



Black Cat LED Dimmer Quick Start Guide

Product Code	Z Wave Frequency
ZWBCLD1-AUS	921.4
ZWBCLD1-EURO	868.4
ZWBCLD1-USA/Canada	908.4
ZWBCLD1-JP	922.5

The **BLACK CAT LED DIMMER** is an in-wall LED dimming module that is a transceiver which is also a security enabled module. Communication is based on Z-Wave Plus technology and it is fully compatible with any Z-Wave™ enabled network.

Zero Crossing Technology is utilised with it's dimming function.

The space efficient design of the **BLACK CAT LED DIMMER** module enables it to be easily hidden in a wall box or cavity. The **BLACK CAT LED DIMMER** supports the Security Command Class and its adaptive programming is capable of learning through a secured controller. Its functionality and supported command classes are identical when included as a secure and non-secure module.

Important Danger of electrocution!

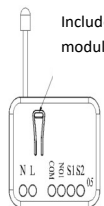
- This module installation requires a great degree of skill and may be performed only by a qualified and licensed electrician. The Warranty may be voided if not installed by a Qualified REC/Installer.
- Even when the module is turned off, voltage may be present on its terminals. Any works on configuration changes related to connection mode or load must be always performed by disconnected power supply (disable at the fuse box).

Installation:

- Before installation, choose a suitable location avoiding facing direct sunlight, humid or dusty environments. Suitable ambient Temperature is 0-40°C and do not locate where combustible substances or any source of heat is present. i.e. fires, boilers, radiators etc.
- Disconnect and isolate the power supply.
- Connect the module according to electrical diagram.
- Locate the antenna far from metal elements (as far as possible).
- Do not shorten the antenna.
- After putting it into service, the body of Switch will become warm to touch, this phenomenon is normal.

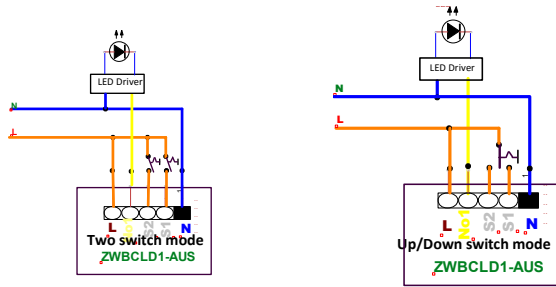
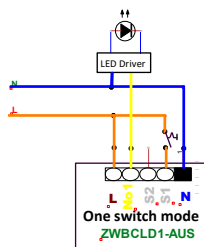
Note!

Do not connect the module to loads exceeding recommended values. Connect the module only in accordance to the below diagrams. Improper connections may be dangerous and may result in damage to the module.



Include Button. (Use to add or remove module from the Z-Wave network).

WARNING: For Use with Dimmable LED Bulbs only.



Module Inclusion Adding to Z-Wave™ Network.

On the front casing, there is an on/off button (Include Button) with LED indicator below which is used to toggle the switch on and off or carry out the inclusion, exclusion, reset or association process. When first power applied, its LED flashes on and off alternately and repeatedly at 0.5 second intervals. It implies that it has not been assigned a node ID and starts Auto Inclusion.

The function of Auto Inclusion will be executed as long as the in wall switch does not have Node ID and has just been connected to the mains power.

Note: Auto inclusion timeout is 2 minutes during which the node information of the explorer frame will be emitted once every several seconds. Unlike the "inclusion" function as shown in the table below, the execution of auto inclusion is free from pressing the On/Off button on the Switch.

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 PAD07 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 PAD07 three times within 2 seconds will enter exclusion mode. 3. Node ID has been excluded.	0.5s On, 0.5s Off (Enter auto inclusion)
Reset	1. Pressing Include button of PAD07 three times within 2 seconds will enter inclusion mode. 2. Within 1 second, press Include button of PAD07 again for 5 seconds. 3. IDs are excluded.	Use this procedure only in the event that the primary controller is lost or otherwise inoperable. 0.5s On, 0.5s Off (Enter auto inclusion)
Association	1. The PAD07 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 PAD07 send a 'node information frame' or NIF for associations, then pressing the On/Off button three times within 2 seconds will cause the PAD07 to send its NIF. 2. There are two groups for the dimmer.	

※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. NOTE 1: For auto-inclusion procedure, first set main controller into inclusion mode and then connect module to power supply.

The table below lists the operation summary of basic Z-Wave functions. Please refer to the instructions for your Z-Wave™ Certified Primary Controller to access the Setup function, and to include/exclude or associate the module.

State Type	LED Indication
Normal	Whenever we switch On and off of the PAD07 by On/Off button or RF command, the LED will lights up when switch on; whereas LED off when switch 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. By pressing On/Off button, it will stop flashing temporarily.
Learning	When PAD07 is in learning mode, LED flashes on and off alternately and repeatedly at 0.5 second intervals.

Manual dim level control :

To manually switch on the light, press and release the On/Off button or S1/S2 shortly when the light is off. The light will dim from off to the level which was set before switch off. To manually switch off the light, press and release the On/Off button or S1/S2 shortly when the light is on. To adjust the dim level, press and hold the On/Off button or S1/S2 until the desired dim level is achieved, then release.

Programming

1. Basic Command Class / Multilevel Switch Command Class

The dimmer will respond to BASIC and MULTILEVEL SWITCH commands that are part of the Z-Wave system. If the ZWBCLD1 is included as a secured node, it will only response to the security encapsulation command of BASIC and MULTILEVEL SWITCH.

1. Z-Wave's Groups

The Switch can be set to send reports to associated Z-Wave devices. It supports one association group with five nodes support for grouping 1.

For group 1, the dimmer will report MULTILEVEL_SWITCH_REPORT, ALARM_REPORT and DEVICE_RESET_LOCALLY_NOTIFICATION.

2-1 Grouping 1 Lifeline (Maximum 5 nodes)

2-1-1 Device reset locally notification :

When the ZWBCLD1 is reset manually, it will send a DEVICE_RESET_LOCALLY_NOTIFICATION to the nodes of group 1.

2-1-2 On/Off Event Report

When "on" or "off" state has been changed, it will send Multilevel Switch Report to the nodes of Grouping 1.

2-1-3 Overload alarm report

When the ZWBCLD1 detects the Overload, it will send Alarm Report to Group 1 nodes. After detecting overload state and sending this alarm report, the ZWBCLD1 will turn off the dimmer automatically and lockout the On/Off button and S1/S2. The only thing to do is unplug the ZWBCLD1 and reduce the load. Then re-power the ZWBCLD1 and it will work again.

2-2 Grouping 2 Control_Key1 : (Maximum 5 nodes)

When the On/Off status changes or the dim level is achieved manually, it will send BASIC_SET command to group 2 nodes to make them unanimous.

3. Z-Wave's Configuration

Configuration Parameter	Function	Size (Byte)	Value	Unit	Default	Description
1	Dimmer Level Report mode	1	0-1	Dec	1	0 : Disable 1 : Enable
2	LED indication mode	1	1-3	Dec	1	1: Show dimmer state 2 : Show night mode
				Dec		3: One flash mode
3	External switch type	1	1-3	Dec	1	1 : One switch mode 2 : Two switch mode 3: Up/Down switch mode
4	Restore dimmer state	1	0-2	Dec	1	0 : Dimmer off 1 : Last dimmer state 2 : Dimmer on

Configuration Parameters.

In Vera select Autoconfigure

3-1 Dimmer level report mode :

Whenever dimmer on/off state changes, it will send MULTILEVEL_SWITCH_REPORT to the nodes of group1. The default setting is Enable the function.

3-2 LED indication mode :

3-2-1 Show dimmer State : When dimmer is on, LED is on. When dimmer is off, LED is off. The default setting is Show dimmer State.

3-2-2 Show Night mode : When dimmer is on, LED is off. When dimmer is off, LED is on.

3-2-3 One flash mode : When dimmer on/off state changes, LED will light on one second and then off.

3-3 External switch type :

3-3-1 One switch mode : Only S1 can dim up the light bulb to brightest level, then dim down to darkest level, and so on...

3-3-2 Two switch mode : S1 and S2 can dim up the light bulb to brightest level, then dim down to darkest level, and so on...

3-3-3 Up/Down switch mode : S1 can only dim up the light bulb to brightest level, and S2 can only dim down to Off.

3-4 Restore dimmer state :

Whenever the AC power return from lost, PAD07 will restore the switch state which could be Dimmer off、Last dimmer state、Dimmer on. The default setting is Last dimmer state.

4. Firmware update over the air (OTA)

The ZWBCLD1 is based on 500 series SoC and supports Firmware Update Command Class, it can receives the updated firmware image sent by controller via the Z-wave RF media. It is a helpful and convenient way to improve some functions if needed.

Trouble Shooting.

Symptom	Cause of Failure	Recommendation
The dimmer does not work and LED off	1.The dimmer does not connect the electrical wire properly 2.The dimmer break down	1. Check power connections 2. Don't open up the dimmer and send it for repair.
The dimmer LED illuminating, but cannot control the ON/OFF state of the load attached	Check if the load connected to the dimmer has its own ON/OFF switch	Set the ON/OFF switch of the load attached to ON
The dimmer LED illuminating, but the Detector cannot control the Switch	1. Not carry out association 2. Same frequency interference	1. Carry out association 2. Wait for a while to re-try

4. Command Classes


The Switch supports Command Classes including...

- * COMMAND_CLASS_ZWAVEPLUS_INFO
- * COMMAND_CLASS_VERSION_V2
- * COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2
- * COMMAND_CLASS_SECURITY
- * COMMAND_CLASS_DEVICE_RESET_LOCALLY
- * COMMAND_CLASS_ASSOCIATION_V2
- * COMMAND_CLASS_ASSOCIATION_GRP_INFO
- * COMMAND_CLASS_POWERLEVEL
- * COMMAND_CLASS_BASIC
- * COMMAND_CLASS_SWITCH_MULTILEVEL_V2
- * COMMAND_CLASS_CONFIGURATION
- * COMMAND_CLASS_ALARM
- * COMMAND_CLASS_FIRMWARE_UPDATE_MD_V2
- * COMMAND_CLASS_SCENE_ACTIVATION
- * COMMAND_CLASS_SCENE_ACTUATOR_CONF

5. Technical Specifications

Power Supply	110—240VAC ± 10% 50/50Hz.
Input Rating:(Operating Current)	0.01~1A ; (Maximum: 1A)
Output Rating: Maximum Load (Current)	Maximum: 0.9A (100-240Vac)
Output Rating: Maximum Load (watts)(230V)	200W (13W x 15 pieces) (Dimmable LED bulbs)(230Vac)
Output Rating: Maximum Load (watts) (110V)	100W (13W x 15 pieces) (Dimmable LED bulbs)(110VAC)
Output Rating: Maximum Dimmable LED Bulbs	Maximum: 15 pieces (Dimmable LED bulbs)
Operational Temperature	0°C to +40°C
Frequency	921.4MHz
Modulation	FSK
Dimensions	47.5* 39.2* 25mm
Weight	55g (inc. packaging)

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.
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This device can be included and operated in any Z-Wave network with other Z-Wave certified modules from any other manufacturers. All constantly powered nodes in the same network will act as repeaters regardless of the vendor in order to increase reliability of the network.

Important disclaimer.

Z-Wave wireless communication is inherently not always 100% reliable, and as such, this product should not be used in situations in which life and/or valuables are solely dependent on its function.

Manufactured for BLACK CAT Control Systems

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FCC Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital module, 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 correct 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 module complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This module may not cause harmful interference, and
- (2) This module 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

FCC ID : RHHPAD07



www.blackcatcontrolsystems.com.au

Date: 17/10/2018

Document: BLACK CAT LED Dimmer User Manual

Version 1.1.2