

**eVI WISE Fan**  
WISE-EC-01

## Table of contents

1: Important safety information	3
2: Description and features	4
2.1: Description	4
2.2: Main features	4
3: Connection diagrams	5
3.1: Operation of physical buttons	6
3.2: Device LED indicator	7
4: Adding to Z-Wave network	8
4.1: Adding manually	8
4.2: Adding using SmartStart	9
5: Removing from Z-Wave network	10
6: Resetting to factory defaults	11
7: Operation	12
7.1: Normal Mode	12
7.2: Auto Mode	13
7.3: Service Mode	13
8: Sensor Functions	14
8.1: Temperature sensor	14
8.2: Humidity sensor	14
9: Configuration	15
9.1: Associations	15
9.2: Advanced parameters	15
10: Z-Wave specification	17
10.1: Generic Device Classes	17
10.2: Basic Command Class	17
10.3: Supported Command Class	17
10.4: Sensor Multilevel CC	18
10.5: Association Group Information Command Class	18
10.6 Indicator Command Class	19
10.7 Association Command Class / Multichannel Association Command Class	20
11: Technical specification	21
12: Regulations	22

## 1: Important safety information

Read this manual before attempting to install the device!



Failure to observe recommendations included in this manual may be dangerous or cause a violation of the law. The manufacturer will not be held responsible for any loss or damage resulting from not following the instructions of operating manual.

CAUTION!



All works on the device may be performed only by a qualified and licensed electrician. Observe national regulations.

Do not modify!



Do not modify this device in any way not included in this manual. This product is intended for indoor use only in dry locations.



Do not use in damp or wet locations, near a bathtub, sink, shower, swimming pool, or anywhere else where water or moisture are present.



This product is not a toy. Keep away from children and animals!



The device is a Security Enabled Z-Wave Plus® product and a Security Enabled Z-Wave® Controller must be used in order to fully utilize the product.

## 2: Description and features

### 2.1: Description

eVI EC WISE is a Z-Wave® device that allows control the air flow through the fan. The eVI EC WISE fan is a device designed for rooms like kitchens and bathrooms and is meant to extract used air, excess humidity and bad smells. It is a highly efficient device designed with balance between power, sound level and energy consumption. It is equipped with a Z-Wave® module and integrated humidity and temperature sensor. The eVI EC WISE fan is a main part in the Venture WISE system.

### 2.2: Main features

- The device allows control of the air flow through the fan
- Pre-set configurations allow to easily adjust operation for specific type of controlled devices
- 230 VAC powered
- Adjustable speed
- Equipped with humidity and temperature sensor
- Supports Z-Wave® network Security Modes: S0 with AES-128 encryption and S2 Authenticated with PRNG-based encryption.
- Works as a Z-Wave® signal repeater when VDC powered (all non-battery operated devices within the network will act as repeaters to increase reliability of the network).
- May be used with all devices certified with the Z-Wave Plus® certificate and should be compatible with such devices produced by other manufacturers.
- The device has smooth performance regulation. The set percentage value controls the airflow in m<sup>3</sup>/h.

### 3: Connection diagrams

In order for the device to operate correctly it is necessary to

- Provide mains voltage of 230 VAC connected to terminals marked L-phase, N-neutral.
- Connect two "toggle" buttons, i.e. those with On/Off states, to the terminals marked L1 and L2 - the first end of the button to the terminal (L1, L2) and the second end to the L-phase cable.
- Optional connect two monostable button, i.e. those with momentary action, to the terminals marked L1 and L2 - the first end of the button to the terminal (L1, L2) and the second end to the L-phase cable.
- For correct device operation, an antenna connector has to be installed on the PCB motherboard.

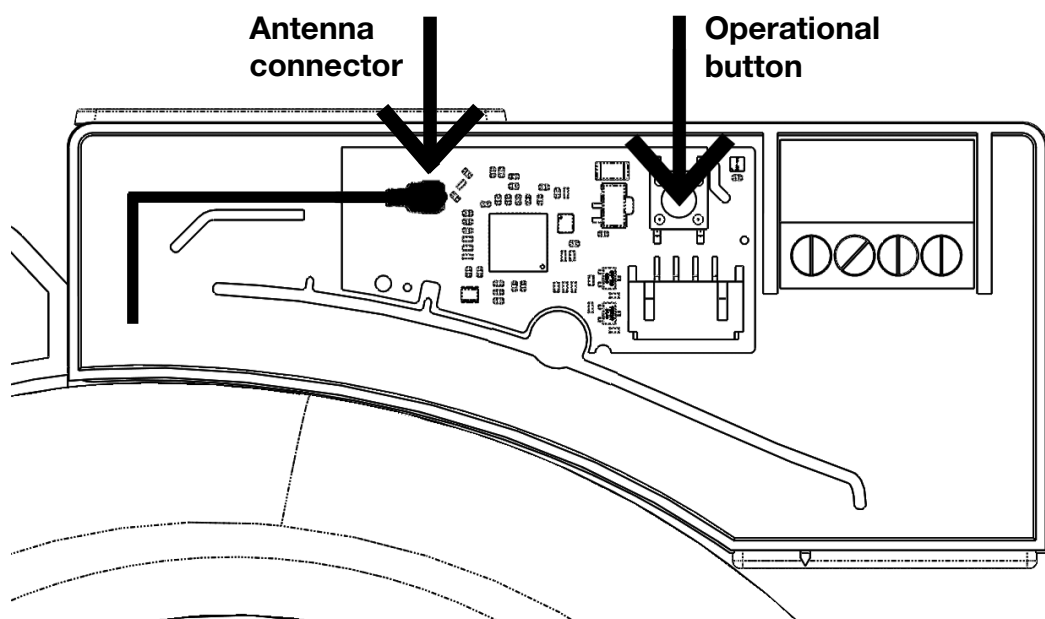


Fig. 1. Antenna connector and operational button

### 3.1: Operation of additional buttons

The main control is performed via Z-Wave network. Additionally, the device is equipped with two functional button inputs L1 and L2.

L1 = 50 m<sup>3</sup>/h

L2 = 70 m<sup>3</sup>/h

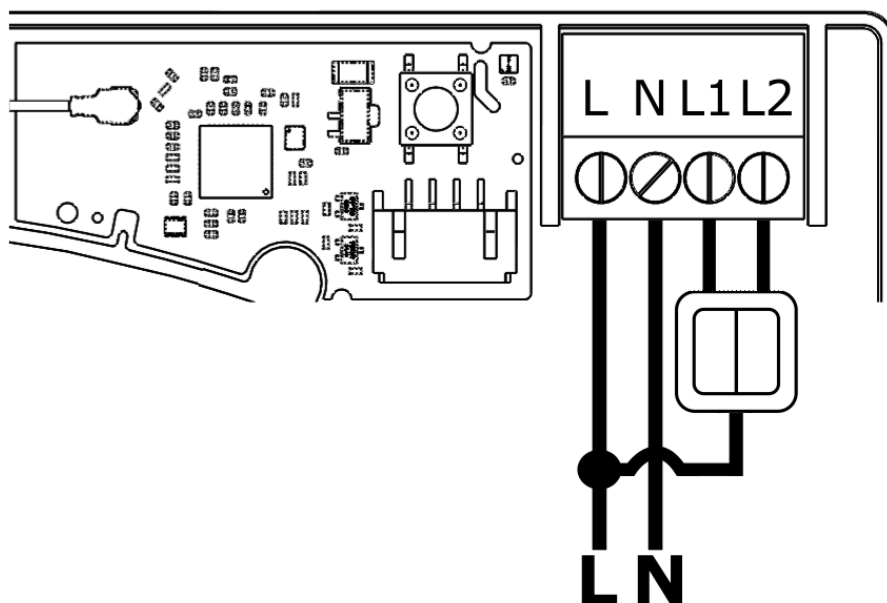


Fig. 2. Wiring diagram

- It is possible to operate the device via external buttons.
- L1 and L2 contacts are powered by 230V.
- The Z-Wave system is in full control of the engine. The external button current state acts as information for the Z-Wave system.
- The Z-Wave system is the primary driver for the entire device.

#### Attention

The device should be operated only via Z-Wave commands or only via physical buttons at the same time.

The action performed on the device overwrites the previously set action. If an action is performed on the buttons, the device will be set according to their configuration. If a Z-Wave command is sent, the device will ignore the configuration of the buttons and set what the Z-Wave is requesting.

Mixing the two types of control can lead to a discrepancy between the position of the buttons and their status.

### 3.2: Device LED indicators

The device is equipped with a single RGB LED indicator

<b>Operations - LED indicator signalisation</b>	
<b>LED indicator color</b>	<b>Description</b>
<b>Green LED</b>	Operation successful. non-secure, S0, S2 non-authenticated
<b>Magenta LED</b>	Operation successful Security S2 Authenticated
<b>Red LED</b>	Operation failure

## 4: Adding to Z-Wave network

Adding (Inclusion) – Z-Wave device learning mode, allowing to add the device to existing Z-Wave network.

### 4.1: Adding manually

To add the device to the Z-Wave network manually:

1. Set the main controller in (Security/non-Security Mode) add mode (see the controller's manual).
2. Set the device in learning mode by quick triple-clicking the button on the PCB . The LED indicator blinks yellow.
3. If you are adding in Security S2 Authenticated, input the underlined part of the DSK (label on the device).
4. After successful adding to the Z-Wave network, the device's LED indicator will: Blink single green light, when added to non-secure, S0, S2 Unauthenticated level or blink with a single magenta light, when added to Security S2 Authenticated.
5. If the device is not successfully added to the network, there will be a single red LED indicator blink.



## 4.2: Adding using SmartStart

SmartStart enabled products can be added into a Z-Wave network by scanning the Z-Wave QR Code present on the product with a controller providing SmartStart inclusion. SmartStart product will be added automatically within 10 minutes of being switched on in the network range.

Attention

Z-Wave alliance certificate is required for the SmartStart procedure.

To add the device to the Z-Wave network using SmartStart:

1. To use SmartStart your controller needs to support Security S2 (see the controller's manual).
2. Enter the full DSK string code to your controller. If your controller is capable of QR scanning, scan the QR code placed on the label on the device.
3. Power the device.
4. Wait for the adding process to start (up to few minutes).
5. Adding result will be confirmed by the Z-Wave controller's message, and by the LED indicator on the device by:  
Blink single green light, when added to non-secure, S0, S2 non-authenticated level  
or  
Blink with a single magenta light,  
when added to Security S2 Authenticated.



In case of problems with adding the device, please reset the device and repeat the adding procedure.

## 5: Removing from Z-Wave network

Removing (Exclusion) – Z-Wave device learning mode, allowing to remove the device from existing Z-Wave network.

To remove the device from the Z-Wave network:

1. Set the main controller into remove mode (see the controller's manual).
2. Triple click the button on the PCB (Fig. 1).  
the LED indicator will blink continuously.
3. Wait for the removal process to complete.
4. After succesfull removal from the Z-Wave network, on the device there will be a single red LED indicator blink.

## 6: Resetting to factory defaults

Reset procedure allows to restore the device back to its factory settings, which means all information about the Z-Wave controller and user configuration will be deleted.

**i** Resetting the device is not the recommended way of removing the device from the Z-Wave network. Use reset procedure only if the primary controller is missing or inoperable. To remove the device properly, follow the removing procedure described in “Removing from Z-Wave network”.

1. To restore the device to the factory settings, hold down the button located on the PCB for at least 10 seconds (Fig. 1).
2. Wait until the LED indicator lights up yellow, release the button.
3. Press the button again.
4. Successful device reset will be confirmed by green LED indicator light.
5. The LED indicator will light up red, when the device is removed from the Z-Wave network.

## 7: Operation

### 7.1: Normal Mode

In this mode, the fan speed is dependant on the percentage setup level of the Z-Wave controller.

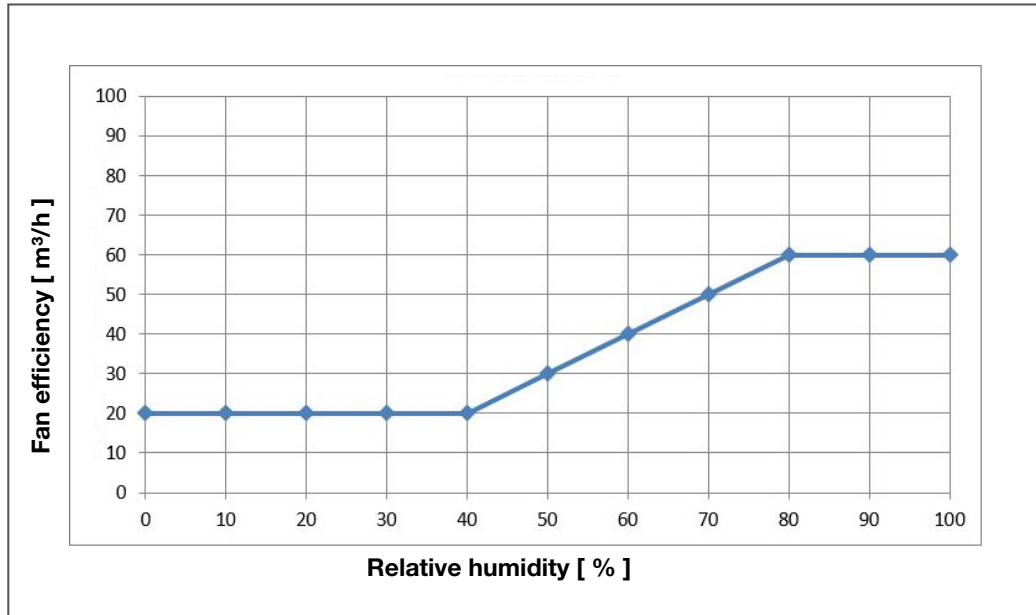
Exactly as it is presented in the below table

<b>Normal mode</b>	
<b>Performance in %</b>	<b>Fan air flow speed</b>
<b>0-20%</b>	20m <sup>3</sup> /h
<b>20-100%</b>	Fan air flow rate from 20 to 99m <sup>3</sup> /h  Smooth regulation tolerance: 2m <sup>3</sup> /h 51% - 50m <sup>3</sup> /h 52% - 52m <sup>3</sup> /h 53% - 52m <sup>3</sup> /h 54% - 54m <sup>3</sup> /h

The L1 and L2 switches can override the selected value, but another set from the controller, will override it even when the switches are turned on.

## 7.2: Auto Mode

The fan speed in auto mode is dependant on the relative humidity level. Exactly as it is presented in the below chart



## 7.3: Service Mode

Entering the Service Mode is temporary for the duration of 30 minutes or by exiting through double clicking the PCB button.

This mode is notified by the LED indicator and functions ONLY when not added to the Z-Wave network.

In the service mode, fan efficiency is permanently set to 58 m³/h

- Enter Service Mode - Double click change of air flow speed to 58m³/h
- Exit Service Mode - Double click
- The LED indicator blinks in magenta, as long as the device remains in Service Mode
- When exiting service mode, the device fan efficiency sets to 34m³/h

## 8: Sensor functions

### 8.1: Temperature sensor

The device has a built-in temperature sensor. It measures the ambient temperature. It reports cyclically every hour and if the value has changed by 0.3°C since the last measurement.

### 8.2: Humidity sensor

The device has a built-in humidity sensor. It measures the ambient humidity. It reports cyclically every hour and if the value has changed by 2% since the last measurement.

## 9: Configuration

### 9.1: Associations

Association (linking devices) – direct control of other devices within the Z-Wave system network.

Associations allow:

- reporting the device status to the Z-Wave controller (using Lifeline Group)

The device provides the association of group:

1st association group – “Lifeline” reports the device status and allows for assigning single device only (main controller by default).

“Lifeline” is reserved solely for the controller, that is why only 1 node can be assigned.

### 9.2: Advanced parameters

The device allows to customize its operation to user’s needs using configurable parameters.

The settings can be adjusted via Z-Wave controller to which the device is added. The way of adjusting them might differ depending on the controller.

In the interface parameters are presented as simple options in Advanced Settings of the device.

Available parameters:

<b>1.</b>	<b>Device status memory</b>	
<b>Description</b>	The parameter determines the status after a power failure.	
<b>Parameter size</b>	1B	
<b>Default value</b>	1	
<b>Available values</b>	0 - Device resets fan airflow to 34m <sup>3</sup> /h 1 - The parameter defines the state after power off.	
<b>154.</b>	<b>Enabling the fan to be switched off completely</b>	
<b>Description</b>	This parameter determines what state the device will be in when the OFF or set 0 command is sent to the multi-level switch.	
<b>Parameter size</b>	1B	
<b>Default value</b>	0	
<b>Available values</b>	0 - Sending OFF command set fan airflow to 20 m <sup>3</sup> /h 1 - Sending the OFF command completely shuts down the device	
<b>155.</b>	<b>Auto mode</b>	
<b>Description</b>	This parameter determines whether the device is to work in auto mode. In auto mode, fan speed is relative to humidity.	
<b>Parameter size</b>	1B	
<b>Default value</b>	0	
<b>Available values</b>	0 – device works in manual mode 1 – device works in auto mode	



## 10: Z-Wave specification

### 10.1: Generic Device Classes

Generic Device Class: GENERIC\_TYPE\_SWITCH\_MULTILEVEL (0x11)

Specific Device Class: SPECIFIC\_TYPE\_NOT\_USED (0x00)

### 10.2: Basic Command Class

Command	Root	Mapping	
		Endpoint 1	Endpoint 2
Basic Set	= EP1	Multilevel Switch Set	Not apply
Basic Get	= EP1	Multilevel Switch Get	Not apply
Basic Report	= EP1	Multilevel Switch Report	Not apply

### 10.3: Supported Command Classes

	Command Class	Version	Secure
1.	COMMAND_CLASS_ZWAVEPLUS_INFO [0x5E]	V2	
2.	COMMAND_CLASS_SWITCH_MULTILEVEL [0x26]	V4	YES
3.	COMMAND_CLASS_ASSOCIATION [0x85]	V2	YES
4.	COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION [0x8E]	V3	YES
5.	COMMAND_CLASS_ASSOCIATION_GRP_INFO [0x59]	V3	YES
6.	COMMAND_CLASS_INDICATOR [0x87]	V3	YES
7.	COMMAND_CLASS_TRANSPORT_SERVICE [0x55]	V2	
8.	COMMAND_CLASS_VERSION [0x86]	V3	YES
9.	COMMAND_CLASS_MANUFACTURER_SPECIFIC [0x72]	V2	YES
10.	COMMAND_CLASS_DEVICE_RESET_LOCALLY [0x5A]	V1	YES
11.	COMMAND_CLASS_POWERLEVEL [0x73]	V1	YES
12.	COMMAND_CLASS_SECURITY [0x98]	V1	
13.	COMMAND_CLASS_SECURITY_2 [0x9F]	V1	
14.	COMMAND_CLASS_MULTI_CHANNEL [0x60]	V4	YES
15.	COMMAND_CLASS_SUPERVISION [0x6C]	V1	
16.	COMMAND_CLASS_CONFIGURATION [0x70]	V4	YES
17.	COMMAND_CLASS_FIRMWARE_UPDATE_MD [0x7A]	V5	YES
18.	COMMAND_CLASS_SENSOR_MULTILEVEL [0x31]	V11	YES
<b>Command Class – not in NIF</b>			
19.	COMMAND_CLASS_BASIC [0x20]	V2	YES

## 10.4 : Sensor Multilevel CC

Root Device				
Sensor Type	Scale	Size	Precision	Description
TEMPERATURE	Celsius (°C)	4B	1	Air Temperature
HUMIDITY	Absolute humidity	4B	0	Air Humidity

## 10.5 : Association Group Information Command Class

ASSOCIATION GROUP INFORMATION CC			
Root Device			
Profile	Command Class & Command		Group Name
1	General: Lifeline (0x00: 0x01)	COMMAND_CLASS_DEVICE_RESET_LOCALLY [0x5A] DEVICE_RESET_LOCALLY_NOTIFICATION [0x01] COMMAND_CLASS_CONFIGURATION [0x70] CONFIGURATION_RAPORT [0x06] COMMAND_CLASS_SWITCH_MULTILEVEL [0x26] SWITCH_MULTILEVEL_REPORT [0x03] COMMAND_CLASS_SENSOR_MULTILEVEL [0x31] SENSOR_MULTILEVEL_REPORT [0x05] COMMAND_CLASS_INDICATOR [0x87] INDICATOR_REPORT [0x03]	Lifeline
Endpoint 1			
1	General: Lifeline (0x00: 0x01)	COMMAND_CLASS_SWITCH_MULTILEVEL [0x26] SWITCH_MULTILEVEL_REPORT [0x03]	Lifeline
Endpoint 2			
1	General: Lifeline (0x00: 0x01)	COMMAND_CLASS_SENSOR_MULTILEVEL [0x31] SENSOR_MULTILEVEL_REPORT [0x05]	Lifeline

## 10.6 Indicator Command Class

Indicator CC - available indicators

Indicator ID – 0x50 (Identify)

Indicator CC - available properties

Property ID	Description	Values and requirements
0x03	Toggling, On/Off Periods	<p>Starts toggling between ON and OFF</p> <p>Used to set the duration of an On/Off period.</p> <p>Available values:</p> <ul style="list-style-type: none"> <li>• 0x00 .. 0xFF (0 .. 25.5 seconds)</li> </ul> <p>If this is specified, the On/Off Cycles MUST also be specified.</p>
0x04	Toggling, On/Off Cycles	<p>Used to set the number of On/Off periods.</p> <p>Available values:</p> <ul style="list-style-type: none"> <li>• 0x00 .. 0xFE (0 .. 254 times)</li> <li>• 0xFF (indicate until stopped)</li> </ul> <p>If this is specified, the On/Off Period MUST also be specified.</p>
0x05	Toggling, On time within an On/Off period	<p>Used to set the length of the On time during an On/Off period. It allows asymmetric On/Off periods.</p> <p>Available values</p> <ul style="list-style-type: none"> <li>• 0x00 (symmetric On/Off period – On time equal to Off time)</li> <li>• 0x01 .. 0xFF (0.1 .. 25.5 seconds)</li> </ul> <p>Example: 300ms ON and 500ms OFF is achieved by setting On/Off period (0x03) = 0x08 and On time within an On/Off Period (0x05) = 0x03</p> <p>This value is ignored if On/Off periods is not defined.</p> <p>This value is ignored if On/Off periods value is less than this value.</p>

10.7 Association Command Class /  
Multichannel Association Command Class

<b>ASSOCIATION CC / MULTICHANNEL ASSOCIATION CC</b>		
<b>Group</b>	<b>Max Nodes Supported</b>	<b>Comment</b>
<b>Root Device</b>		
<b>1</b>	1	Lifeline
<b>Endpoint 1</b>		
<b>1</b>	0	Lifeline
<b>Endpoint 2</b>		
<b>1</b>	0	Lifeline

## 11: Technical specification

<b>Technical specification</b>	
Radio frequency	868.4 or 869.8MHz EU
Power supply	230 VAC/50 Hz
Operating temperature	0 - 40°C
Dimensions	76 x 113 x 68 mm

## 12: Regulations

### Legal Notices

#### Declaration of conformity



#### WEEE Directive Compliance



Device labelled with this symbol should not be disposed with other household wastes. It shall be handed over to the applicable collection point for the recycling of waste electrical and electronic equipment.

