Z-Home Control

ZHC5010

**Z-Wave switch module for FUGA® installations.**

Firmware Version : 2.0

Quick Start

ZHC5010 is a wall switch module with Z-Wave communication. The module contains four buttons, four LEDs, a built-in relay switch and is designed to fit into a standard LK FUGA® wall box (one-module format).

The ZHC5010 Wall Switch allows you to control the local load as well as Z-Wave connected devices in up to four additional Z-Wave groups

Pushing the upper left button 3 times, (triple click) will **activate Inclusion Mode on the device.** It is also possible to activate Inclusion Mode by triple clicking the switch in the middle of the module (normally covered by the middle plastic cover, this can be removed by means of a little screwdriver).

Please refer to the following chapters for a detailed information about all aspects of the products usage.

Inclusion / Exclusion button
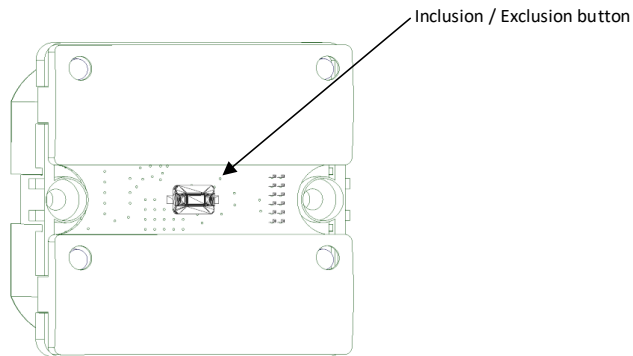
Product Description

The Z-Home Control ZHC5010 is a Z-Wave wall switch device that can both control other Z-Wave devices and activate scenes. Although it is controlling other devices, the device cannot act as Z-Wave network controller and will always need a Z-Wave network controller to be included into a Z-Wave network.

The device can work in different modes and with different functionality, which can be selected by means of various configuration parameters.

- Control of groups of other Z-Wave devices using 'ON', 'OFF' and 'DIM' commands.
- Activation of scenes in Gateways or other Z-Wave devices (configurable scene numbers).
- The LEDs can be controlled in a numbers of ways.

ZHC5010 contains a relay output that allows the module to control a local load. The relay is controllable by means of the modules different buttons or by other Z-Wave devices.

ZHC5010 can act as a Scene Controller by transmitting different Scene Notifications, when the buttons are pressed, long-pressed and double-pressed.

ZHC5010 will act as a Z-Wave network repeater to increase reliability of the network.

Installation Guidelines

ATTENTION: only authorized technicians under consideration of the country-specific installation guidelines/norms may do works with 230 Volt mains power. Prior to the assembly of the product, the voltage network has to be switched off and ensured against re-switching.

The ZHC5010 insert is constructed to fit into standard Danish FUGA® one-module wall boxes. To fasten the insert in the FUGA® wall box, fasten the two screws with claws until the insert is fixed in the wall box. When ZHC5010 is installed in the wall box, the middle plastic cover can be mounted by just clicking it on to the insert.
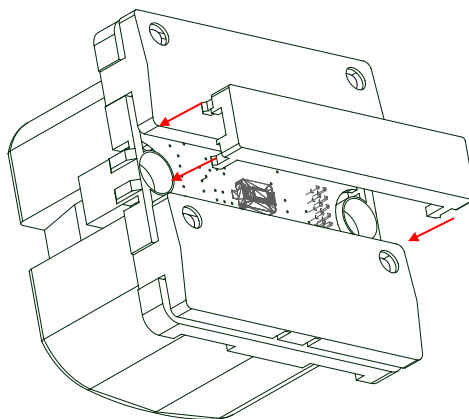
The schematics below shows how to wire ZHC5010. The two wires from the mains distribution panel are connected to the inserts contacts **N** and **L**. The contact ↑ is for the switched output; internally connected to **L** through the switching relay. Contacts with same markings (**N, L** and ↑) are internally connected and can be used for cable looping.
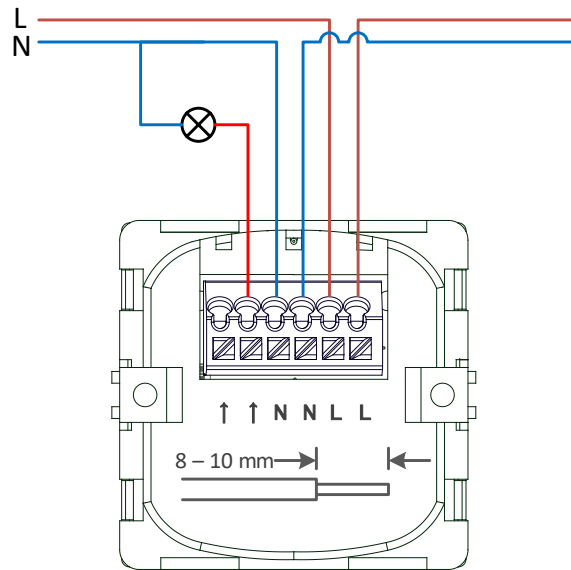
Factory Reset

ZHC5010 can be factory reset by pressing the small button in the middle of the module (normally covered by small plastic cover) for at least 10 seconds.

Remove the middle plastic cover by means of a small screwdriver, and press the small button for at least 10 seconds, until all the LEDs lights up.

Please use this procedure only when the network primary controller is missing or otherwise inoperable.

Behaviour within the Z-Wave Network

This product can be operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers. All non-battery operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

On delivery, the device does not belong to any Z-Wave network. The device needs to be added to an existing wireless network to communicate with the devices of this network. Devices can also be removed from a network. Both add and remove process are initiated by the primary controller of the Z-Wave network. This controller will be turned into a mode for adding or removing devices. Please refer to your primary controllers manual on how to turn your controller into add or remove mode. Only if the primary controller is in add or remove mode, this device can be added or removed from the network. When the device is removed from the network, it will set the device back to factory default.

If the device already belongs to a network, follow the remove process before adding it in your network. Otherwise, the adding of this device will fail.

Place your primary controller in Adding Mode by following the manufacturer's instructions, then activate the add mode on the device by triple-clicking the upper left button on the module, or by triple-clicking the little button in the middle of the module (hidden behind the small plastic cover). Adding Mode is indicated by

blinking of upper left LED until the timeout occurs after 10 seconds or the module has been added in the network. The device is removed in the same manner, when the controller is in Removing Mode.

Operating the Device

Depending on the operating modes, configured using the configuration parameters, the 4 buttons can be used in different ways.

Buttons and LEDs:
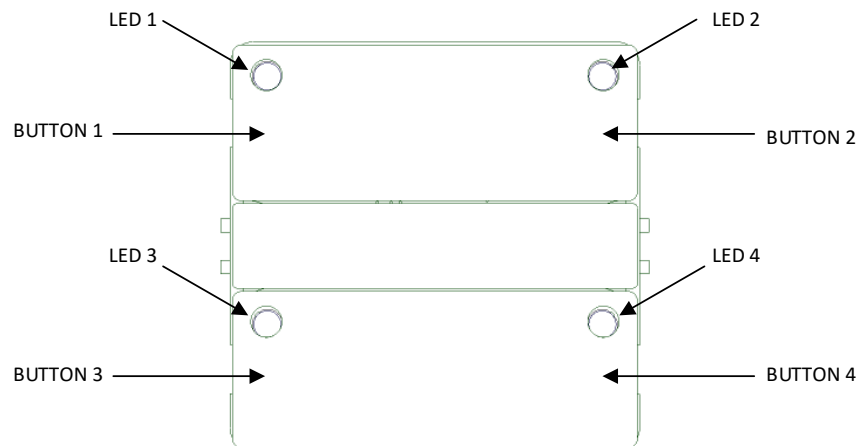
Multi Channel Mode:

ZHC5010 has support for the **Multi Channel Command Class**, and therefore be seen as five logical devices by the Z-Wave Controller that supports this; one root device and four Binary Switch devices. Each of the Binary Switch devices has six Association Groups:

- First group is for the Lifeline group.
- Second group is for **Basic Command Class** - **Basic Report**.
- Third group is for **Basic Command Class – Basic Set**.
- Fourth group is for **Binary Switch Command Class – Binary Switch Set**.
- Fifth group is for **Binary Toggle Switch Command Class – Binary Toggle Switch Set**.
- Sixth group is for **Multilevel Switch Command Class – Multilevel Switch Set**.

Commands sent to each of the logical devices will be interpreted according to the description in the section: Supporting Command Classes. Commands sent to the root device will be forwarded to device 1.

No Multi Channel Mode:

If the Z-Wave Controller, or the Z-Wave devices that shall be associated to ZHC5010, does not support the **Multi Channel Command Class** (Multichannel encapsulation), then only the association groups in the root device must be used. This device will contain all 21 association groups needed to send standard notification commands to the associated Z-Wave nodes when the buttons are used. For further information, see the chapter concerning association groups.

All commands sent to the root device (the only device when not using Multichannel encapsulation), will be interpreted as it was sent to the logical device 1 (button #1). Therefore, if Multichannel encapsulation is <u>NOT</u> used, then it is not possible to send commands to the other three logical devices (buttons #2, #3 and #4).

Scene Notifications:

ZHC5010 supports Central Scene Command Class and when a button is pressed, held or double-pressed, it will transmit a scene notification. It is possible to configure the scene numbers that will be transmitted through **Central Scene Notification Command Class**; default is scene one transmitted for button #1, scene two for button #2, etc. See configuration parameter #17.

Supporting Command Classes:

Besides the mandatory command classes, ZHC5010 has support for following command classes:

- **Basic Command Class**.
  It is possible to send a **Basic Set** command to each of logical devices, by means of the Multichannel encapsulation. When a command is received, it will give the same result as if the corresponding button was activated, according to the **Basic Set** value sent, i.e. the LED will be controlled and the nodes programmed in the association groups will be notified, also a scene notification will be transmitted. A **Basic Set** value of 0x00 (0 decimal) corresponds to a button state OFF, a **Basic Set** value of 0xff (255 decimal) corresponds to a button state ON. It is possible to disable the control of the association groups by means of configuration parameters #23 - #26.

- **Binary Switch Command Class**.
  When a **Binary Switch Set** command is received in each of the logical devices, by means of the Multichannel encapsulation, it corresponds to that the logical devices button was activated, the nodes in the association groups will be notified and a scene notification will be transmitted. Furthermore, the LED will be controlled according to the actual state and the LED configuration. It is possible to disable the control of the association groups by means of configuration parameters #23 - #26.

- **Binary Toggle Switch Command Class**.
  When a **Binary Switch Toggle Set** command is received in each of the logical devices, by means of the Multichannel encapsulation, is corresponds to that the logical devices button was activated (the state of the logical device will reversed), the nodes in the association groups will be notified and a scene notification will be transmitted. Furthermore, the LED will be controlled according to the actual state and the LED configuration. It is possible to disable the control of the association groups by means of configuration parameters #23 - #26.

- **Multilevel Switch Command Class**.
  When a **Multilevel Switch Set** command is received by a logical device, by means of the Multichannel encapsulation, it corresponds to that the button for the logical device was activated; the nodes programmed in the association groups will be notified and scene notification will be transmitted. Furthermore, the LED will be controlled according to actual state and the configuration of the LED. If **Multilevel Switch Start Level Change** or **Multilevel Switch Stop Level Change** commands are received, then the nodes programmed in association group 4 will be notified with a corresponding Multilevel Start/Stop Level Change command. This can be useful to control several nodes by only sending one command to the wall switch. It is important to notice, that the ZHC5010 device forwards the received Multilevel Switch commands, store the received information, and this information will be used for reporting when a **Multilevel Switch Get** command is received. So, the reports are a kind of "cached" information, and does not reflect an actual status of the controlled device. It is possible to disable the control of the association groups by means of configuration parameters #23 - #26.

▪ **Indicator Command Class**.

It is possible to control the LED in each logical device by means of sending **Indicator Set** commands with the requested level to each of the logical devices. Level 0 turns off the LED and levels in the range of 1 – 100 gives the percentage of LED brightness. If only the Indicator Command Class must control a LED, then the LED handling, in each of the logical devices, can be disabled by means of configuration parameters #3 - #6.

NB! Commands received by the logical root device will be forwarded to logical device #1.

Pair Mode:

The ZHC5010 buttons can be configured to work together in Pair Mode so that the upper two buttons (button #1 and #2), and the lower two buttons (button #3 and #4) will work together in pairs. Pair Mode for each of the two paddles (upper paddle and lower paddle) can be configured independently.

In Pair Mode, then when the left side buttons are held, they will send **Multilevel Switch Command Class Start Level Change** – up commands and the right side buttons will send **Multilevel Switch Command Class Start Level Change** – down commands.

For the **Binary Switch Command Class** and **Basic Command Class**; then the left side buttons will send ON commands when they are pressed, and OFF when the right side buttons are pressed.

If Pair Mode is configured for the upper button pair (button #1 and #2), then only the association groups for device 1 (button #1) will be used – device 2 (button #2) association groups will be inactive. Only commands to device 1 will control the switch function, so if it is required to turn off the switch pair, then an off command has to be sent to device 1, as a command sent to device 2 will not have any effect on the switch function (it will only control any associations for device 2).

If Pair Mode is configured for the lower button pair (button #2 and #3), then only the association groups for device 3 (button #3) will be used – device 4 (button #4) association groups will be inactive. Only commands to device 3 will control the switch function, so if it is required to turn off the switch pair, then an off command has to be sent to device 3, as a command sent to device 4 will not have any effect on the switch function (it will only control any associations for device 4).

See configuration parameter #1 and #2.

LED modes:

It is possible to configure the operation of each of the LEDs, and to configure the brightness of the LEDs in both ON and OFF states.

A LED is able to indicate the status of the corresponding button function or, in pair mode, the status for the corresponding paddle function.

Furthermore, it is possible to select inverted functionality, i.e. night mode.

The LEDs can also be configured to only show a short 5 seconds confirmation indication when a button is pressed.

The individual LED is also controllable by other Z-Wave devices by means of sending commands to the **Indicator Command Class**. ZHC5010 supports **Indicator Command Class** version 2 and it is therefore possible to send advanced **Indicator Set** commands with both an activation period and cycles, in order to make different indication patterns.

When **Indicator Set** commands are sent to the root device, then it is possible to control all LEDs in one message. ZHC5010 supports following indicator IDs:

ID	Definition	Description
0x43	BUTTON1_INDICATION	Controls the light in LED1.
0x44	BUTTON2_INDICATION	Controls the light in LED2.
0x45	BUTTON3_INDICATION	Controls the light in LED3.
0x46	BUTTON4_INDICATION	Controls the light in LED4.

And has support for following commands:

Property	Definition	Description
0x01	Multilevel	Set LED brightness level 0x00 = OFF 0x01 – 0x63 = Lowest non-zero level - 100% 0xFF = Restore most recent (non-zero) level.
0x02	Binary	Turn indication ON or OFF 0x00 = OFF 0x01 – 0x63, 0xFF = ON
0x03	ON_OFF_PERIOD	The period in seconds of one ON/OFF period 0x00 – 0xFF = 0 - 25,5 seconds.
0x04	ON_OFF_CYCLES	Number of ON_OFF_PERIOD to run 0x00 – 0xFE = 0 – 254 times 0xFF = Run until stopped by binary ON or OFF.

If **Indicator Set** commands are sent to the logical devices (not the root device), then only the LED in the actual device are able to be controlled.

In the configuration parameters #7 - #10, it is possible to configure the level of brightness for each LED, when the LED is turned ON by the modules internal logic (not by means of the **Indicator Command Class)**.

In configuration parameters #11 - #14, the brightness level for each LED, when the LED is turned OFF, can be configured; the default value is zero, which means the LED will be switched off when it is controlled by ZHC5010 internal logic.

Built-in relay:

The built-in relay is able to be controlled by each of buttons, configurable. Furthermore, the relay can also be controlled by sending Set command to the **Basic Command Class** or **Binary Switch Command Class** for the logical device that controls the relay.

It can be configured so that the relay can be controlled exclusively by sending commands to the root device, which means that the relay isn't controlled by any of the buttons. In this mode, commands (to **Basic Command Class** and **Binary Switch Command Class**) sent to the root device will not be forwarded to device 1, see configuration parameter #15.

It is possible to configure the relay to have a short activation of half a second, so that it can be used to control impulse relays, or configured to follow the state of a button, see configuration parameter #15.

The state of the relay will be remembered after a power-down or reset situation.

House Cleaning Mode:

In the so-called "House Cleaning Mode", ZHC5010 is able send a dimming command to set the level of the lights to 100%.

In the standard mode, a double-press on a button will issue a **Multilevel Switch Set** command, with a level value of 100%, to be sent to the nodes in **Multilevel Switch Command Class** association group.

In Pair Mode, when the left button is pressed a second time (first press just sends a **Multilevel Switch Set** on) will send a **Multilevel Switch Set** command with a level value of 100%.

This functionality can be disabled by means of configuration parameter #18.

ZHC5010 Included secure.

When ZHC5010 is included secure in a controller/gateway, then all commands sent to devices in the ZHC5010 association groups will be sent secure (encrypted). If the receiving device is NOT included secure, or isn't able to interpret secure commands, then ZHC5010 contain configuration parameters where it is possible to set that commands for an association group shall be sent non-secure. See configuration parameters #33 - #36.

These configuration parameters are made as a bit patterns, for each logical device, where a bit in the pattern represent an association group. Bit number 1 (first bit) represent association group 1, bit number 2 represent association group 2, etc.

So, as an example; If it is required that the **Multilevel Switch Command Class** commands to devices in association group 6 shall be sent non-secure for logical device 2, then configuration parameter #34 must be set to the hexadecimal value 20 (0x20), i.e. bit number 6 is set, decimal value 32.

Parameter	Definition	Description
33	Non-secure commands for devices in logical device 1 association groups.	0x00 = No commands are sent non-secure. 0x01 = Not used 0x02 = Basic Report is sent non-secure 0x04 = Basic Set is sent non-secure 0x08 = Binary Switch Set is sent non-secure. 0x10 = Binary Toggle Switch Set is sent non-secure 0x20 = Multilevel Switch commands are sent non-secure

34	Non-secure commands for devices in logical device 2 association groups.	0x00 = No commands are sent non-secure. 0x01 = Not used 0x02 = Basic Report is sent non-secure 0x04 = Basic Set is sent non-secure 0x08 = Binary Switch Set is sent non-secure. 0x10 = Binary Toggle Switch Set is sent non-secure 0x20 = Multilevel Switch commands are sent non-secure
35	Non-secure commands for devices in logical device 3 association groups.	0x00 = No commands are sent non-secure. 0x01 = Not used 0x02 = Basic Report is sent non-secure 0x04 = Basic Set is sent non-secure 0x08 = Binary Switch Set is sent non-secure. 0x10 = Binary Toggle Switch Set is sent non-secure 0x20 = Multilevel Switch commands are sent non-secure
36	Non-secure commands for devices in logical device 4 association groups.	0x00 = No commands are sent non-secure. 0x01 = Not used 0x02 = Basic Report is sent non-secure 0x04 = Basic Set is sent non-secure 0x08 = Binary Switch Set is sent non-secure. 0x10 = Binary Toggle Switch Set is sent non-secure 0x20 = Multilevel Switch commands are sent non-secure

The bit patterns can be combined by adding them together, if several groups require that command are sent non-secure.

Node Information Frame

The Node Information Frame is the business card of a Z-Wave device. It contains information about the device type and the technical capabilities. The inclusion and exclusion of the device is confirmed by sending out a Node Information Frame. Beside this, it may be necessary for certain network operations to send out a Node Information Frame.

Triple clicking the central button (normally covered by a plastic cover) or the upper left button will issue a Node Information Frame.

Associations

Z-Wave devices control other Z-Wave devices. The relationship between one device controlling another device is called *association*. In order to control a different device, the controlling device needs to maintain a list of devices that will receive controlling commands. These lists are called **association groups** and they are always related to certain events (e.g. button pressed, sensor triggers, ...). In case the event happens all devices stored in the respective association group will receive a common wireless command.

Association Groups (Multi Channel Mode):

When using ZHC5010 in Multi Channel Mode, then the root device is normally not to be used, the communication should be through the four Binary Switch devices (except for the Lifeline).

Binary Switch Device 1		Maintains button #1 and LED #1
	Group 1	Lifeline. Max. nodes in group: 0
	Group 2	Send Basic Report (On/Off) when button #1 is used. Max. nodes in group: 5
	Group 3	Sends Basic Set (On/Off) when button #1 is used. Max. nodes in group: 5
	Group 4	Sends Binary Switch Set (On/Off) when button #1 is used. Max. nodes in group: 5
	Group 5	Send Binary Toggle Switch Set when button #1 is used. Max. nodes in group: 5
	Group 6	Sends Multilevel Switch Set / Multilevel Switch Start Level Change / Multilevel Switch Stop Level Change when button #1 is used. Max. nodes in group: 5
Binary Switch Device 2		Maintains button #2 and LED #2
	Group 1	Lifeline. Max. nodes in group: 0
	Group 2	Send Basic Report (On/Off) when button #2 is used. Max. nodes in group: 5
	Group 3	Sends Basic Set (On/Off) when button #2 is used. Max. nodes in group: 5
	Group 4	Sends Binary Switch Set (On/Off) when button #2 is used. Max. nodes in group: 5
	Group 5	Send Binary Toggle Switch Set when button #2 is used. Max. nodes in group: 5
	Group 6	Sends Multilevel Switch Set / Multilevel Switch Start Level Change / Multilevel Switch Stop Level Change when button #2 is used. Max. nodes in group: 5

Binary Switch Device 3   Maintains button #3 and LED #3

    Group 1   Lifeline
Max. nodes in group: 0

    Group 2   Send Basic Report (On/Off) when button #3 is used.
Max. nodes in group: 5

    Group 3   Sends Basic Set (On/Off) when button #3 is used.
Max. nodes in group: 5

    Group 4   Sends Binary Switch Set (On/Off) when button #3 is used.
Max. nodes in group: 5

    Group 5   Send Binary Toggle Switch Set when button #3 is used.
Max. nodes in group: 5

    Group 6   Sends Multilevel Switch Set / Multilevel Switch Start Level Change /
Multilevel Switch Stop Level Change when button #3 is used.
Max. nodes in group: 5

Binary Switch Device 4   Maintains button #4 and LED #4

    Group 1   Lifeline
Max. nodes in group: 0

    Group 2   Send Basic Report (On/Off) when button #4 is used.
Max. nodes in group: 5

    Group 3   Sends Basic Set (On/Off) when button #4 is used.
Max. nodes in group: 5

    Group 4   Sends Binary Switch Set (On/Off) when button #4 is used.
Max. nodes in group: 5

    Group 5   Send Binary Toggle Switch Set when button #4 is used.
Max. nodes in group: 5

    Group 6   Sends Multilevel Switch Set / Multilevel Switch Start Level Change /
Multilevel Switch Stop Level Change when button #4 is used.
Max. nodes in group: 5

<u>Association Groups (NOT Multi Channel Mode):</u>

When using ZHC5010 without Multi Channel support, then only one device is seen by the network controller and the associations groups are as follows:

Binary Switch Root Device

Group 1	Lifeline. Max. nodes in group: 1	
Group 2	Send Basic Report (On/Off) when button #1 is used. Max. nodes in group: 5	
Group 3	Sends Basic Set (On/Off) when button #1 is used. Max. nodes in group: 5	
Group 4	Sends Binary Switch Set (On/Off) when button #1 is used. Max. nodes in group: 5	
Group 5	Send Binary Toggle Switch Set when button #1 is used. Max. nodes in group: 5	
Group 6	Sends Multilevel Switch Set / Multilevel Switch Start Level Change / Multilevel Switch Stop Level Change when button #1 is used. Max. nodes in group: 5	
Group 7	Send Basic Report (On/Off) when button #2 is used. Max. nodes in group: 5	
Group 8	Sends Basic Set (On/Off) when button #2 is used. Max. nodes in group: 5	
Group 9	Sends Binary Switch Set (On/Off) when button #2 is used. Max. nodes in group: 5	
Group 10	Send Binary Toggle Switch Set when button #2 is used. Max. nodes in group: 5	
Group 11	Sends Multilevel Switch Set / Multilevel Switch Start Level Change / Multilevel Switch Stop Level Change when button #2 is used. Max. nodes in group: 5	
Group 12	Send Basic Report (On/Off) when button #3 is used. Max. nodes in group: 5	
Group 13	Sends Basic Set (On/Off) when button #3 is used. Max. nodes in group: 5	
Group 14	Sends Binary Switch Set (On/Off) when button #3 is used. Max. nodes in group: 5	
Group 15	Send Binary Toggle Switch Set when button #3 is used. Max. nodes in group: 5	
Group 16	Sends Multilevel Switch Set / Multilevel Switch Start Level Change / Multilevel Switch Stop Level Change when button #3 is used. Max. nodes in group: 5	
Group 17	Send Basic Report (On/Off) when button #4 is used. Max. nodes in group: 5	
Group 18	Sends Basic Set (On/Off) when button #4 is used. Max. nodes in group: 5	

Group 19   Sends Binary Switch Set (On/Off) when button #4 is used.
                Max. nodes in group: 5

Group 20   Send Binary Toggle Switch Set when button #4 is used.
                Max. nodes in group: 5

Group 21   Sends Multilevel Switch Set / Multilevel Switch Start Level Change /
                Multilevel Switch Stop Level Change when button #4 is used.
                Max. nodes in group: 5

Setting and Removing Associations

Associations can be assigned and removed via Z-Wave commands.

Configuration Parameters

Z-Wave products are supposed to work *out of the box* after inclusion, however certain configuration of a device can alter the functionality to better serve the user's needs or unlock further enhanced features.

Parameter Number 1, Parameter Size 1. Upper paddle buttons mode.
Configuration of Pair Mode for the upper two buttons (button #1 and #2).

Value Description

0	Separate mode (toggle mode). (Default)
1	In pair mode, left side sends on/up commands, right side sends off/down commands.

Parameter Number 2, Parameter Size 1. Lower paddle buttons mode.
Configuration of Pair Mode for the lower two buttons (button #3 and #4).

Value Description

0	Separate mode (toggle mode). (Default)
1	In pair mode, left side sends on/up commands, right side sends off/down commands.

Parameter Number 3, Parameter Size 1. LED #1 mode.

Value Description

0	LED indication is disabled (LED can be controlled by **Indicator Command Class Set** commands).
1	LED indicates the status of the corresponding button. (Default)
2	LED indicates the status of the corresponding button, with inverted indication.
3	LED indicates the status of corresponding paddle (in pair mode).
4	LED indicates the status of the corresponding paddle (in pair mode), with inverted indication.
5	LED indicates the status of the built-in relay.
6	LED indicates the status of the built-in relay, with inverted indication.
7	LED show a 5 seconds indication when the corresponding button is pressed.
8	LED indication is disabled, it is only controlled by **Command Class Basic Set** commands.

Parameter Number 4, Parameter Size 1. LED #2 mode.

Value Description

0	LED indication is disabled (LED can be controlled by **Indicator Command Class Set** commands).
1	LED indicates the status of the corresponding button. (Default)
2	LED indicates the status of the corresponding button, with inverted indication.
3	LED indicates the status of corresponding paddle (in pair mode).
4	LED indicates the status of the corresponding paddle (in pair mode), with inverted indication.
5	LED indicates the status of the built-in relay.
6	LED indicates the status of the built-in relay, with inverted indication.
7	LED show a 5 second indication when the corresponding button is pressed.
8	LED indication is disabled, it is only controlled by **Command Class Basic Set** commands.

Parameter Number 5, Parameter Size 1. LED #3 mode.

Value Description

0   LED indication is disabled (LED can be controlled by **Indicator Command Class Set** commands).

1   LED indicates the status of the corresponding button. (Default)

2   LED indicates the status of the corresponding button, with inverted indication.

3   LED indicates the status of corresponding paddle (in pair mode).

4   LED indicates the status of the corresponding paddle (in pair mode), with inverted indication.

5   LED indicates the status of the built-in relay.

6   LED indicates the status of the built-in relay, with inverted indication.

7   LED show a 5 second indication when the corresponding button is pressed.

8   LED indication is disabled, it is only controlled by **Command Class Basic Set** commands.

Parameter Number 6, Parameter Size 1. LED #4 mode.

Value Description

0   LED indication is disabled (LED can be controlled by **Indicator Command Class Set** commands).

1   LED indicates the status of the corresponding button. (Default)

2   LED indicates the status of the corresponding button, with inverted indication.

3   LED indicates the status of corresponding paddle (in pair mode).

4   LED indicates the status of the corresponding paddle (in pair mode), with inverted indication.

5   LED indicates the status of the built-in relay.

6   LED indicates the status of the built-in relay, with inverted indication.

7   LED show a 5 second indication when the corresponding button is pressed.

8   LED indication is disabled, it is only controlled by **Command Class Basic Set** commands.

Parameter Number 7, Parameter Size 1. LED #1 brightness level.
Configure the percentage of light in the LED, when the LED is turned on.

Value Description

0 - 100 Specifies the brightness level of the LED when it is on. Default is 50.

Parameter Number 8, Parameter Size 1. LED #2 brightness level.
Configure the percentage of light in the LED, when the LED is turned on.

Value Description

0 - 100 Specifies the brightness level of the LED when it is on. Default is 50.

Parameter Number 9, Parameter Size 1. LED #3 brightness level.
Configure the percentage of light in the LED, when the LED is turned on.

Value Description

0 - 100 Specifies the brightness level of the LED when it is on. Default is 50.

Parameter Number 10, Parameter Size 1. LED #4 brightness level.
Configure the percentage of light in the LED, when the LED is turned on.

Value Description

0 - 100 Specifies the brightness level of the LED when it is on. Default is 50.

Parameter Number 11, Parameter Size 1. LED #1 off brightness level.
Configure the percentage of light in the LED, when the LED is turned "off".

Value Description

0 - 100 Specifies the brightness level of the LED when it is off. Default is 0.

Parameter Number 12, Parameter Size 1. LED #2 off brightness level.
Configure the percentage of light in the LED, when the LED is turned "off".

Value Description

0 - 100 Specifies the brightness level of the LED when it is off. Default is 0.

Parameter Number 13, Parameter Size 1. LED #3 off brightness level.
Configure the percentage of light in the LED, when the LED is turned "off".

Value Description

0 - 100 Specifies the brightness level of the LED when it is off. Default is 0.

Parameter Number 14, Parameter Size 1. LED #4 off brightness level.
Configure the percentage of light in the LED, when the LED is turned "off".

Value Description

0 - 100 Specifies the brightness level of the LED when it is off. Default is 0.

Parameter Number 15, Parameter Size 1. Relay mode.
This parameter configures which of the buttons that shall control the built-in relay, or if the relay only will be activated for one second, each time button #1 is used.

Value Description

0   Relay is disabled.

1   Relay is controlled by button #1 or by upper paddle when pair mode is active. (Default)

2   Relay is controlled by button #2 or by upper paddle when pair mode is active.

3   Relay is controlled by button #3 or by lower paddle when pair mode is active.

4   Relay is controlled by button #4 or by lower paddle when pair mode is active.

5   Relay is activated for half a second and is controlled by button #1 or by upper paddle when pair mode is active.

6   Relay is activated for half a second and is controlled by button #2 or by upper paddle when pair mode is active.

7   Relay is activated for half a second and is controlled by button #3 or by lower paddle when pair mode is active.

8   Relay is activated for half a second and is controlled by button #4 or by lower paddle when pair mode is active.

9   Relay follows the state of button #1; when button is down the relay is on and when button is released the relay is off. Incoming button command messages will result in a short activation of the relay.

10   Relay follows the state of button #2; when button is down the relay is on and when button is released the relay is off. Incoming button command messages will result in a short activation of the relay.

11   Relay follows the state of button #3; when button is down the relay is on and when button is released the relay is off. Incoming button command messages will result in a short activation of the relay.

12   Relay follows the state of button #4; when button is down the relay is on and when button is released the relay is off. Incoming button command messages will result in a short activation of the relay.

13   Relay is only controlled by commands sent to the root device. Commands to the root device will not be forwarded to device 1.

Parameter Number 16, Parameter Size 1. Indicator mode.
When ZHC5010 receives an **Indicator Set** message, then the received value can be used only to set the current light level for the actual LED or the level value can be stored and will then be used for subsequent internal activations.

Value Description

0   Indicator Set level values are only used to control the LED.

1   Indicator Set level values are also used by internal LED activations. (Default)

Parameter Number 17, Parameter Size 1. Scene notification offset.
Configure the scene sequence numbers that will be transmitted by Central Scene notifications.

Value	Description
0	Scene notifications are turned off.
1 - 200	Button #1 will send scene [*value*], button #2 will send scene [*value*] + 1, button #3 will send scene [*value*] + 2, button #4 will send scene [*value*] + 3. (Default = 1)

Parameter Number 18, Parameter Size 1. Disable House Cleaning Mode.
This parameter is able to enable or disable the so-called "House Cleaning Mode", where ZHC5010 is able send a dimming command in order to set the level of the lights to 100%.

Value	Description
0	House Cleaning Mode is enabled (Default)
1	House Cleaning Mode is disabled.

<u>Parameter Number 19, Parameter Size 4. Multilevel Switch on single press for device 1 (button #1)</u>

Value	Description

Byte 1: Enable / Disable

0	Disabled – When single pressing the button, nodes associated to group 6 won't be switched.
1	Enabled – When single pressing the button, nodes associated to group 6 will be switched between the configured upper and lower switch values. (Default)

Byte 2: Upper switch value

0 – 99, 255	When single pressing the button for ON, a Multilevel Switch Set with this value will be send to devices in association group 6. (Default = 255)

Byte 3: Lower switch value

0 - 99	When single pressing the button for OFF, a Multilevel Switch Set with this value will be send to devices in association group 6. (Default = 0)

Byte 4: Not used – must be set to 0.

<u>Parameter Number 20, Parameter Size 4. Multilevel Switch on single press for device 2 (button #2)</u>

Value	Description

Byte 1: Enable / Disable

0	Disabled – When single pressing the button, nodes associated to group 6 won't be switched.
1	Enabled – When single pressing the button, nodes associated to group 6 will be switched between the configured upper and lower switch values. (Default)

Byte 2: Upper switch value

0 – 99, 255	When single pressing the button for ON, a Multilevel Switch Set with this value will be send to devices in association group 6. (Default = 255)

Byte 3: Lower switch value

0 - 99	When single pressing the button for OFF, a Multilevel Switch Set with this value will be send to devices in association group 6. (Default = 0)

Byte 4: Not used – must be set to 0.

<u>Parameter Number 21, Parameter Size 4. Multilevel Switch on single press for device 3 (button #3)</u>

Value	Description

Byte 1: Enable / Disable

0	Disabled – When single pressing the button, nodes associated to group 6 won't be switched.
1	Enabled – When single pressing the button, nodes associated to group 6 will be switched between the configured upper and lower switch values. (Default)

Byte 2: Upper switch value

0 – 99, 255	When single pressing the button for ON, a Multilevel Switch Set with this value will be send to devices in association group 6. (Default = 255)

Byte 3: Lower switch value

0 - 99	When single pressing the button for OFF, a Multilevel Switch Set with this value will be send to devices in association group 6. (Default = 0)

Byte 4: Not used – must be set to 0.

Parameter Number 22, Parameter Size 4. Multilevel Switch on single press for device 4 (button #4)

Value   **Description**

Byte 1: Enable / Disable

0   Disabled – When single pressing the button, nodes associated to group 6 won't be switched.

1   Enabled – When single pressing the button, nodes associated to group 6 will be switched between the configured upper and lower switch values. (Default)

Byte 2: Upper switch value

0 – 99, 255   When single pressing the button for ON, a Multilevel Switch Set with this value will be send to devices in association group 6. (Default = 255)

Byte 3: Lower switch value

0 - 99   When single pressing the button for OFF, a Multilevel Switch Set with this value will be send to devices in association group 6. (Default = 0)

Byte 4: Not used – must be set to 0.

Parameter Number 23, Parameter Size 1. Control of association groups for device 1 (button #1).
Enable or disable if received commands are relayed to the nodes in the association groups.

Value Description

0   When commands are received by device 1, nodes in the association groups will <u>not</u> be switched, button activations will still send switch values.

1   When commands are received by device 1, nodes in the association groups will be switched. (Default)

Parameter Number 24, Parameter Size 1. Control of association groups for device 2 (button #2).
Enable or disable if received commands are relayed to the nodes in the association groups.

Value Description

0   When commands are received by device 2, nodes in the association groups will <u>not</u> be switched, button activations will still send switch values.

1   When commands are received by device 2, nodes in the association groups will be switched. (Default)

Parameter Number 25, Parameter Size 1. Control of association groups for device 3 (button #3).
Enable or disable if received commands are relayed to the nodes in the association groups.

Value Description

0   When commands are received by device 3, nodes in the association groups will <u>not</u> be switched, button activations will still send switch values.

1   When commands are received by device 3, nodes in the association groups will be switched. (Default)

Parameter Number 26, Parameter Size 1. Control of association groups for device 4 (button #4).
Enable or disable if received commands are relayed to the nodes in the association groups.

Value Description

0	When commands are received by device 4, nodes in the association groups will <u>not</u> be switched, button activations will still send switch values.
1	When commands are received by device 4, nodes in the association groups will be switched. (Default)

Parameter Number 27, Parameter Size 1. Not in use.

Parameter Number 28, Parameter Size 1. Threshold time for long-press.
Decides the time for when a button is detected as long-pressed.

Value	Description
0	Detection disabled. **This is not recommended.**
1 - 255	Long-press detection time in 0.01 seconds, 50 equals 0.5 seconds. (Default value is 50)

Parameter Number 29, Parameter Size 1. Threshold time for keypress detection of button 1.
Specifies the detection time for single-press, double-press, etc. for button 1.

Value	Description
0	Detection disabled. **This is not recommended.**
1 - 255	Detection time in 0.01 seconds, 30 equals 0.3 seconds. (Default value is 30)

Parameter Number 30, Parameter Size 1. Threshold time for keypress detection of button 2.
Specifies the detection time for single-press, double-press, etc. for button 2.

Value	Description
0	Detection disabled. **This is not recommended.**
1 - 255	Detection time in 0.01 seconds, 30 equals 0.3 seconds. (Default value is 30)

Parameter Number 31, Parameter Size 1. Threshold time for keypress detection of button 3.
Specifies the detection time for single-press, double-press, etc. for button 3.

Value	Description
0	Detection disabled. **This is not recommended.**
1 - 255	Detection time in 0.01 seconds, 30 equals 0.3 seconds. (Default value is 30)

<u>Parameter Number 32, Parameter Size 1. Threshold time for keypress detection of button 4.</u>
Specifies the detection time for single-press, double-press, etc. for button 4.

Value	Description
0	Detection disabled. **This is not recommended.**
1 - 255	Detection time in 0.01 seconds, 30 equals 0.3 seconds. (Default value is 30)

<u>Parameter Number 33, Parameter Size 1. Non-secure commands for AG in logical device 1.</u>
Specifies that commands to devices in the association groups for logical device 1 is sent non-secure. This parameter is only relevant if ZHC5010 is included secure. See chapter regarding ZHC5010 included secure.

Value	Description
0	No commands are sent non-secure.
0x01	Not used.
0x02	Basic Report is sent non-secure.
0x04	Basic Set is sent non-secure.
0x08	Binary Switch Set is sent non-secure.
0x10	Binary Toggle Switch Set is sent non-secure.
0x20	Multilevel Switch commands are sent non-secure.

<u>Parameter Number 34, Parameter Size 1. Non-secure commands for AG in logical device 2.</u>
Specifies that commands to devices in the association groups for logical device 2 is sent non-secure. This parameter is only relevant if ZHC5010 is included secure. See chapter regarding ZHC5010 included secure.

Value	Description
0	No commands are sent non-secure.
0x01	Not used.
0x02	Basic Report is sent non-secure.
0x04	Basic Set is sent non-secure.
0x08	Binary Switch Set is sent non-secure.
0x10	Binary Toggle Switch Set is sent non-secure.
0x20	Multilevel Switch commands are sent non-secure.

Parameter Number 35, Parameter Size 1. Non-secure commands for AG in logical device 3.

Specifies that commands to devices in the association groups for logical device 3 is sent non-secure. This parameter is only relevant if ZHC5010 is included secure. See chapter regarding ZHC5010 included secure.

Value	Description
0	No commands are sent non-secure.
0x01	Not used.
0x02	Basic Report is sent non-secure.
0x04	Basic Set is sent non-secure.
0x08	Binary Switch Set is sent non-secure.
0x10	Binary Toggle Switch Set is sent non-secure.
0x20	Multilevel Switch commands are sent non-secure.

Parameter Number 36, Parameter Size 1. Non-secure commands for AG in logical device 4.

Specifies that commands to devices in the association groups for logical device 4 is sent non-secure. This parameter is only relevant if ZHC5010 is included secure. See chapter regarding ZHC5010 included secure.

Value	Description
0	No commands are sent non-secure.
0x01	Not used.
0x02	Basic Report is sent non-secure.
0x04	Basic Set is sent non-secure.
0x08	Binary Switch Set is sent non-secure.
0x10	Binary Toggle Switch Set is sent non-secure.
0x20	Multilevel Switch commands are sent non-secure.

Command Classes

Supported Command Classes

- Association (version 2)
- Association Group Information (version 1)
- Multi Channel Association (version 3)
- Version (version 2)
- Configuration (version 1)
- Manufacturer Specific (version 2)
- Z-Wave Plus Information (version 2)
- Device Reset Locally (version 1)
- Multilevel Switch (version 1)
- Powerlevel (version 1)
- Firmware Update (version 2)
- Multi Channel (version 4)
- Basic (version 2)
- Binary Switch (version 1)
- Binary Toggle Switch (version 1)
- Multi Level Switch (version 4)
- Indicator (version 2)
- Security (version 1)

Controlled Command Classes
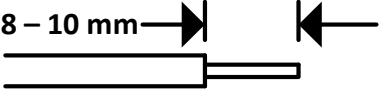
- Basic (version 2)
- Binary Switch (version 1)
- Binary Toggle Switch (version 1)
- Multilevel Switch (version 4)

Supported Command classes for endpoint 1 – 4

- Z-Wave Plus Information (version 2)
- Binary Switch (version 1)
- Binary Toggle Switch (version 1)
- Multi Level Switch (version 4)
- Association (version 2)
- Association Group Information (version 1)
- Multi Channel Association (version 3)
- Indicator (version 2)

Technical Data

Power Supply	230V 50 Hz
Attachable Load	1000 W resistive / 200 VA inductive
Fuse	T5A (not replaceable by customer)

Stripping length

8 – 10 mm

Micro-gap	µ
Approvals	CE
	EN 50491-3: 2009
	EN 60669-2: 2004
	Z-Wave Plus
Explorer Frame Support	Yes
SDK	6.61.00
Device Type	Slave with routing capabilities
Generic Device Class	Binary Switch
Specific Device Class	Binary Power Switch
Security	S0
Routing	Yes
FLiRS	No
Z-Wave Plus	Yes
Firmware Version	2.0

Explanation of Z-Wave specific terms

- **Controller** — is a Z-Wave device with capabilities to manage the network. Controllers are typically gateways, remote controls or battery operated wall controllers.
- **Slave** — is a Z-Wave device without capabilities to manage the network. Slaves can be sensors, actuators and even remote controls.
- **Primary Controller** — is the central organizer of the network. It must be a controller. There can be only one primary controller in a Z-Wave network.
- **Association** — is a control relationship between a controlling device and a controlled device.
- **Wakeup Notification** — is a special wireless message issued by a Z-Wave device to announce that is able to communicate.
- **Node Information Frame** — is a special wireless message issued by a Z-Wave device to announce its capabilities and functions.

Disposal Guidelines

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. If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being.