Slim Multi Sensor ZWBC41S-AUS
Quick Start Guide

The slim multi-sensor ZWBC41S has PIR, door/window, temperature and luminosity functions built in, all based on Z-Wave™ technology.

It is a Z-Wave™ plus product that supports Security and OTA. These are the newest features of Z-Wave™ technology. Z Wave™ is a wireless communication protocol designed for home automation, specifically to remotely control applications in residential and light commercial environments. The technology uses a low power RF radio embedded or retrofitted devices fitted into home electronic devices and systems such as lighting, home access control, entertainment systems, environment control and household appliances.

This product an be included and operated in any Z-Wave™ network with other Z-Wave™ certified devices from other manufacturers and/or applications. All non-battery operated nodes within the network will act as repeaters regardless of vendor which increases the reliability of the network.

The device adopts the Z-Wave™ 500 series chip. When your Z-Wave™ network is made up of all Z-Wave™ series devices, the network system will have the following advatages.

• Concurrent multi-channel support which reduces external interference.
• Better RF range, improved about 10 meters in indoor environments
• Supports 100 Kbps transmit speed, speeds up communication.

How to Add to/Remove from Z-Wave™ Network.

There are two tamper keys in the device, one is in the back side another is on the front side. They have the same function. Either of them can be Included, Excluded or Associated from the Z-Wave™ network.

To add the device into the Z-Wave™ network, make sure the primary controller is in Inclusion Mode, then power up the sensor by taking out the Mylar insulation tape in the back of the device. The device will then start the NWI (Network Wide Inclusion) process. It should be included in approximately 10 seconds. The LED will light for approximately 1 second.

Z-Wave™ Notification.

After the device is added to the network it will wake up once per day by default. When it wakes up it broadcasts a wake up notification message to the network and will remain awake for 10 seconds to receive setting commands.

The minimum wake up interval setting is 30 minutes and the maximum is 120 hours. The Interval step is 30 minutes.

The device can be woken up immediately by removing the front cover and pressing the tamper key once. The device will wake up and remain woken for 10 seconds.

Function	Description
Inclusion (Add a new node)	1. Put your Z-Wave controller into inclusion mode by following the instructions provided by the controller manufacturer. 2. Press theTamper Key 3 times within 1.5 seconds will enter inclusion mode. 3. After Inclusion is sucessful the device will wake to receive the setting command from the Z-Wave Network for about 20
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 the Tamper key three times within 1.5 seconds will enter exclusion mode. Node ID has been excluded.
Reset	1. Pressing the Tamper Key four times within 1.5 seconds and do not releasethe Tamper Key after the 4th press, the LED will turn On. after that within 2 seconds release the Tamper Key. If successful the LED will light for 1 second, otherwise the LED will flash once. 3.Node ID's are excluded and all settings will be reset to factory default.
Association	1. Put your Z-Wave controller into Association mode by following the instructions provided by the controller manufacturer. 2. Press the Tamper Key 3 times within 1.5 secondsto enter Association Mode. Note: The device supports 2 groups. Group 1. is for receiving the report message such as the triggered event, temperature,illumination etc. Group 2. is for light control, the device will send the "Basic Set" command to this Note: Always RESET a Z-Wave Device priorto Inclusion When the device is NWI mode, there is no sensor functionality. The NWI mode times out after 30 seconds, you can also press the Tamper key 3 times to abort the NWI mode.

Z-Wave™ Message Report.

When the PIR motion is triggered or the door/window sensor is triggered the device will report the event and will also report the battery status, temperature and luminosity.

By default the device will use the Notification report to trigger the event, it can however be changed to a sensor Binary Report by setting the Configuration parameter 7 bit 4 to 1.

Motion Report.

When the PIR detects motion the device will send the report to nodes in Group 1.

Door/window Report.

When the door/window state changes, the device will send the report to nodes in Group 1.

Tamper Report.

If both of the 2 Tamper Keys are pressed for over 5 seconds, the device will enter the Alarm state, when in this state pressing any on the Tamper keys will send a report to the nodes in Group 1.

Temperature Report.

When PIR motion is detected or the door/window state is changed the device will send a Sensor Mutilevel Report to the nodes in Group 1.

Illumination Report.

When PIR motion is detected or the door/window state is changed the device will send a Sensor MultiLevel Report to the nodes in Group 1.

Timing Reports.

Battery Level: Default=6 hours Change using Config. Parameter 10
Low Battery: every 30 minutes when Battery Level is low.
Door/window state: Default=6 hours Change using Config. Parameter 11
Illumination: Default=6 hours Change using Config. Parameter 12
Temperature: Default=6 hours Change using Config. Parameter 13
Note: The above configuration parameters can be set to 0 to disable report.
Setting Parameter 20 will change the time interval, the default is 30 minutes, if set to 1 then the report interval will be 1 minute.
The only function that will not be disabled is the Low Battery report.

Power Up Procedure.

Battery Check.

When the device is powered up the power level will be detected immediately. If the power level is to low, the LED will continue to flash for about 5 seconds. Replace battery if this occurs.

PIR Warm up.

When the device is powered up, the PIR needs to warm up before being placed into operation. The warm up time is about 1 minute during which the LED will flash every 2 seconds. After the warm up procedure is complete the LED will flash 3 times.

NWI.

When the device is powered up it will check if it is already added to a network. If it isn't, then it will enter the NWI mode. The LED will flash every second and will continue for 30 seconds until it timeout or is included. NWI can be aborted by pressing the Tamper key 3 times.

Awake.

When the device is powered up it will remain awake for 20 seconds, during which the controller can communicate with the device. Normally the device is asleep to conserve battery power.

Over the Air Firmware Update (OTA)

This device supports firmware update via OTA.

Before commencing this procedure remove the front cover otherwise the firmware check will fail. Place the controller into OTA firmware update mode and then press the front tamper key once to start the procedure.

Once the firmware is downloaded the LED will flash every 0.5 sec, during this time **DO NOT REMOVE the BATTERY** otherwise it will cause Firmware failure and the device will not function.

Once the LED stops flashing, it is recommended that the device is powered up by removing the battery for 30 seconds then replacing.

Supported Command Classes.

The device supports the Security Z-Wave function when the device is included into a security controller. The device will auto switch to Security mode and while in that mode the following commands will need to use Security Command Class to communicate otherwise there will be no response.

COMMAND_CLASS_BATTERY
COMMAND_CLASS_NOTIFCIATION_V4
COMMAND_CLASS_ASSOCIATION_V2
COMMAND_CLASS_CONFIGURATION
COMMAND_CLASS_SENSOR_BINARY_V2
COMMAND_CLASS_SENSOR_MULTILEVEL_V5
COMMAND_CLASS_WAKEUP_V2

DIP Switch.

There is one DIP switch in front of the device. It is located on the right top of the PCB and also has M1 & M2 markings.

| M1	M2	Description
ON	ON	Test Mode
ON	OFF	Normal Mode
OFF	ON	Normal Mode
OFF	OFF	Custom Mode: Use Para.5 to set operation mode/

There are two modes, Test and Normal. Test mode is for the user to test the sensor functions during installation. Normal Mode is for normal operation. When the tamper key on the back is released, the device will be placed into Test Mode regardless of the DIP switch setting.

Battery Installation.

When the device reports a low battery message, the battery should be replaced. The battery type is CR123A 3.0V

To replace open the front cover and follow the following steps:

Depress the clear tab to release the front cover.

Hold the front cover and pull back

Hold the front cover and pull up
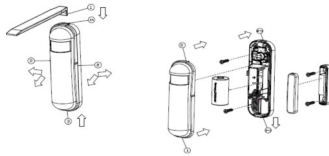
Replace with a   new battery and replace the front cover.

Choose a suitable location.

Recommended height is 1600mm

Do not face a window or direct sunlight

Do not face a source of heat, such as radiator. Ducted heating duct or other heat source.

Z-Wave™ Supported Command Class.

COMMAND_CLASS_ZWAVEPLUS_INFO_V2
COMMAND_CLASS_BATTERY
COMMAND_CLASS_NOTIFICATION_V4
COMMAND_CLASS_ASSOCIATION_V2
COMMAND_CLASS_CONFIGURATION
COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2
COMMAND_CLASS_VERSION_V2
COMMAND_CLASS_SENSOR_BINARY_V2
COMMAND_CLASS_SENSOR_MULTI-LEVEL_V5
COMMAND_CLASS_WAKE_UP_V2
COMMAND_CLASS_ASSOCIATION_GRP_INFO
COMMAND_CLASS_POWERLEVEL
COMMAND_CLASS_DEVICE_RESET_LOCALLY
COMMAND_CLASS_MULTI_CMD
COMMAND_CLASS_SECURITY
COMMAND_CLASS_FIRMWARE_UPDATE_MD_V2

Specifications:

Power: CR123A Lithium battery

Frequency: 921.4mHz

Range: 40 Meters Indoors up to 100M outdoors.

Operating Temperature: -10°C ~40°C

For Indoor Use only.

Specifications subject to change without notice due to continuing product improvement.

www.blackcatcontrolsystems.com.au

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Manufactured for Black Cat Control Systems
26 Tiller Lane, Patterson Lakes 3197 Australia by:
Philio Technology Corporation.
8F.,No.653-2,Zhongzheng Rd., Xinzhuang Dist.,
New Taipei City 24257,Taiwan(R.O.C)

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Z-Wave's Configuration ZWBC41S

Name	Configuration Parameter	Value	Value	Description
Basic Set	2	0xFF	All	Set the Basic command value to turn on Light 0xFF(-1) Turn on 1-100 for dimmer 0 Turn Off Caution. Value is an unsigned byte the range is from 0x00 to 0xFF
PIR Sensitivity	3	80	0-99	PIR sensitivity settings. 0= disable 1=lowest 99=highest
Light Threshold	4	99	0-99	Luminosity settings. 0= disable 1=darkest 99=lightest
Operation Mode	5	0		Refer to Programming guide
Multi-Sensor Function Switch	6	0		Refer to Programming guide
Custom Function	7	0		Refer to Programming guide
PIR Redetect Interval Time	8	1~127		Default =3 1 = 8 seconds
Turn Off Light time	9	1~127		Default =4 1 = 8 seconds 0=Disable
Auto Battery Report	10	1~127		0=Disable default=12 Use parameter 20 to set time interval
Door Window Report	11	1~127		0=Disable default=12 Use para 20 to set time interval
Illumination Report	12	1~127		0=Disable default=12 Use para 20 to set time interval
Temperature Report	13	1~127		0=Disable default=12 Use para 20 to set time interval
Time Interval	20	30	0~0xFF	Unit=1minute
Temperature Differentual Report	21	1	0~07F	0=Disable Unit = Fahrenheit
Illumination Differential report	22	0	0~0x63	0=Disable Unit=%