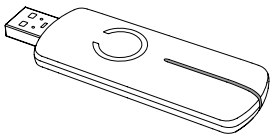




Z-Stick GEN5



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



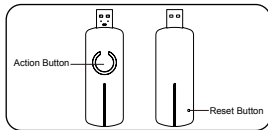
① Aeotec by Aeon Labs Z-Stick .

Aeon Labs Z-Stick Gen5 is a self-powered Z-Wave® USB adapter with network creation capabilities (independent from external power and host microprocessor). By being able to remotely include/remove Z-Wave devices, this greatly simplifies Z-Wave network installation. When connected to a host controller (via USB), it enables the host controller to take part in the Z-Wave Network.

The Z-Stick Gen5 is also device firmware upgradeable by the end user. This enables the product to always have the latest Z-Wave protocol, capabilities and commands.

By taking advantage of the Z-Wave mesh network, commands can be routed to their destination via intermediary “listening” Z-Wave products. Products that are Z-Wave certified can be used and communicate with other Z-Wave certified devices.

② Familiarize yourself with your Z-Stick .



③ Quick start.

The Z-Stick Gen5 operates in SerialAPI-Mode. Both Inclusion-Mode and Removal-Mode require that the Z-Stick to be plugged into the USB connector of the host. Software drivers for the “ZW050x_USB_VCP_PC_Driver” may need to be installed for the Z-Stick to be recognized on some computers(drivers can be found at <http://www.aeotec.com/support>).

● SerialAPI-Mode: Allowing a Host Processor To Take Control of the Z-Stick and Take Part in the Z-Wave Network

To initiate SerialAPI-Mode, plug the Z-Stick into the USB connector of the host.

Note:

1). While in SerialAPI-mode, the Z-Stick is always listening (it is awake and always in RX receive mode) for instructions and acts as a Z-Wave adapter and responds to commands sent through USB by the host processor software.


2). Pressing the Action Button will not have any effect while in SerialAPI-Mode. But short pressing the Reset Button will reset the USB port.



● Installation and Maintenance Application (IMA) feature.

The IMA feature only can be used in Serial API-Mode for Z-Stick Gen5, it can measure the network health for each device in the network. The different colour of LED indicates the communication quality between the Z-Stick Controller and devices in the network.

Install the IMA tool software first (note: the IMA tool can be downloaded from here: <http://www.aeotec.com/support>). Select the node device and then click the IMA test button to start the IMA test between the Central Controller and the node devices. Your IMA tool client will receive the test result via the different colour of LED icon to indicate the network health level and its colour will be changed follow with the change of network health level. If the color of LED

is changed to green , which means the current network quality is good. If the color of LED is changed to orange

, which means the current network quality is acceptable but latency can occur. If the color of LED is changed

to red , which means the current network quality is insufficient. If the IMA tool return a , which means the current network is critical because a node is not responding.

● Upgrading the Z-Stick with the Latest Software.

1. Download the Aeon Labs Z-Stick Gen5 firmware upgrade software that contains the firmware update and UART to USB driver at <http://www.aeotec.com/support> and run the downloaded program.

2. Follow the on screen instructions to complete installation.

④ Technical specifications.

Power Supply: USB DC 4.75V to 5.25V.
Max Operating Current: 100mA.
Operating Temperature: 0°C to 50°C .
Storage Temperature: -20°C to 70°C .
Operating Distance: Up to 1310 feet/400 metres outdoors.

⑤ Warranty.

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 12 months.

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.

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⚠ 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

Version:501009000001-AA
www.aeotec.com



Aeon Labs Z-Stick Gen5
Engineering Specifications and Advanced Functions for Developers
(V1.00)

Aeon Labs Z-Stick Gen5 is a Z-Wave USB adapter. When it connects to a host controller (via USB), it enables the host controller to take part in the Z-Wave Network. You can use the PC Controller application to control your Z-Wave devices via its Serial API function, this greatly simplifies Z-Wave network installation.

The Z-Stick Gen5 is also device firmware upgradeable by the end consumer. This enables the product to always have the latest Z-Wave protocol, capabilities and commands.

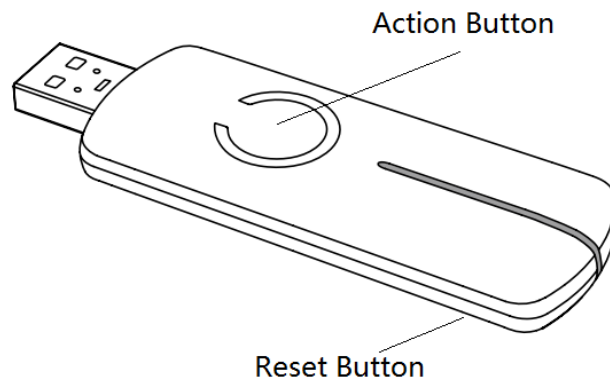
By taking advantage of the Z-Wave mesh network, commands can be routed to their destination via intermediary “listening” Z-Wave products. Products that are Z-Wave certified can be used and communicate with other Z-Wave certified devices.

1. Technical Specifications

Operating distance: Up to 500 feet/150 metres outdoors in normal mode or 1310 feet/400 metres outdoors in PA mode.

2. Familiarize Yourself with Your Z-Stick

2.1 Interface



3. Independence Mode and Serial API-Mode Functions

3.1 Function of Action Button

| Button action | Description |
|---------------------------|---|
| Press and hold 20 seconds | Reset Z-Stick to factory Default: 1. Unplug the Z-Stick from the USB connector. 2. Press and hold the Action Button for 20 seconds. 3. If holding time more than one second, the LED will become red, then blink faster and faster. If holding time more than 20 seconds, the LED will become blue and stay solid for 2 seconds, it indicates reset success, otherwise please repeat step 2. Note: 1. This procedure should only be used when the primary controller is inoperable. |

| | |
|--|---|
| | 2. Reset Z-Stick to factory default Settings will: 1, exclude the Z-Stick from the Z-Wave network; 2, remove all Node ids that the Z-Stick included. 3, restore the configuration settings to the default. |
|--|---|

3.2 Function of Reset Button

| Button action | Description |
|----------------|---------------------|
| Click one time | Reset the USB port. |

4. Special Functions of Z-Stick

4.1 Factory reset

You can through one of the following ways to perform this function:

1. At some stage, you may wish to reset all of your Z-Stick's settings to their factory defaults. To do this, press and hold the Reset Button for 20 seconds and then release it. The Z-Stick will now be reset to its original settings, and the blue LED will solid for 2 seconds as confirmation.
2. The Z-Stick also can be reset to the factory defaults settings via the host software (e.g. PC Controller Application). To do this, the host software must take control of the Z-Stick USB adapter while the Z-Stick is in SerialAPI-Mode. Please consult the instruction manual of the host software to perform a network reset (i.e. factory reset on the Z-Stick).

4.2 Add a Z-Stick to another Z-Stick/a pre-existing Z-Wave network.

This function also must be done through the host software (e.g. PC Controller Application, etc) which takes control of the Z-Stick USB adapter while the Z-Stick is in SerialAPI-Mode. Please consult the instruction manual of the host software to add the Z-Stick to another Z-Stick/a pre-existing Z-Wave network (i.e. "Learn", "Sync", "Add as Secondary Controller", etc.).

4.3 Function of SerialAPI-Mode

Plug the Z-Stick into the USB connector of the host, the Z-Stick will initiate SerialAPI-Mode, it is always listening (awake and always in RX receive mode) and acts as a Z-Wave adapter and responds to commands sent through USB by the host processor software.

The list supported functions of SerialAPI:

| |
|--------------------------------|
| Functions: |
| SUPPORT_GET_ROUTING_TABLE_LINE |
| SUPPORT_LOCK_ROUTE_RESPONSE |
| SUPPORT_MEMORY_GET_BUFFER |
| SUPPORT_MEMORY_GET_BYTE |
| SUPPORT_MEMORY_GET_ID |
| SUPPORT_MEMORY_PUT_BUFFER |
| SUPPORT_MEMORY_PUT_BYTE |

| |
|--|
| SUPPORT_NVM_GET_ID |
| SUPPORT_NVM_EXT_READ_LONG_BUFFER |
| SUPPORT_NVM_EXT_READ_LONG_BYTE |
| SUPPORT_NVM_EXT_WRITE_LONG_BUFFER |
| SUPPORT_NVM_EXT_WRITE_LONG_BYTE |
| SUPPORT_PWR_CLK_PD |
| SUPPORT_PWR_CLK_PUP |
| SUPPORT_PWR_SELECT_CLK |
| SUPPORT_PWR_SETSTOPMODE |
| SUPPORT_STORE_HOMEID |
| SUPPORT_STORE_NODEINFO |
| SUPPORT_ZW_ADD_NODE_TO_NETWORK |
| SUPPORT_ZW_AES_ECB |
| SUPPORT_ZW_ARE_NODES_NEIGHBOURS |
| SUPPORT_ZW_ASSIGN_RETURN_ROUTE |
| SUPPORT_ZW_ASSIGN_SUC_RETURN_ROUTE |
| SUPPORT_ZW_CONTROLLER_CHANGE |
| SUPPORT_ZW_CREATE_NEW_PRIMARY |
| SUPPORT_ZW_DELETE_RETURN_ROUTE |
| SUPPORT_ZW_DELETE_SUC_RETURN_ROUTE |
| SUPPORT_ZW_ENABLE_SUC |
| SUPPORT_ZW_EXPLORE_REQUEST_INCLUSION |
| SUPPORT_ZW_GET_CONTROLLER_CAPABILITIES |
| SUPPORT_ZW_GET_LAST_WORKING_ROUTE |
| SUPPORT_ZW_SET_LAST_WORKING_ROUTE |
| SUPPORT_ZW_GET_NEIGHBOR_COUNT |
| SUPPORT_ZW_GET_NODE_PROTOCOL_INFO |
| SUPPORT_ZW_GET_PROTOCOL_STATUS |
| SUPPORT_ZW_GET_PROTOCOL_VERSION |
| SUPPORT_ZW_GET_RANDOM |

| |
|---|
| SUPPORT_ZW_GET_ROUTING_MAX |
| SUPPORT_ZW_GET_SUC_NODE_ID |
| SUPPORT_ZW_GET_VERSION |
| SUPPORT_ZW_GET_VIRTUAL_NODES |
| SUPPORT_ZW_IS_FAILED_NODE_ID |
| SUPPORT_ZW_IS_NODE_WITHIN_DIRECT_RANGE |
| SUPPORT_ZW_IS_PRIMARY_CTRL |
| SUPPORT_ZW_IS_VIRTUAL_NODE |
| SUPPORT_ZW_IS_WUT_KICKED |
| SUPPORT_ZW_NEW_CONTROLLER |
| SUPPORT_ZW_RANDOM |
| SUPPORT_ZW_REDISCOVERY_NEEDED |
| SUPPORT_ZW_REMOVE_FAILED_NODE_ID |
| SUPPORT_ZW_REMOVE_NODE_FROM_NETWORK |
| SUPPORT_ZW_REPLACE_FAILED_NODE |
| SUPPORT_ZW_REPLICATION_COMMAND_COMPLETE |
| SUPPORT_ZW_REPLICATION_SEND_DATA |
| SUPPORT_ZW_REQUEST_NETWORK_UPDATE |
| SUPPORT_ZW_REQUEST_NEW_ROUTE_DESTINATIONS |
| SUPPORT_ZW_REQUEST_NODE_INFO |
| SUPPORT_ZW_REQUEST_NODE_NEIGHBOR_UPDATE |
| SUPPORT_ZW_RF_POWER_LEVEL_GET |
| SUPPORT_ZW_RF_POWER_LEVEL_REDISCOVERY_SET |
| SUPPORT_ZW_RF_POWER_LEVEL_SET |
| SUPPORT_ZW_SEND_DATA |
| SUPPORT_ZW_SEND_DATA_ABORT |
| SUPPORT_ZW_SEND_DATA_BRIDGE |
| SUPPORT_ZW_SEND_DATA_META |
| SUPPORT_ZW_SEND_DATA_META_BRIDGE |
| SUPPORT_ZW_SEND_DATA_META_MR |

| |
|-----------------------------------|
| SUPPORT_ZW_SEND_DATA_MR |
| SUPPORT_ZW_SEND_DATA_MULTI |
| SUPPORT_ZW_SEND_DATA_MULTI_BRIDGE |
| SUPPORT_ZW_SEND_NODE_INFORMATION |
| SUPPORT_ZW_SEND_SLAVE_DATA |
| SUPPORT_ZW_SEND_SUC_ID |
| SUPPORT_ZW_SEND_TEST_FRAME |
| SUPPORT_ZW_SET_DEFAULT |
| SUPPORT_ZW_SET_EXT_INT_LEVEL |
| SUPPORT_ZW_SET_LEARN_MODE |
| SUPPORT_ZW_SET_LEARN_NODE_STATE |
| SUPPORT_ZW_SET_PROMISCUOUS_MODE |
| SUPPORT_ZW_SET_RF_RECEIVE_MODE |
| SUPPORT_ZW_SET_ROUTING_INFO |
| SUPPORT_ZW_SET_ROUTING_MAX |
| SUPPORT_ZW_SET_SLAVE_LEARN_MODE |
| SUPPORT_ZW_SET_SLEEP_MODE |
| SUPPORT_ZW_SET_SUC_NODE_ID |
| SUPPORT_ZW_SET_WUT_TIMEOUT |
| SUPPORT_ZW_SUPPORT9600_ONLY |
| SUPPORT_ZW_TYPE_LIBRARY |
| SUPPORT_ZW_WATCHDOG_DISABLE |
| SUPPORT_ZW_WATCHDOG_ENABLE |
| SUPPORT_ZW_WATCHDOG_KICK |
| SUPPORT_ZW_WATCHDOG_START |
| SUPPORT_ZW_WATCHDOG_STOP |
| SUPPORT_ZW_NVR_GET_VALUE |
| SUPPORT_FUNC_ID_CLEAR_TX_TIMERS |
| SUPPORT_FUNC_ID_GET_TX_TIMERS |

4.4 Installation and Maintenance Application (IMA) feature

When the Z-Stick is in Serial API-Mode and acts a primary controller, it can measure the network health for each device in the network. The different colour of LED indicates the communication quality between the Z-Stick Controller and devices in the network.

Install the IMA tool software first (note: the IMA tool can be downloaded from here: <http://www.aeotec.com/support>). Select the node device and then click the IMA test button to start the IMA test between the Central Controller and the node devices. Your IMA tool client will receive the test result and use different colour of LED icon to indicate the network health level, its colour will be changed follow with the change of network health level.



Network health is good



Network health is acceptable but latency can occur



Network health is insufficient



Network health is critical because node is not responding

4.5 Configuration

4.4.1 Set Command

The Set Command used to set the value of configuration parameter(s), command format:

| |
|--|
| Serial API: (refer to the below form) |
| HOST->ZW: REQ 0xf2 Parameter Number size Value |
| ZW->HOST: RES 0xf2 RetVal |

REQUEST:

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|------------------|------|---|---|---|---|---|---|
| Command = 0xF2 | | | | | | | |
| Parameter Number | | | | | | | |
| Default | Size | | | | | | |
| Value 1(MSB) | | | | | | | |
| Value 2 | | | | | | | |
| | | | | | | | |
| Value n(LSB) | | | | | | | |

Parameter Number (8 bits)

The parameter number field specifies which configuration parameter is being set. The parameter numbers refer to the form at the end of the document.

Default (1 bit)

If the default bit is set to 1 the device is set to default factory setting and the configuration values is ignored. If the default bit is set to 0 then the configuration values is used.

Size (7 bits)

The size field indicates the number of bytes used for the configuration value.

Value 1 ... Value N (variable)

The value is a unsigned field. The field can be 16 bytes in size. Please refer to the form at the end of the document.

RESPONSE:

RetVal :

If the set is successful will return TRUE, otherwise it returns FALSE

4.4.2 Get Command

This Get Command used to get the values of some configuration parameters.

| |
|--|
| Serial API: |
| HOST->ZW: REQ 0xf3 Parameter Number 1 Parameter Number N |
| ZW->HOST: RES 0xf3 Parameter Number 1 size 1 Value Parameter Number N size N Value |

REQUEST:

Parameter Number 1 ... Parameter Number N (variable)

The parameter number field specifies which configuration parameter is being requested. The parameter numbers refer to the form at the end of the document.

RESPONSE:

Refer to explanation under the Set Command Request.

Parameter Number Definitions (8 bit):

| Parameter Number (Hex / Decimal) | Description | Default Value | Size |
|-------------------------------------|--|---------------|------|
| 0x51 (81) | When the USB power supply, the LED indicator light configuration (0 =disable, 1 = enable, other= ignore) | 1 | 1 |
| 0xF2 (242) | Security network enabled (0 =disable, 1 = enable, other= ignore) | 0 | 1 |
| 0xDC (220) | Configuration of the RF power level 1~10, other= ignore. A total of 10 levels, level 1 as the weak output power, and so on, 10 for most output power level. | 10 | 1 |
| 0xFC (252) | Enable/disable Lock Configuration (0 =disable, 1 = enable, other= ignore). | 0 | 1 |
| 0xFF (255) | Value=0 Default=1 Size=1 Reset to factory default setting | N/A | 1 |