to monitor the state of a garage door (open or closed) and to control the manual switch that activates the door opener. EZIO8SA is set up to send an INSTEON ON group command to a set of devices when the door is open, and an OFF command some minutes later. The door open detection can also be programmed to send a command to close the door through one of the EZIO8SA relays some minutes later if the door is detected to be open. A readily available magnetically activated sensor (reed switch type) is used as a door open/close sensor. This switch simply closes when next to a magnet, and opens when away from the magnet. Our setup PC utility is used to modify the device input parameters. Set up the unit as follows:

1. The picture on the right shows a typical magnetically activated sensor/switch. Some may come with wires already terminated, and others, as the one pictured, come with screw terminals. Connect I1+ to the +5V terminal and I1– to one wire of the door sensor. Connect the other sensor wire to the GND terminal.
2. Connect the two wires from the opener pushbutton to the R1CM and R1NO terminals on the EZIO8SA.
3. Link INSTEON devices to respond to door open or close events by following the steps in the section "**Controlling One or Multiple INSTEON Devices with Signals on the Inputs".** It is possible to link one or several INSTEON devices (lights, sirens, telephone dialers, etc.) that will be given commands when the door opens or closes.
4. If needed, use the set up utility to set the ON to OFF (door opening) and/or OFF to ON (door closing) commands to be sent. INSTEON commands are 13 00 for "Rapid OFF" and 11 FF for "Rapid ON".
5. **Programming Relay 1 to Activate the Door Opener Switch:** Use the setup utility to a) set the output timers in seconds; b) program the output 1 timer to 2 seconds; and c) establish a link to have relay 1 respond to group 1.

Greenhouse Manager: The unit could be set up to monitor the greenhouse temperature through a 1-Wire temperature sensor. An alarm would be set to send a group command upon the temperature reaching a certain threshold. Another alarm point would be set for when the temperature falls below a certain point. An INSTEON responder switch to control a heating element would activate upon receipt of the first group command and turn off upon receiving the second alarm from the temperature sensor. This would create a basic temperature controller to maintain the greenhouse at an optimum point. Any of the EZIO8SA relays could be used to control the heating element, or for controlling ancillary items such as window shutters, sunlight reflectors, fogging systems, irrigation valves, air baffles, etc., in response to other conditions. Some of the digital inputs could be used for checking the state of doors, light conditions, etc.