



## Black Cat Blind/Shutter Installation Guide (ZWBCBS)

This in-wall Roller Shutter Controller is designed to raise or lower a roller shutter or blind which is connected to its terminals using radio waves.

This Controller is also a transceiver which is a Z-Wave™ Plus enabled device and is fully compatible with any Z-Wave™ Plus enabled network.

The slim design allows the Controller to be easily hidden into a wall box or inside a cavity.

The new smart relay calibration technology can reduce the inrush current caused by the load and allows the module to work perfectly with many different brands of Roller Shutter and Blinds

This in-wall Blind/Shutter Controller is able to detect position of the Blind/Shutter by using a patented power measuring method, so it can be remote controlled to be not only fully up or down but it can also be adjusted to ex. 30% or 50%, when manually controlled by a push button. The controller also can memorize the position and send the new shutter position to its controller.

### 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.
- Place the in wall Controller into a wall box and connect the AC power wire L and N.
- 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.

### Operation

- To manually switch up and down of the shutter, simply press the external switch S1 or S2.
- The built in meter function and can read the Watt, KWh, V(Voltage), I(Current), PF(Power Factor) of the load by using Z-Wave command class, the user can set a threshold current to get the warning caused by abnormal operation
- The Controller has a overload protection function which can help to prevent a short circuit.

**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

## Adding to the Z-Wave™ Network

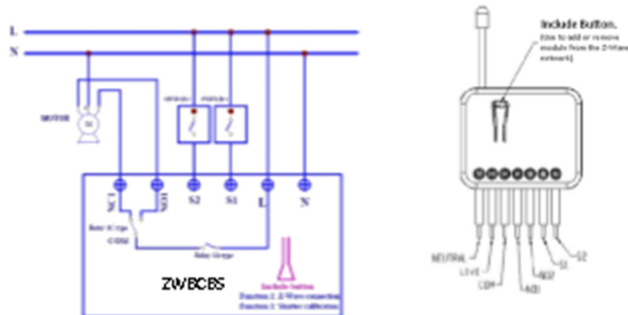
In the front casing, there is an include button with LED indicator below which is used to carry out inclusion, exclusion, reset or association. When power is first applied, the LED flashes on and off alternately and repeatedly at 0.5 second intervals. This indicates that it has not been assigned a node ID and will start auto inclusion.

### Auto Inclusion.

The function of auto inclusion will be executed as long as the device does not have a Node ID and just connected the device to mains power.

**Note:** Auto inclusion timeout is 2 minutes during which the node information explorer frame will be emitted once every several seconds. Unlike “inclusion” function as shown in the table below, the execution of auto inclusion is free from pressing the Include button on the device.

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



Function	Description	LED Indication
No Node ID	The Z-Wave Controller does not allocate a node ID to the PAN08.	LED 2-second on, 2-second off
Inclusion (Add a new node)	1. Put your Z-Wave controller into inclusion mode by following the instructions provided by the controller manufacturer. 2. Pressing Include button three times within 2 seconds will enter inclusion mode.	One press, one LED flash
Exclusion (Remove an existed node)	1. Put your Z-Wave controller into exclusion mode by following the instructions provided by the controller manufacturer. 2. Pressing Include button three times within 2 seconds will enter exclusion mode. Node ID has been excluded.	One press, one LED flash    LED 0.5s On, 0.5s Off (Enter auto inclusion)
Reset	1. Pressing Include button three times within 2 seconds will enter inclusion mode.  2. Within 1 second, press Include button again for 5 seconds.  3. IDs are excluded.	Use this procedure only in the event that the primary controller is lost or otherwise inoperable.   LED 0.5s On, 0.5s Off (Enter auto inclusion)
Association	1. The Device is an always listening Z-Wave device, so associations be added or removed by a controller at any time. or If your controller requires to have the Device send a 'node information frame' or NIF for associations, pressing the On/Off button three times within 2 seconds will cause the Device to send its NIF. There is 1 group (Group 1) for the Device.	One press one LED flash

## LED Indication

To distinguish what mode the device is in view the status of the LED.

State Type	LED Indication
Motor Activate	Led will flash every second whilst the Motor is activated. When S1 or S2 is operate, the LED will flash even when the motor has stoppedf, this is to let user know the S1 or S2 still close and not been released.
No node ID	Under normal operation, when the Device has not been allocated a node ID, the LED flashes on and off alternately at 2-second intervals. By pressing S1, S2 or the Include button, it will stop flashing temporarily.
Learning	When the Deviceis in learning mode the LED flashes on and off alternately and repeatedly at 0.5 second intervals.
Overload	When overload state occurs, the Device is disabled and the LED flashes on and off alternately at 0.2 second intervals. The Device will send alarm_type=8 alarm_Level=0xFF to Group1, Overload state can be cleared by a disconnect and reconnect the Device to the main power supply.

## Moving Range Calibration.

1. It is important to carry out a shutter calibration process before you control the Blind/Shutter to move.

Press inclusion button for more than 3 seconds and release before the 6<sup>th</sup> second. The roller shutter controller will start the shutter calibration process.

The process is composed of three continuous stages.

1. The shutter move to the TOP (first stage)
2. Then move to the BOTTOM (second stage)
3. Then it will move to the TOP once more (third stage).

The Controller will then know the total range of UP and DOWN.

2. During the shutter calibration process if there are any emergencies you can press and release the include button to stop the process.

3. If the direction is found to be in reverse, this may be caused by the wrong connection of NC and NO to the motor, please exchange the NC and NO connection and execute calibration process again.

4. Please select a compatible motor which can stop by itself when it goes to bottom end or top end.

## Programming.

Contact Support for full Programming support.

### 6 Z-wave's Groups introduction (Association Command Class Version 2 )

There is only one group called Group1, there is only one node for Group1 which supports MULTILEVEL\_SWITCH\_REPORT、METER\_REPORT\_COMMAND\_V3、ALARM\_REPORT.

Z-Wave's Configuration						
Configuration Parameter	Function	Size (Byte)	Value	Unit	Default	Description
1	Watt Meter report period	2	0x01-0x7FFF	5s	720	5*720s=3600s =1 Hour
2	KWH Meter report period	2	0x01-0x7FFF	10min.	6	6*10min= 1 hour
3	Threshold of current for Load Caution	2	10-500	0.01A	500	500*0.01A= 5A
4	Threshold of KWH for Load Caution	2	1-10000	1 KWH	10000	
5	Switch Type	1	1 or 2		2	1. 1 Push Button 2. 2 Push Buttons
6	Level Report Mode	1	1 or 2		2	1. Report Destination level in 5s 2. Report 10% level while running.

#### 1. Watt Meter Report Period:

If the setting is configured for 1hour (set value =720), the device will report its instant power consumption every 1 hour to the node of Group 1. The maximum interval to report its instant power consumption is 45 hours (5s\*32767/3600=45hr). Default value is 1 hour.

#### 2. KWH Meter Report Period:

If the setting is configured for 1hour (set value =6), the device will report its Accumulated Power Consumption (KW/h) every 1 hour to the node of correspond Group. The maximum interval to report its Accumulated Power Consumption (KW/h) is 227.55 days (10min\*32767/1440=227.55 days). Default value=1 hour.

#### 3 .Threshold of current for Load Caution

This is a warning when the current of load over the preset threshold value, if the setting value is 500, when the load current of Relay1 over this value, the device will send current meter report to warn the Group1 node, the Range of the setting value is from 10 to 500, and the default value is 500.

#### 4. Threshold of KWh for Load Caution

This is a warning when the KWh of load over the preset threshold value, If the setting value is 10000, when the Accumulated Power Consumption of Relay1 or Relay2 over this value, the device will send KWh Meter Report command to the node of correspond Group, minimum value is 1KWh and default value is 10000 kWh

#### 5. External switch type

**5-1 One Push Button** When the configuration setting is One Push Button, only S1 input will be valid.The control moving commands can be accepted in this switch type while the shutter is moving. In this switch type, the inclusion/exclusion/reset/association function can also be fulfilled by pressing S1 just like the operation of include button. When S1 is short pressed, the shutter will move up toward TOP(0xFF). While in this moving S1 is short pressed again, the shutter will stop moving. A third short

pressing of S1 will move the shutter down toward BOTTOM(0x00). While in this moving S1 is short pressed again, the shutter will stop moving.

Inverting direction and stopping.

**5-2 Two Push Button** : (The default setting is Two Push Button (2)) If this setting is configured as Two Push Button, S1 and S2 input will be valid, but will not accept pressing S1 and S2 at the same time. In this switch type, the inclusion/exclusion/reset/association function can also be fulfilled by pressing S1 or S2 just like the operation of include button.

When S1 is pressed and hold more than 1.5 seconds, the shutter will move up toward TOP(0xFF), and the shutter will stop moving when S1 is released. When S2 is pressed and hold more than 1.5 seconds, the shutter will move down toward BOTTOM(0x00), and the shutter will stop moving when S2 is released. When S1 is short pressed, the shutter will move up toward TOP(0xFF). While in this moving short pressed S1 again, the shutter just keep moving up toward TOP(0xFF). The easy way to stop this moving is short pressing S2. When S2 is short pressed, the shutter will move down toward BOTTOM(0x00). While in this moving short pressed S2 again, the shutter just keep moving down toward BOTTOM(0x00). The easy way to stop this moving is short pressing S1

**When in Two Push Button switch type, S1 or S2 are pressed and not released, and PAN08 receive any control moving command from Z-Wave RF (Ex. BASIC\_SET, BINARY\_SWITCH\_SET, MULTILEVEL\_SWITCH\_SET, MULTILEVEL\_SWITCH\_START\_LEVEL\_CHANGE or MULTILEVEL\_SWITCH\_STOP\_LEVEL\_CHANGE or SCENE\_ACTIVATION\_SET), PAN08 won't do any change in position but report alarm to Group1 (Alarm\_Type=1, Alarm\_level =0xFF), this indicate that the S1 or S2 not been release.**

**ATT. : For avoid misunderstanding that RF command dose not work, it is recommended to check the status of S1 and S2.**

## 6. Level Report mode

Mode 1 : In 5 seconds period after controlled by a moving command, it will report the destination level when received request command. Out of the 5 seconds period, it will report the actual level of the shutter when received request command.

Mode 2 : Whenever the shutter move pass a 10 percent level, it will auto report the level to Group 1 node.

### Command Classes

The Switch supports Command Classes including...

- \* COMMAND\_CLASS\_ZWAVEPLUS\_INFO
- \* COMMAND\_CLASS\_VERSION\_V2
- \* COMMAND\_CLASS\_MANUFACTURER\_SPECIFIC\_V2
- \* COMMAND\_CLASS\_DEVICE\_RESET\_LOCALLY
- \* COMMAND\_CLASS\_ASSOCIATION\_V2
- \* COMMAND\_CLASS\_ASSOCIATION\_GRP\_INFO
- \* COMMAND\_CLASS\_POWERLEVEL
- \* COMMAND\_CLASS\_SWITCH\_BINARY
- \* COMMAND\_CLASS\_BASIC
  
- \* COMMAND\_CLASS\_SWITCH\_MULTILEVEL\_V3
- \* COMMAND\_CLASS\_CONFIGURATION
- \* COMMAND\_CLASS\_ALARM
- \* COMMAND\_CLASS\_METER\_V3
- \* COMMAND\_CLASS\_SCENE\_ACTIVATION
- \* COMMAND\_CLASS\_SCENE\_ACTUATOR\_CONF
- \* COMMAND\_CLASS\_FIRMWARE\_UPDATE\_MD\_V2

## Troubleshooting

### Symptom Cause of Failure Recommendation

Symptom	Cause of Failure	Recommendation
The Device is not working and LED is Off	1. The device is not connected to Power 2. The Device is faulty.	1. Check Power Connection 2. Do not open, return for repair.
Direction of Motion is in reverse.	Incorrect connection of the NO & NC Motor connection	Swap the NO & NC connection
LED OK but no control	1. No Association Setting 2. Same Frequency interference. 3. S1 or S2 are both pressed in, device will not accept RF command	1. Carry out association, 2. Wait and retry. 3. Release S1 and S2

## Technical Specifications

Operating Voltage 100 ~240VAC /50Hz/60Hz

Maximum Load 6.5A (230Vac/120Vac) (Resistive load)

Range Minimum 40 m in door 100m outdoor line of sight

Operating Temperature 0°C ~ 40°C

Frequency Range 921.40MHz.

Manufactured for Black Cat Control Systems

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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 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.

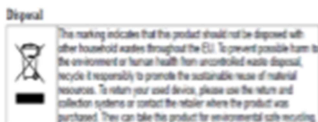


[www.blackcatcontrolsystems.com.au](http://www.blackcatcontrolsystems.com.au)

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Version 1.01



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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.