LED Strip

View the expanded manual:
http://aeotec.com/support

IMPORTANT!

This product has been fully tested and certified to work with Z-Wave by the Z-Wave Alliance. It is crafted using Z-Wave Plus, the latest device version of Z-Wave. As such, if the product does not work with your gateway, please be sure to check with your gateway manufacturer that they have integrated this device with their gateway for full operation.

① Aeotec by Aeon Labs LED Strip.

Aeotec LED Strip is a multi-coloured LED Strip which allows control (on/off/dim/colour change) via wireless Z-Wave commands.
The LED Strip can also communicate securely via AES 128 wireless Z-Wave commands and supports Over-The-Air (OTA) firmware upgrades.

② Familiarise yourself with your LED Strip.

Package Contents:

1. LED Strip Controller (×1)
2. Screws (×2)
3. Back Mount Plate (×1)
4. 5 meters LED strip (×1)
5. Power Adapter (×1)
6. Double-Sided Tape (×1)

Install your LED Strip.

The installation of your LED Strip has two major steps: the LED Strip Controller and the LED Strip. LED Strip can be installed inside or outside your home, but the LED Strip Controller should only be installed inside your home and should not be installed outdoors in elements such as rain and snow.

1. Plug the LED strip to the LED strip connector of your LED Strip Controller.
2. Connect the Power Adapter to your LED Strip.
3. Plug the Adapter into an electrical outlet and then the Network LED on LED Strip Controller will blink slowly to indicate it is ready to be paired to your Z-Wave network.
4. Now press the Action Button to toggle your LED strip on or off to ensure the connection between your LED Strip and its Controller properly connected.

③ Quick start.

Adding your LED Strip to a Z-Wave network.

You are now able to manually control the LED Strip directly via pressing your LED Strip' Action Button. It is time to add your LED Strip to your Z-Wave Network. To set your Z-Wave gateway/controller into pairing mode, please refer to the respective section within your controller instruction manual.

1. Set your Z-Wave controller into pairing mode.
2. Press the Action Button on the LED Strip.
3. If the LED Strip has been successfully added to your Z-Wave network, its Network LED will be solid. If the pairing was unsuccessful, the red LED will be on for 2 seconds and then remain a colourful gradient, repeat the instructions above from step 1.

With your LED Strip now working as a part of your smart home, you'll be able to configure it to indicate different colours from your home control software via setting the RGB value. Please refer to the user manual for your Z-Wave controller/gateway for precise instructions on configuring your LED Strip to your needs.

● Removing your LED Strip from a Z-Wave network.

Your LED Strip can be removed from your Z-Wave network at any time. You'll need to use your Z-Wave network's main controller. To set your Z-Wave controller/gateway into removal mode, please refer to the respective section within your Z-Wave controller instruction manual.

1. Set your Z-Wave controller into device removal mode.
2. Press the Action Button on the LED Strip.
3. If the LED Strip has been successfully removed from your Z-Wave network, its Network LED will remain colourful gradient. If the removal was unsuccessful, the Network LED will still be solid, repeat the instructions above from step 1.

④ Advanced functions.

Colour Display Cycle Configuration.

Parameter 37 [4 byte] will cycle the colour displayed by LED Strip into different modes:

	7	6	5	4	3	2	1	0
Value 1 (MSB)	Colour Transition Style		Colour Change Speed Option		Colour Display Cycle			
Value 2	Brightness							
Value 3	Cycle Count							
Value 4 (LSB)	Time Base of Coulor Change Speed		Colour Change Speed Level					

Colour Display Cycle (4 bits)

The Colour Display Cycle field can have the following values corresponding to 4 different modes:

Colour Display Cycle	Description
0	Inactive (keep the current configuration values)
1	Rainbow Mode(red, orange, yellow, green, cyan, blue, violet)
2	Multi Colour Mode(colours cycle between selected colours)
3	Random Mode.
4	Single Colour Mode.
5 to15	Reserved.

Colour Transition Style (2 bits)

The following values correspond to 2 different transition styles between colours:

Colour Transition Style	Description
0	Smooth Colour Transition.
1	Fade Out Fade In Transition.

Cycle Count (8 bits)

The Cycle Count is used to define the number of repetitions/cycles displayed by your LED Strip in Colour Display Cycle before stopping.

Cycle Count	Description
0	Unlimited.
1 to 254	Total number of repetitions/cycles before stopping.
255	Inactive (keep the current configuration values).

Brightness (8 bits)

Brightness Level	Description
1 to 99	1 = Min level, 99 = Max level.
0 or 255	Inactive (keep the current configuration values).

Time Base of Colour Change Speed (3 bits)

This function would be used when the Colour Transition Style is set to Fade Out/In.

Time Base	Description
0	Time base is 1s.
1	Time base is 10ms.
2	Time base is 100ms.

Colour Change Speed Level (5 bits)

This function would be used when the Colour Transition Style is set to Fade Out/In.

Speed Level	Description
0	Constant speed.
1 to 30	Accelerate/decelerate speed from the level 1 to 30.
31	Inactive (keep the current configuration values).

The table above shows a decimal representation of the settings that can be set on parameter 37.

Parameter 39 [4 byte] can be used to set up to 8 colours to cycle between when LED Strip is in Multi Colour Mode. Colours transition from Colour Index 1-8.

	7	6	5	4	3	2	1	0
Value 1 (MSB)	Index 1					Index 2		
Value 2	Index 3					Index 4		
Value 3	Index 5					Index 6		
Value 4 (LSB)	Index 7					Index 8		

Colour Component Id:

ID	1	2	3	4	5	6	7	8
Colour	Red	Orange	Yellow	Green	Cyan	Blue	Violet	Pinkish

Example:
If you set the parameter 39 to 305136516 (0x12300000 in hexadecimal), the colour will be changed from Red to Orange and then Orange to Yellow circularly (Red-Orange-Yellow).

When your Strip is in Single Colour Mode and the Fade Out Fade In transition style, the parameter 39 would be used to set the RGB value.

	7	6	5	4	3	2	1	0
Value 1 (MSB)	Red value							
Value 2	Green value							
Value 3	Blue value							
Value 4 (LSB)	Reserved							

When your Bulb is in Random Mode, the parameter 39 would be used to set the random seed, then your bulb will automatically generate random colours to be displayed according to the random seed you set.

	7	6	5	4	3	2	1	0
Value 1 (MSB)	Random seed value							
Value 2								
Value 3								
Value 4 (LSB)								

✷ Enabling Security Encryption.

In order to take full advantage of all functionality the LED Strip, you may want your LED Strip is a security device that uses secure/encrypted message to communicate in your Z-Wave network, so a security enabled controller/gateway is needed.

1. Set your Z-Wave controller into pairing mode.
2. Press the Action Button on LED Strip Controller 2 times within 1 second.
3. If LED Strip has been successfully added to your Z-Wave network, its Network LED will be solid when you turn Strip on.

✷ Resetting your LED Strip.

If at some stage, your primary controller is missing or inoperable, you may wish to reset all of your LED Strip's settings to their factory defaults. To do this, press and hold the Action Button for 20 seconds and then release it. Your LED Strip will now be reset to its original settings, and the green LED will be solid for 2 seconds and then remain the colourful gradient status as a confirmation.

⑤ Technical Specifications.

Model number: ZW121.
Power supply: 24V/3A DC Adapter.
Max operating power: 72W.
Max standby power: 1.2W.
Colour temperature: 450 to 650 Kelvin for RGB colour, 3000 to 3500 Kelvin for Warm white, 6500 to 8000 Kelvin for Cool white.
Operating temperature: 0°C to 40°C/32°F to 104°F.
Relative humidity: 8% to 80%.
Operating distance: Up to 492 feet/150 meters outdoors.

⑥ Warranty.

If you are in need of any technical support during or subsequent to your products' warranty, please get in touch with our support team via http://aeotec.com/support. The Company you bought this product from has also guaranteed to assist you with any of your support needs, and you can also contact them for accordingly.
This guarantee made by the company who you purchased the product from includes the transfer of Aeon Labs' full warranty to that Company. They guaranteed that they'll be able to assist you, the Customer, with all technical support and repair needs on our behalf.
Aeon Labs warrants to the original purchaser of Products that for the Warranty Period (as defined below), the Products will be free from material defects in materials and workmanship. The foregoing warranty is subject to the proper installation, operation and maintenance of the Products in accordance with installation instructions and the operating manual supplied to Customer. Warranty claims must be made by Customer in writing within thirty (30) days of the manifestation of a problem. Aeon Labs' sole obligation under the foregoing warranty is, at Aeon Labs' option, to repair, replace or correct any such defect that was present at the time of delivery, or to remove the Products and to refund the purchase price to Customer.
The "Warranty Period" begins on the date the Products is delivered and continues for 3 years.

Any repairs under this warranty must be conducted by an authorized Aeon Labs service representative and under Aeon Labs' RMA policy. Any repairs conducted by unauthorized persons shall void this warranty.

Excluded from the warranty are problems due to accidents, acts of God, civil or military authority, civil disturbance, war, strikes, fires, other catastrophes, misuse, misapplication, storage damage, negligence, electrical power problems, or modification to the Products or its components.

Aeon Labs does not authorize any person or party to assume or create for it any other obligation or liability in connection with the Products except as set forth herein.

Aeon Labs will pass on to Customer all manufacturers' Material warranties to the extent that they are transferable, but will not independently warrant any Material.

Customer must prepay shipping and transportation charges for returned Products, and insure the shipment or accept the risk of loss or damage during such shipment and transportation. Aeon Labs will ship the repaired or replacement products to Customer freight prepaid.

Customer shall indemnify, defend, and hold Aeon Labs and Aeon Labs' affiliates, shareholders, directors, officers, employees, contractors, agents and other representatives harmless from all demands, claims, actions, causes of action, proceedings, suits, assessments, losses, damages, liabilities, settlements, judgments, fines, penalties, interest, costs and expenses (including fees and disbursements of counsel) of every kind (i) based upon personal injury or death or injury to property to the extent any of the foregoing is proximately caused either by a defective product (including strict liability in tort) or by the negligent or willful acts or omissions of Customer or its officers, employees, subcontractors or agents, and/or (ii) arising from or relating to any actual or alleged infringement or misappropriation of any patent, trademark, mask work, copyright, trade secret or any actual or alleged violation of any other intellectual property rights arising from or in connection with the products, except to the extent that such infringement exists as a result of Aeon Labs' manufacturing processes.

IN NO EVENT SHALL AEON LABS BE LIABLE FOR ANY INDIRECT, INCIDENTAL, PUNITIVE, SPECIAL OR CONSEQUENTIAL DAMAGES OR DAMAGES FOR LOSS OF PROFITS, REVENUE, OR USE INCURRED BY CUSTOMER OR ANY THIRD PARTY, WHETHER IN AN ACTION IN CONTRACT, OR TORT, OR OTHERWISE EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. AEON LABS' LIABILITY AND CUSTOMER'S EXCLUSIVE REMEDY FOR ANY CAUSE OF ACTION ARISING IN CONNECTION WITH THIS AGREEMENT OR THE SALE OR USE OF THE PRODUCTS, WHETHER BASED ON NEGLIGENCE, STRICT LIABILITY, BREACH OF WARRANTY, BREACH OF AGREEMENT, OR EQUITABLE PRINCIPLES, IS EXPRESSLY LIMITED TO, AT AEON LABS' OPTION, REPLACEMENT OF, OR REPAYMENT OF THE PURCHASE PRICE FOR THAT PORTION OF PRODUCTS WITH RESPECT TO WHICH DAMAGES ARE CLAIMED. ALL CLAIMS OF ANY KIND ARISING IN CONNECTION WITH THIS AGREEMENT OR THE SALE OR USE OF PRODUCTS SHALL BE DEEMED WAIVED UNLESS MADE IN WRITING WITH IN THIRTY (30) DAYS FROM AEON LABS'S DELIVERY, OR THE DATE FIXED FOR DELIVERY IN THE EVENT OF NONDELIVERY.
THE INDEMNITY AND WARRANTY IN ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER INDEMNITIES OR WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

FCC NOTICE (For USA)

THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT.SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

STORE INDOORS WHEN NOT IN USE. SUITABLE FOR DRY LOCATIONS. DO NOT IMMERSE IN WATER. NOT FOR USE WHERE DIRECTLY EXPOSED TO WATER.

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. This equipment has been tested and found to comply with the limits for a Class B digital device, 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 or more 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.

Warning

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities.

Contact your local government for information regarding the collection systems available.

Certifications (regional):

Z-Wave and Z-Wave Plus are registered trademarks of Sigma Designs and its subsidiaries in the United States and other countries

FCC ID: XBAFT121

Version:501012100001-AA

Association infomation

5.4 Association Command Class

The LED Strip supports 2 association groups and can add max 5 nodes for each group.

Association Group	Nodes	Send Mode	Send commands
Group 1	0	N/A	N/A
	[1,5]	Single Cast	When the state of LED Strip (turn on/off the LED Strip) is changed: 1. Set Configuration parameter 80 to 0: Reserved (Default) 2. Set Configuration parameter 80 to 1: Send Hail CC. 3. Set Configuration parameter 80 to 2: Send the Basic Report.
Group 2	0	N/A	N/A
	[1,5]	Single Cast	Forward the Basic Set, Switch Binary Set, Switch Multilevel Start Level Change, Switch Multilevel Stop Level Change, Switch Multilevel Set, Scene Activation Set to associated nodes in Group 2 when the LED Strip receives the Basic Set, Switch Binary Set, Switch Multilevel Start Level Change, Switch Multilevel Stop Level Change, Switch Multilevel Set, Scene Activation Set commands from the main controller.

5.5 Association Group Info Command Class

5.5.1 Association Group Info Report Command Class

Profile: General: NA (Profile:MSB=0, Profile LSB=1)

5.5.2 Association Group Name Report Command Class

Group 1: Lifeline

Group 2: Retransmit

Configuration parameter infomation

Parameter Number Hex / Decimal	Description	Default Value	Size
0x14 (20)	The LED Strip's state after re-power on it. 0 = The last state before re-power on. 1 = Always On. 2 = Always Off.	0	1
0x20 (32)	Enable/disable to send out a report when the color is changed. 0 = Disable. 1 = Hail CC. Others = ignore.	0	1
0x25(37)	Colorful mode configuration. (See the below table)	0x09030000	4
0x26 (38)	Change speed: Value 1: The speed from OFF to ON. Value 2: The speed from ON to OFF. Value 3: Pause time of ON. Value 4: Pause time of OFF.	0x03000300	4
0x27 (39)	Color index configuration when the LED Strip is in Multi color mode. (See the below table)	0x30000000	4
0x29 (41)	Configure the display mode of Cold/Warm white. 0 = Arbitrary combination of Cold/Warm white. 1 = Complementary combination of Cold/Warm white. Others = ignore.	0	1
0x2A(36)	Reboot/reset/exit Colorful mode. 0 = Un-reboot Colorful mode. 1 = Reboot Colorful mode. 2 = Exit Colorful mode. 3 = Save the current Colorful mode value and then to be exited.	-	1
0x50 (80)	Enable to send notifications to associated devices (Group 1) when the state of LED Strip is changed. 0 = Nothing. 1 = Hail CC. 2 = Basic CC report.	1	1
0x70 (112)	Dimmer mode: 0 = Parabolic curve. 1 = Index curve. 2 = (Parabolic + Index)/2. 3 = Linear.	2	1
0xFC (252)	Enable/disable Lock Configuration (0 =disable, 1 = enable). Value=0, the setting of configuration parameters is allowed. Value=1, all configuration parameters cannot be set (Locked).	0	1
0xFF (255)	1. Value = 0x55555555, Default = 1, Size = 4 Reset to factory default settings and removed from the z-wave network. 2. Value = 0, Default = 1, Size = 1 Reset all configuration parameters to factory default settings	N/A N/A	4 1

Parameter 37 (4 byte) will set the LED Strip into different modes:

7	6	5	4	3	2	1	0
Value 1 (MSB)	Color Transition Style	Color Change Speed Option			Color Display Cycle		
Value 2	Brightness						
Value 3	Cycle Count						
Value 4 (LSB)	Time Base of Color Change Speed			Color Change Speed Level			

Colour Display Cycle (4 bits)

The Color Display Cycle field can have the following values corresponding to 4 different modes:

Color Display Cycle	Description
0	Inactive (keep the current configuration values)
1	Rainbow Mode(red, orange, yellow, green, cyan, blue, violet, pinkish)
2	Multi Color Mode(colors cycle between selected colours)
3	Random Mode
4	Single Color Mode
5 to 15	Reserved

Single colour mode: The LED Strip will be solid/ blinking with one color in this mode.

Rainbow mode: The LED Strip has 8 colors to display and will change through a range of colors (Red→ Orange→ Yellow→ Green→ Cyan→ Blue→ Violet→ pinkish).

Multi-colour mode: The LED Strip can change between multiple colors according to the color index which is configurable through configuration parameter 39, see the configuration table of parameter 39 below.

Random mode: The Bulb's color will be displayed randomly.

Color Transition Style (2 bits)

The following values correspond to 3 different transition styles between colors:

Dim Style	Description
0	Smooth Color Transition
1	Fade Out-Fade In Transition.

Brightness (8 bits)

Level	Description
1 to 99	1 = Min level, 99 = Max level
0 or 255	Inactive (keep the current configuration values)

Cycle Count (8 bits)

The Cycle Count is used to define the number of repetitions/cycles displayed by your LED Strip in Color Display Cycle before stopping.

Cycle Count	Description
0	Unlimited
1 to 254	Total number of repetitions/cycles before stopping.
255	Inactive (keep the current configuration values).

Note: The process of the first color change to the last color is regarded as a cycle.

For example:

When the LED Strip is in Rainbow mode, the color change from red to pink (Red→ Orange→ Yellow→ Green→ Cyan→ Blue→ Purple→ Pink), going through the colors is regarded as 1 cycle.

Time Base of Colour Change Speed (3 bits)

This function would be used when the Color Transition Style is set to Fade out/in.

Time Base	Description
0	Time base is 1s.
1	Time base is 10ms.
2	Time base is 100ms.

Colour Change Speed Level (5 bits)

This function would be used when the Color Transition Style is set to Fade out/in.

Level	Description
0	Constant speed
1~30	Accelerate/decelerate speed from the level 1 to 30.
31	Inactive (keep the current configuration values)

Parameter 39 (4 byte) can be used to set the 8 color index when the Bulb is in Multi color mode.

7	6	5	4	3	2	1	0
Value1 (MSB)	Index 1				Index 2		
Value2	Index 3				Index 4		
Value3	Index 5				Index 6		
Value4 (LSB)	Index 7				Index 8		

Color component id:

ID	1	2	3	4	5	6	7	8
Color	Red	Orange	Yellow	Green	Cyan	Blue	Violet	Pinkish

The color will be changed from index 1 to index 8 circularly when your LED Strip is in Multi color mode.

For example:

If you set the parameter 39 to 305135616 (0x12300000 in hexadecimal, which means the Index 1=1 (Red), the Index 2=2(Orange) and the Index 3=3(Yellow)), the color will be changed from Blue to Violet and then Violet to Pinkish (Red→Orange→Yellow).

When your Strip is in Single Colour Mode and the Fade Out-Fade In transition style, the parameter 39 would be used to set the RGB value.

7	6	5	4	3	2	1	0
Value1 (MSB)	Red value						
Value2	Green value						
Value3	Blue value						
Value4 (LSB)	Reserved						

When your Strip is in Random Mode, the parameter 39 would be used to set the random seed, then your bulb will automatically generate random colours to be displayed according to the random seed you set.

7	6	5	4	3	2	1	0
Value1 (MSB)	Random seed value						
Value2							
Value3							
Value4 (LSB)							

AEOTEC
BY AEON LABS