

PAC01

Z-Wave JEM-A Adapter

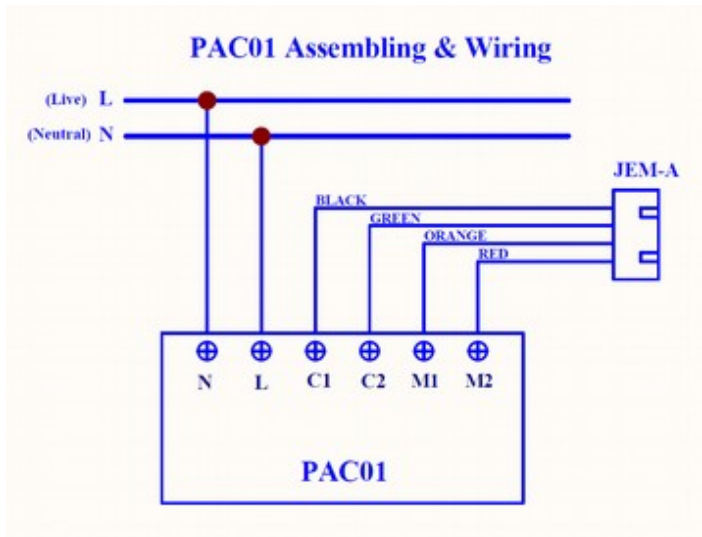


Fig 1. Assembling & Wiring

Introduction

PAC01 is a security enabled wireless JEM-A Adapter, based on Z-Wave Plus technology. Z-Wave Plus™ enabled devices displaying the Z-Wave Plus™ logo can also be used with it regardless of the manufacturer, and can also be used in other manufacturer's Z-Wave™ enabled networks. Z-Wave controller can On/Off the thermostat by sending Thermostat Setback command.

PAC01 is a transceiver which is a security enabled device which based on Z-Wave Plus technology, and it is fully compatible with any Z-Wave™ enabled network. Since PAC01 supports Security Command Class, it can learn with a Secured enabled controller to fully utilize the device. Its functionality and supported command classes is identical when included as a secure and non-secure device.

Adding to Z-Wave™ Network

In the front casing, there is an include button with LED indicator below which is used to carries out inclusion, exclusion, reset or association. When first power applied, its LED flashes on and off alternately and repeatedly at 2 second intervals. It implies that it has not been assigned a node ID.

The table below lists an operation summary of basic Z-Wave functions. Please refer to the instructions for your Z-Wave™ Certificated Primary Controller to access the Setup function, and to Add/Remove/associate devices

Function	Description	Annotation
----------	-------------	------------

No node ID	The Z-Wave Controller does not allocate a node ID to the Switch.	LED 2-second on, 2-second off
Add (Inclusion)	1. Put your Z-Wave controller into inclusion mode by following the instructions provided by the controller manufacturer.	
	2. Pressing Include button of PAC01 three times within 2 seconds will enter inclusion mode.	
Remove (Exclusion)	1. Put your Z-Wave controller into exclusion mode by following the instructions provided by the controller manufacturer.	
	2. Pressing Include button of PAC01 three times within 2 seconds will enter exclusion mode.	
	3. Node ID has been excluded.	LED 2-second on, 2-second off
Reset	1. Pressing Include button of PAC01 three times within 2 seconds will enter inclusion mode.	Use this procedure only in the event that the primary controller is lost or otherwise inoperable.
	2. Within 1 second, press Include button of PAC01 again for 5 seconds.	
	3. IDs are excluded.	

SmartStart	- Product has a DSK string, you can key in first five digit to increment smart start process, or you can scan QR code. - SmartStart enabled products can be added into a Z-Wave network by scanning the Z-Wave QR Code present on the product with a controller providing SmartStart inclusion. No further action is required and the SmartStart product will be added automatically within 10 minutes of being switched on in the network vicinity. *notice1:The QR code can be found on the device PAC01 or in the box.	
Association	The PAC01 is an always listening Z-Wave device, so associations may be added or removed by a controller at any time. Or If your controller requires to have the PAC01 send a 'node information frame' or NIF for associations, then pressing the On/Off button three times within 2 seconds will cause the PAC01 to send its NIF.	

✕ Adding a node ID allocated by Z-Wave Controller means inclusion. Removing a node ID allocated by Z-Wave Controller means exclusion.

✕ Failed or success in including/excluding the node ID can be viewed from the Z-Wave Controller.

LED Indication

To distinguish what mode the switch is in, view from the LED for identification.

State Type	LED Indication
Normal	Whenever we press button to PAC01, the LED will on; Otherwise the LED is off.
No node ID	Under normal operation, when the Switch has not been allocated a node ID, the LED flashes on and off alternately at 2-second intervals.
Learning	When PAC01 is in learning mode, LED flashes on and off alternately and repeatedly at 2 second intervals.

Programming

1. Basic Command Class / Thermostat Setbac Command Class

PAC01 will respond to BASIC and THERMOSTAT_SETBACK commands that are part of the Z-Wave system. If PAC01 is included as a secured node, it will only response to the security encapsulation command of BASIC and THERMOSTAT_SETBACK.

1-1 BASIC_GET / THERMOSTAT_SETBACK_GET

Upon receipt of the following commands from a Z-Wave Controller, the Adapter will report its state to the node inquired.

Basic Get Command: **[Command Class Basic, Basic Get]**

Basic Report Command:

Report Energy Saving Mode: **[Command Class Basic, Basic Report, Value = 0]**

Report Comfort Mode: **[Command Class Basic, Basic Report, Value = 0xFF]**

Thermostat Setback Get Command: **[Command Class Thermostat Setback, Thermostat Setback Get]**

Thermostat Setback Report Command:

Report Energy Saving Mode: **[Command Class Thermostat Setback, Thermostat Setback Report, Setback Type=0,2, Value=0x7A]**

Report Comfort Mode: **[Command Class Thermostat Setback, Thermostat Setback Report, Setback Type= 0,2, Value =0x00~0xFF]**

1-2 BASIC_SET / THERMOSTAT_SETBACK_SET

Upon receipt of the following commands from a Z-Wave Controller

[Command Class Basic, Basic Set, Value = 0] : Set Energy Saving Mode

[Command Class Basic, Basic Set, Value = 0xFF] : Set Comfort Mode.

[Command Class Thermostat Setback, Thermostat Setback Set, Setback Type=0,2 setbackState = 0x7A] : Energy Saving Mode

[Command Class Thermostat Setback, Thermostat Setback Set, Setback Type =0,2, setbackState = 0x00~0xFF] : Comfort Mode.

1. Z-Wave's Groups

The Adapter can be set to send reports to associated Z-Wave devices. It supports one association group with one nodes support for grouping 1. For group 1, the Adapter will report THERMOSTAT_SETBACK_REPORT and DEVICE_RESET_LOCALLY_NOTIFICATION.

2-1 Grouping 1 Lifeline(Maximum 1 nodes)

2-1-1 Device reset locally notification:

When PAC01 is reset manually, it will send a DEVICE_RESET_LOCALLY_NOTIFICATION to the nodes of group 1

3. Firmware update over the air (OTA)

PAC01 is based on 500 series SoC and supports Firmware Update Command Class, it can receive the updated firmware image sent by controller via the Z-wave RF media. It is a helpful and convenient way to improve some function if needed.

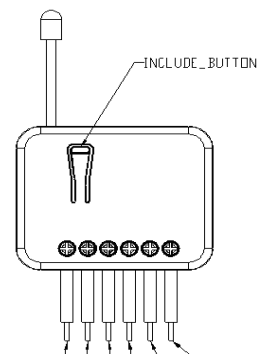
1. Command Classes

The Switch supports Command Classes including...

Command Class	Version	Required Security Class
Z-Wave Plus Info	2	None
Version	3	Highest granted Security Class
Manufacturer Specific	2	Highest granted Security Class
Security 2	1	None
Device Reset Locally	1	Highest granted Security Class
Association	2	Highest granted Security Class
Association Group Information	1	Highest granted Security Class
Powerlevel	1	Highest granted Security Class
Basic	1	Highest granted Security Class
Firmware Update Meta Data	4	Highest granted Security Class

Thermostat setback	1	Highest granted Security Class
Supervision	1	None
Transport Service	2	None

Product Overview



Troubleshooting

Symptom	Cause of Failure	Recommendation
The Adapter does not work and LED off	1.The Adapter does not connect the electrical wire properly 2.The Adapter break down	1. Check power connections 2. Don't open up the Adapter and send it for repair.
The Adapter cannot report to the group	1. Not carry out association 2. Same frequency interference	1. Carry out association 2. Wait for a while to re-try

Specification

Rated Voltage	220-240Vac 50Hz/60Hz 0.02A (EU) 100Vac 50/60Hz 0.02A (JP) 120Vac 60Hz 0.02A (US)
Operating Temperature	0°C - 40°C
Frequency Range	868.40MHz & 869.85MHz / EU (PAC01-EU); 908.4MHz & 916.0MHz / USA (PAC01-US); 922-927MHz / JAPAN (PAC01-JP);
RF Maximum Power	+5dBm
Transmission Range	Minimum 40 m in door 100m outdoor line of sight
Modulation Type	FSK (Frequency-Shift Keying)

** Specifications are subject to change and improvement without notice.

FCC ID : RHH PAC01



DANGER **Danger of electrocution!**

All works on the device may be performed only by a qualified and licensed electrician. Observe national regulations.

Any works introducing changes into the configuration must be always performed with disconnected voltage.

Choosing a Suitable Location

1. Do not locate the Module facing direct sunlight, humid or dusty place.
2. The suitable ambient temperature for the Module is 0°C~40°C.
3. Do not locate the Module where exists combustible substances or any source of heat, e.g. fires, radiators, boiler etc.
4. After putting it into use, the body of Module will become a little bit hot of which phenomenon is normal.

Warning:

Plug out to disconnect from power supply; Do not plug in line.

IMPORTANT

Installation must be performed by skilled technicians who are informed about the standards and

technical requirements of the appliance and its proper installation.

Check your local codes as they apply to your situation. If the house wiring is of aluminum, consult with an electrician about proper wiring methods.

Before proceeding with the installation, TURN OFF THE POWER TO THE LIGHTING

CIRCUIT AT THE CIRCUIT BREAKER OR FUSE BOX TO AVOID ELECTRICAL SHOCK.

Disposal

	This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.
---	--

Philio Technology Corporation
8F., No.653-2, Zhongzheng Rd., Xinzhuang Dist., New Taipei City 24257, Taiwan(R.O.C)

FCC Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital de-vice, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to cor-rect the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.