Dune HD Solo 4K
Z-Wave Smart Home Controller
User Manual

INTRODUCTION

This document describes Z-Wave Smart Home controller functionality built-in into Dune HD Solo 4K media player.

The Z-Wave Smart Home controller allows management of Z-Wave network and Z-Wave devices in this network, and additionally provides high-level Home Automation functionality (scripting etc).

The Z-Wave Smart Home controller functionality can be accessed via the Web UI, which can be opened in a browser on a PC, and also via iOS and Android applications. For custom integrations, HTTP / JavaScript API is available.

The Z-Wave Smart Home controller is based on Z-Way software stack from Z-Wave.Me. For more information about Z-Way software stack and its features, please see:

- Z-Wave.Me web site: http://www.z-wave.me
- Z-Wave.Me forum: https://forum.z-wave.me
- Z-Way product page: http://www.z-wave.me/index.php?id=22

Please check the following page for updates and additional information about Z-Wave support in Dune HD products:

- http://dune-hd.com/support/z-wave

Z-WAVE PRODUCT INFORMATION

This device is a Z-Wave static controller.

As a certified Z-Wave Plus device it can communicate with all other Z-Wave certified devices regardless of vendor or year of origin and it implements the enhanced functions of Z-Wave Plus.

This device can communicate in a secure environment if the other device supports the secure environment too. If not the controller will fall back to the normal communication mode automatically. During inclusion the use of secure environment can be suppressed for performance reason if desired.

In Z-Wave all non-battery powered device will act as routers for other devices to form a so-called meshed network.

In case there is more than one controller in the network the controllers need to be kept synchronous in regard to their knowledge of the network. This is called Controller Replication and the following policy applies: (a) in case there is a SIS in the network every other controllers will query the SIS for updates; (b) In the rare case that there is no SIS and this device is Primary Controller please re-include other controllers to perform a network information update.

The device supports the command classes 'SwitchMultilevel', 'SwitchBinary' and 'Basic' to catch events from devices using these command classes to trigger actions in the controller. There is no other action performed than changing values in the device data objects.

The device supports lifeline (association group 1, max 3 nodes) and 16 channels (simulating a generic Multilevel Switch) to differentiate receiving commands from devices not able to send modern scene control commands. The channels support the 3 same command classes (Basic, SwitchBinary, SwitchMultilevel and Scene Activation) that do not perform any real action but allow command reception only.

GETTING STARTED

To start using Z-Wave Smart Home controller built-in in the Dune box, perform the following steps:

1. Ensure the following cables are connected to the Dune box:
    a. Ethernet cable – to connect to the local Ethernet network. Wi-Fi connection can also be used, but Ethernet connection is recommended for more stable operation.
    b. A/V (e.g. HDMI) cable – to connect to a TV. If you want to use the Dune box just as a Z-Wave Smart Home controller (w/o connection to a TV at all), this can be omitted.
2. Ensure the power cable is connected to the Dune box and ensure that the ON/OFF hardware switch at the rear panel is in ON state.
3. Determine the IP address of the Dune box.
    - If the Dune box is configured to obtain IP address automatically via DHCP (which is the default setting), you can determine the IP address via the Web UI of your home router.
    - If the Dune box is connected to a TV and the TV is switched on, you can see the IP address in "Setup / Information" menu on the TV.
4. Open the following URL in a web browser on PC:
    - http://IP-address:8083
    - NOTE: Some version of Internet Explorer web browser may not work. Latest versions of Chrome web browser are well tested and recommended.
5. Log in as "admin" user. The Dune box may be preconfigured to expect one of the following initial passwords, find the one which works on your box:
    - "admin"
    - "123456"
6. The system may ask you to change the password.
7. Finally, you will get into the Web UI of the Z-Wave Smart Home controller.

HOME AUTOMATION UI AND EXPERT UI

The Web UI of the Z-Wave Smart Home Controller has two parts: the Home Automation UI and the Expert UI.

When you log in into the Web UI, you get into the Home Automation UI.

The Home Automation UI:

- Provides a subset of Z-Wave related functionality (most typically used functions).
- Provides high-level Home Automation functionality (applications, rooms, scripting etc).
- Is available via the following URL:
    o http://IP-address:8083

The Expert UI:

- Provides full access to low-level Z-Wave related functionality.
- Is available via the following URL:
    o http://IP-address:8083/expert
- Can also be reached via the Home Automation UI in the following way:
    o Click the "Settings" icon at the top right corner of the screen, choose "Devices" item, click "Manage with Expert UI" button.

HOME AUTOMATION UI

The Home Automation UI is intended for typical everyday Home Automation tasks, for high-level Smart Home configuration, and provides only basic operations for Z-Wave network configuration and administration. For advanced Z-Wave configuration, please use the Expert UI.

When you log in into the Web UI (using the URL http://IP-address:8083), you get into the Home Automation UI.
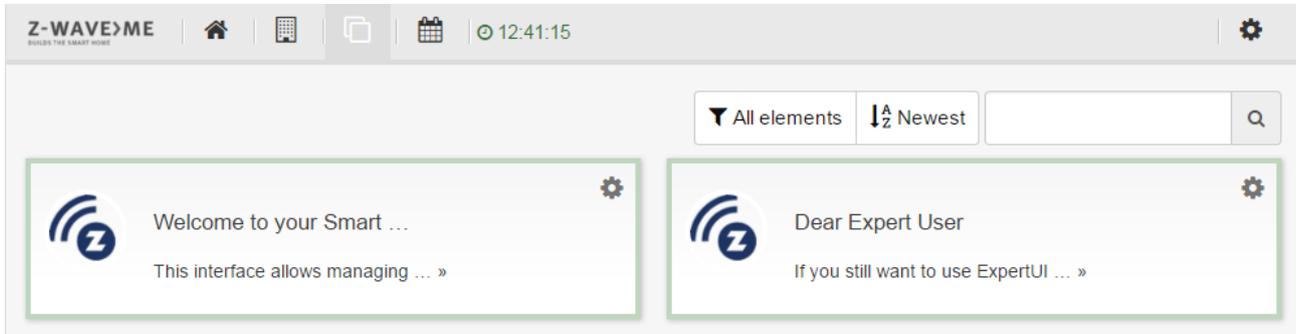
The top menu bar has the following icons:

- "Home": opens the Dashboard screen, which shows the UI elements (corresponding to Z-Wave devices and other objects) configured to be shown on the dashboard for easy access.
- "Rooms": opens the Rooms screen, which shows the configured rooms.
- "Elements": opens the Elements screen, which shows all the available Elements (UI blocks corresponding to configured Z-Wave devices and other objects).
- "Events": opens the Events screen, which shows the log of system events.

The "Settings" icon at the top right corner of the screen shows the "Settings" menu:

The "Settings" menu has the following items:

- "Apps": install and configure Home Automation applications.
- "Devices": configure Z-Wave devices and IP cameras.
- "Rooms": configure Rooms.
- "My settings": configure UI and account settings.
- "Management": system configuration.
- "Logout": log out from the Web UI.

HOME AUTOMATION UI: CONCEPTS AND FEATURES

The Home Automation UI uses the following concepts and provides the following features.

Z-WAVE DEVICE: HARDWARE Z-WAVE DEVICE INCLUDED INTO YOUR Z-WAVE NETWORK

- You can add (include) and remove (exclude) Z-Wave Devices from your Z-Wave network controlled by the Z-Wave Smart Home controller.
- For each Z-Wave Device, the system may generate one or several Elements (UI blocks to work with some aspect of the Z-Wave Device).

ELEMENT: A UI BLOCK TO WORK WITH SOME ASPECT OF A VIRTUAL OR PHYSICAL OBJECT

- Elements are generated by the system automatically when you add Z-Wave devices or create instances of Applications.
- Each Z-Wave Device added to the system typically generates one or several Elements.
- Many Applications typically create virtual objects and generate the corresponding Elements.
- Elements are automatically deleted when the corresponding object which generated them is deleted.
- You cannot manually delete Elements, but you can completely hide any Element if do not need it.
- Elements can be added to Rooms and the Dashboard.

ROOM: A GROUP OF ELEMENTS

- You can define as many Rooms as you need.
- You can add/remove Elements to Rooms.
- One Element may be added only to one Room.
- There is one special Room called "No Room" which groups all Elements not added to any Room.

DASHBOARD: THE "HOME" SCREEN LISTING THE MOST IMPORTANT ELEMENTS

- You can add/remove Elements to the Dashboard.

APPLICATION: A BUILDING BLOCK TO ADD LOGIC OR SPECIAL FEATURES

- An Application is a ready-to-use script / template which can add extra logic and functionality to your Smart Home setup, such as logic rules like "If-Then", timers, interaction with external (non Z-Wave) systems, etc.
- Some Applications are built-in into the system, and more can be installed from the App Store.
- New Applications can be easily created by 3-parties: the Application is coded in JavaScript language using the provided JavaScript API.
- To use an Application, you create an instance of the Application, and configure the properties of this Application instance (e.g. specify the Z-Wave devices to act on, specify the parameters, etc).
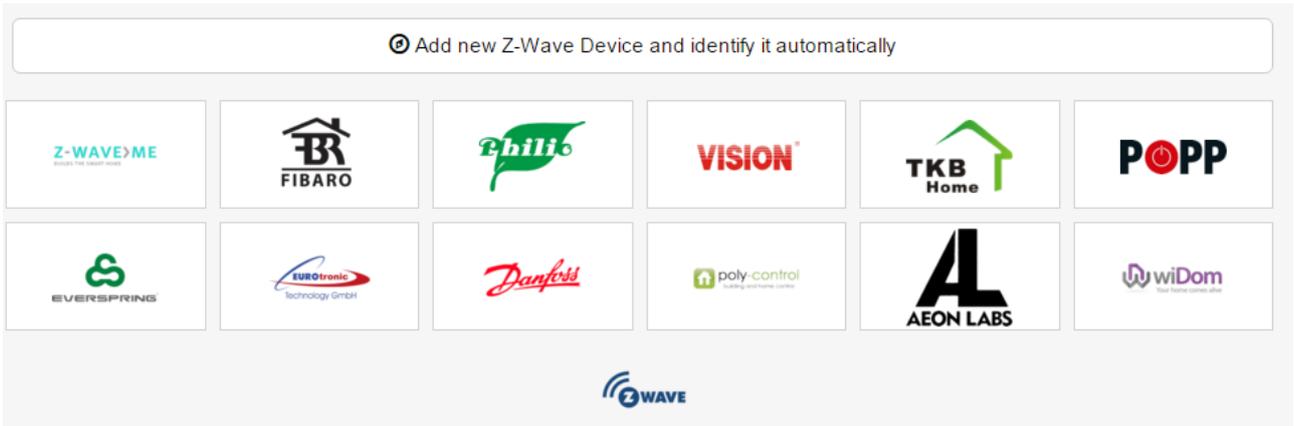- You can create many instance of the same Application.

HOME AUTOMATION UI: Z-WAVE DEVICES

To add a new Z-Wave device (include it into your Z-Wave network), choose "Devices" item in the "Settings" menu.

You will see the "Devices" screen:
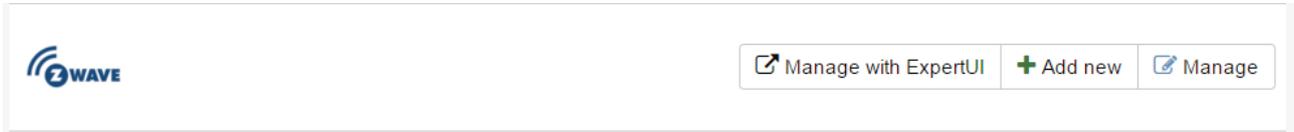
Click "Add new" button in the "Z-Wave" section. You will see the following screen:

Click "Add new Z-Wave device and identify it automatically" button, or choose a brand/manufacturer of the Z-Wave device from the list. You will see the "Include device" screen.

If the Z-Wave device is not in factory default state and was previously included into another Z-Wave network, first perform the exclusion of the device from the old network:

- Click "Exclusion again" link.
- You will see "Ready to exclude" message.
- Perform the "Exclude" action on the Z-Wave device (usually quickly press the button on the Z-Wave device 3 times; see the user manual of the Z-Wave device for device-specific information).
- If the operation succeeds, you will see "Device excluded" message.

Perform the inclusion:

- Click "Start inclusion" button.
- You will see "Ready to include" message.
- Perform the "Include" action on the Z-Wave device (usually quickly press the button on the Z-Wave device 3 times, see the user manual of the Z-Wave device for device-specific information).
- If the operation succeeds, you will see "New device found" message, and the system will perform the automatic configuration of the new device.

After you add a Z-Wave Device, you automatically get into the "Device" screen:

You can also open the "Device" screen in the following way: click "Manage" button in the "Devices" screen and click the Z-Wave device.

On the "Device" screen, you see and can adjust the following configuration for the Z-Wave device:

- Device name to be shown in the UI.
- Elements corresponding to the Z-Wave device.
- Hardware configuration of the Z-Wave device.

To remove a Z-Wave device (exclude it from your Z-Wave network), perform the following steps:

- Choose "Devices" item in the "Settings" menu.
- Click "Manage" button in the "Z-Wave" section.
- Click "Remove" icon for the selected Z-Wave device.
- Click "Start exclusion" button.
- Perform the "Exclude" action on the Z-Wave device (usually quickly press the button on the Z-Wave device 3 times; see the user manual of the Z-Wave device for device-specific information).
- If the operation succeeds, you will see "Device excluded" message.

HOME AUTOMATION UI: ELEMENTS

To see the list of all Elements, click "Elements" icon in the top menu bar. This will open the "Elements" screen:
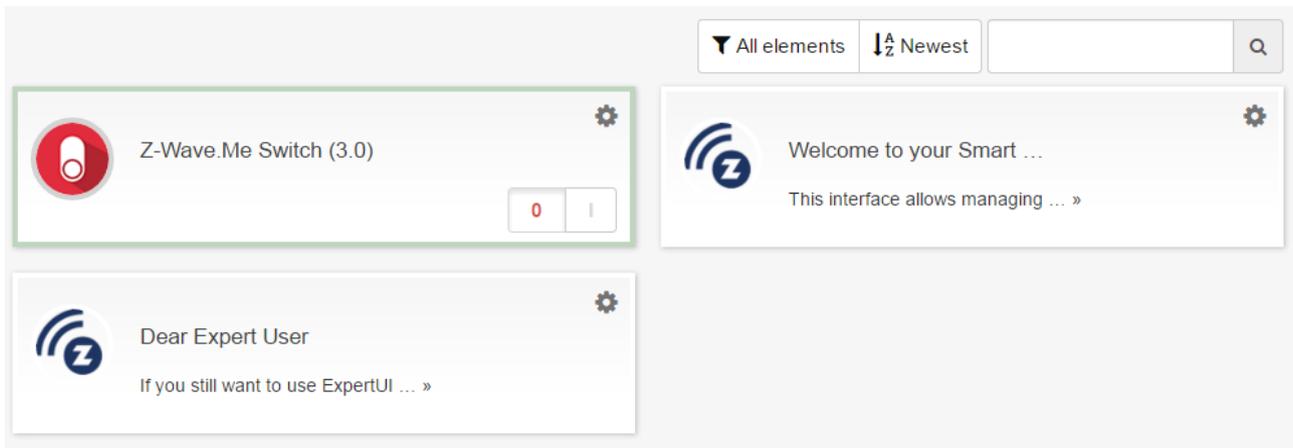
To adjust Element configuration, click "Settings" icon at the top right corner of the UI block corresponding to the Element. This will open the "Element Configuration" screen.


The "Element Configuration" screen shows the information about the Element and allows adjusting its configuration (rename, hide, assign to Room, add to the Dashboard, etc).

To remove the unneeded Elements, either hide the Element via the "Element Configuration" screen (if the Element supports hiding), or delete the object (Application instance of Z-Wave Device) which generated this Element.
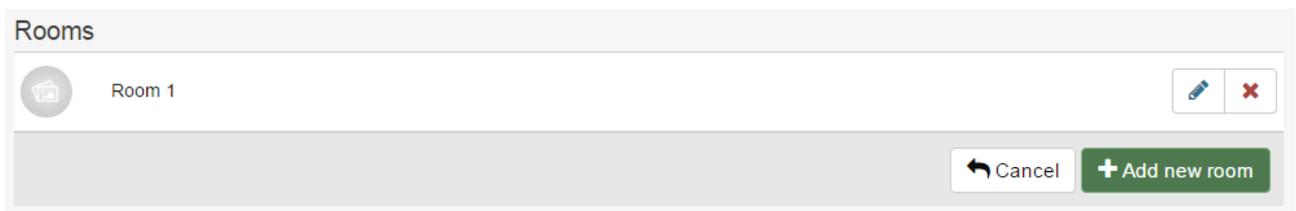
HOME AUTOMATION UI: ROOMS

To see the list of all Rooms, click "Rooms" icon in the top menu bar. This will open the "Rooms" screen:
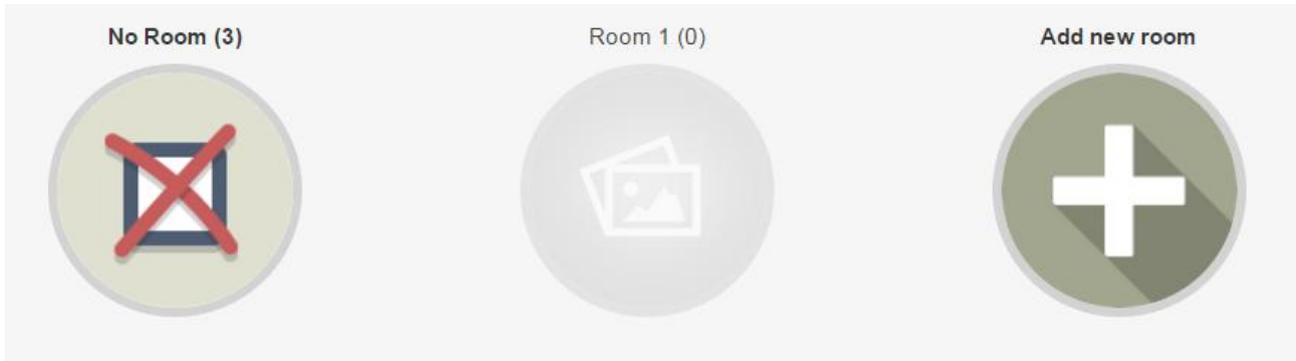
To view Elements in the Room, click the Room.

To create a new Room, click "Add new room" or use the "Rooms Configuration" screen.

To open "Rooms Configuration" screen, choose "Rooms" in the "Settings" menu. This will show the following screen:

To adjust Room configuration, click the "Edit" icon.

To delete a Room, click the "Remove" icon.

To add/remove an Element to a Room, use the "Element Configuration" screen.

To hide the special "No Room" Room, just move all Elements from this Room to other Rooms.
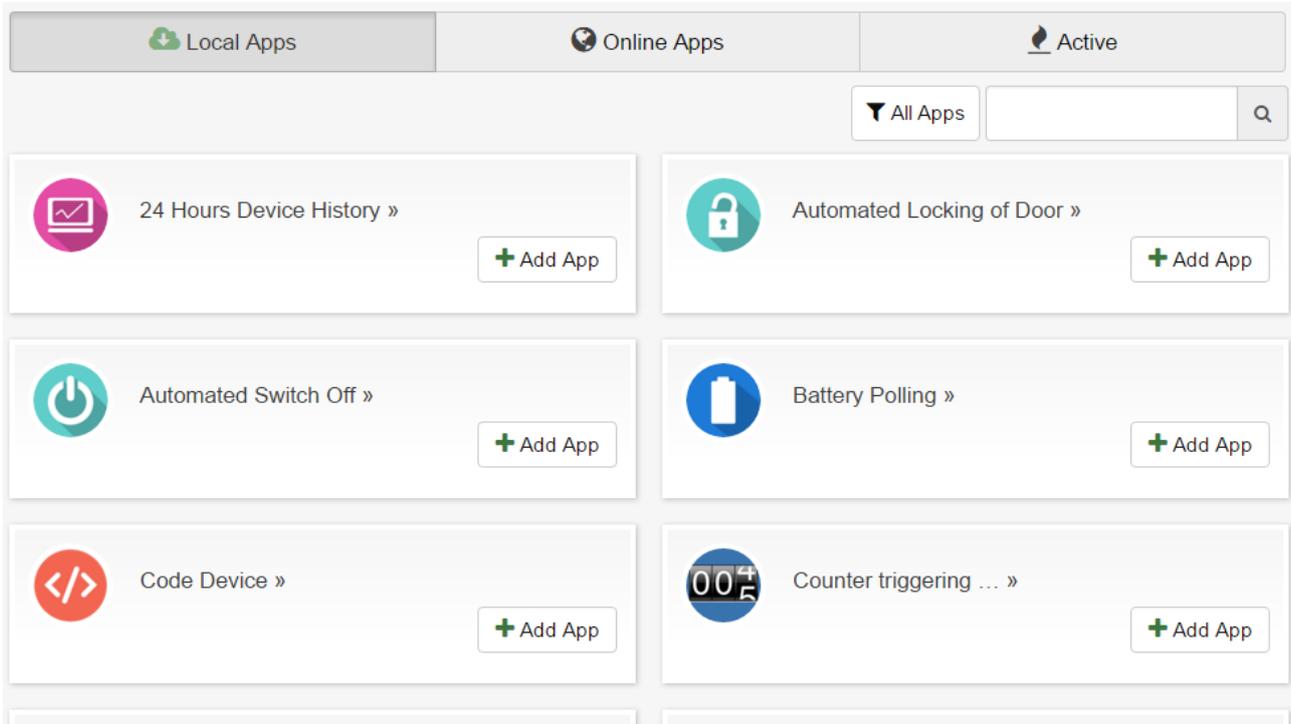
HOME AUTOMATION UI: DASHBOARD

To view the Dashboard, click "Home" icon in the top menu bar. This will show the "Dashboard" screen:
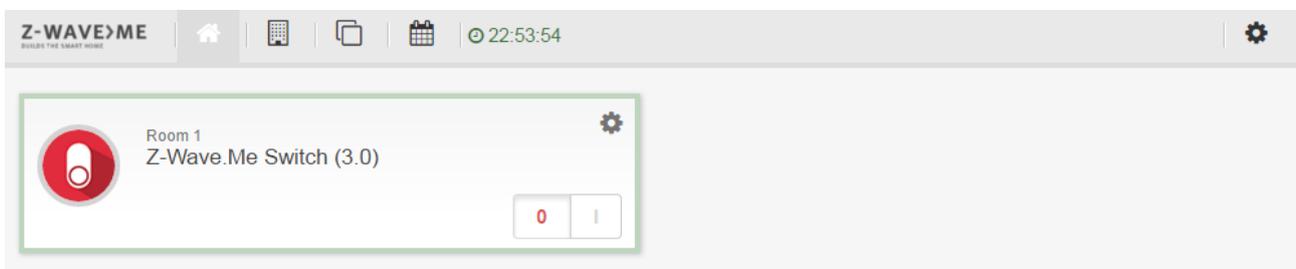
To add/remove an Element to the Dashboard, use the "Element Configuration" screen.

HOME AUTOMATION UI: APPLICATIONS

To view the list of available Application, choose "Apps" item in the "Settings" menu.

The "Local Apps" tab shows the list of locally installed Applications.

The "Online Apps" tab shows the list of Applications available via the App Store.

When viewing the list of available Applications, change the filter "Features apps" to "All apps" to see the list of all available Applications.

Click "Add App" button to create an instance of an Application. This will create a new instance of the Application, and you will see "Application Configuration" screen:

Enter the required parameters and click "Save".

To see and manage the list of created Application instances, use the "Active" tab.

EXPERT UI

The Expert UI is intended for installers, technically savvy people and other users that know how to built and maintain a Z-Wave based wireless network. Hence it uses some Z-Wave specific language and offers detailed insight into the work and data structure if the Z-Wave network.

You can access the Expert UI in the following ways:

- Open the following URL: http://IP-address:8083/expert
- In the Home Automation UI, choose "Devices" item in the "Settings" menu and click "Manage with Expert UI" button.

The Expert UI provides the following functions:

- Add (include) and remove (exclude) Z-Wave devices to your Z-Wave network.
- Configure Z-Wave devices.
- Operate Z-Wave devices.
- Manage Associations between Z-Wave devices.
- Perform various operations on Z-Wave controller.
- Access all data generated by the devices and perform all kind of functions and actions to the device.
- Look behind the scene into the data structures, routing mechanisms and timings of the Z-Wave control stack. This is particularly useful for debugging and software development.

The Expert UI does not provide any access to higher order business logic and automation. Please refer to the Home Automation UI for these functions.

EXPERT UI: UI OVERVIEW

The Expert UI offers a home screen and four top menu items (tabs):

- Control: Access to functions of the wireless devices included in the network.
- Device: Access to information about devices.
- Configuration: Configure the devices after inclusion if needed.
- Network: Add and remove devices and manage the network.

The top menu bar also has a language selector. Please be aware that this selection is only valid for the Expert UI.

The timing info on the upper right side shows the time on the controller device. Its update serves as a heartbeat to the system. All values shown in the UI are assigned to a time stamp indicating when the value of status information was received from the wireless network. A red color of the time stamp indicates that and update request from the controller for this value is pending.

EXPERT UI: HOME SCREEN

The Home screen offers some high level information about the software and a notepad where the user or installer can leave important information for future use

The Network Information box offers some statistics about the number of devices in the network and how many of them are mains or battery operated.

The Network Health box will list devices that have problems: the battery is down, the interview is not complete or the device failed. Clicking on the statement will lead to a help page explaining the problems and giving guidance for remediation.

EXPERT UI: CONTROL TAB

The Control Tab allows operating the various types of devices and shows the reported values in case of sensors or meters. In case the control options offered here are not sufficient please refer to the Expert Command Tab as part of the Configuration menu for a full set of functions supported by the device.

EXPERT UI: CONTROL TAB: SWITCH

The Switch screen lists all devices of the network supporting switching, dimmer or motor control capabilities. The device name and Id and the current status of the switch is given and the time of the last status update. The "Update" button forces an immediate update of the switch (if mains powered device). A 'Switch All' Icon shows whether or not the specific device will react on a Switch All ON or Switch All Off command. A green triangle indicates that the device will react to the command shown.

#	Devices	Level	DateTime	Switch all	Update all	All off	All on				
2	⏻ Heizung	On	18.8.2014	ON/OFF	Update	Off	On				
3	⏻ CP Deckenlicht	Off	18.8.2014	ON/OFF	Update	Off	On				
8	⏻ CP Jal	On	18.8.2014	ON/OFF	Update	Off	On	Full	0	▬▬▬▬▬	99
13	⏻ CP Fenster	Off	18.8.2014	ON/OFF	Update	Off	On	Full	0		0
14	⏻ SL Deckenlicht	Off	18.8.2014	ON/OFF	Update	Off	On	Full	0		0
15	⏻ SL Schrank	Off	18.8.2014	ON/OFF	Update	Off	On				
16	⏻ SL Jal	On	18.8.2014	ON/OFF	Update	Off	On	Full	0	▬▬▬▬▬	99
20	⏻ Wasch	On	18.8.2014	ON/OFF	Update	Off	On				
21	⏻ Werkstatt	Off	18.8.2014	ON/OFF	Update	Off	On				

All actuators can be switched on or off. Dimmer and motors controls can be operated using a slider. For dimmer there is a button "On" and "Full". "Full" turns the dimmer always to 100 % diming value while "On" will turn to the last dimming state before the dimmer was turned off. Clicking on the table heads reorders the table view of the data.

EXPERT UI: CONTROL TAB: SENSORS

The Sensor screen lists all devices of the network providing sensor information. Device name and id, the type of the sensor, the actual sensor value and the sensor scale is listed. The Date/time column indicates when the given sensor value was received. Its possible to call for a sensor update but bear in mind that battery operated device will only respond after the next wakeup.

#	Devices	Device type	Level	Scale	DateTime	Update all
2	Heizung	Electric	82.4	W	18.8.2014	Update
2	Heizung	Electric	234.5	V	18.8.2014	Update
2	Heizung	Electric	0.38	A	18.8.2014	Update
2	Heizung	Electric	0.9	Power Factor	18.8.2014	Update
9	CP Heizung	Temperature	23.27	°C	15:46	Update
10	CP Tür	General purpose	Triggered		06:37	Update
19	Stromzähler	Electric	130.393	W	15:42	Update
19	Stromzähler	Electric	232.673	V	18.8.2014	Update

EXPERT UI: CONTROL TAB: METERS

The Meter screens lists all devices of the network providing (accumulating) meter information. Device name and id, the type of the meter, the actual meter value and the meter scale is listed. The Date/time column indicates when the given sensor value was received. Its possible to call for a meter update but bear in mind that battery operated device will only respond after the next wakeup. Clicking on the table heads reorders the table view of the data.

#	Devices	Device type	Level	Scale	DateTime	Update all	
2	Heizung	Electric	11.74	kWh	18.8.2014	Update	Reset
19	Stromzähler	Electric	205.237	kWh	15:53	Update	Reset
19	Stromzähler	Electric	58.974	kWh	18.8.2014	Update	Reset
19	Stromzähler	Electric	53.215	kWh	17.8.2014	Update	Reset
19	Stromzähler	Electric	80.797	kWh	17.8.2014	Update	Reset
20	Wasch	Electric	11.4	kWh	18.8.2014	Update	Reset
23	WO Stehlampe	Electric	0.2	kWh	18.8.2014	Update	Reset

EXPERT UI: CONTROL TAB: THERMOSTAT

The Thermostat screen lists all thermostat devices of the network. Device name and id and the current set point temperature is shown. The Date/time column indicates when the given set point temperature was transferred to the device. The set point temperature can be changed using the '+' or '-' buttons or the slider. Clicking on the table heads reorders the table view of the data.

# ▼	Devices	Temperature	DateTime		
20	Device _20	26 °C	07:00	- +	0 — 40
19	Device _19	23 °C	28.7.2014	- +	0 — 40
12	Device _12	40 °C	28.7.2014	- +	0 — 40

Attention: The temperature value does not differentiate between heating and cooling devices. If a cooling and a heating function shall have different set points please refer to the expert command section for more precise command settings.

EXPERT UI: CONTROL TAB: LOCKS

The Lock screen lists all door lock devices of the network. Device name and id, the current status of the lock and last time of the change of the status is listed.

#	Devices	Devices	DateTime		
17	Front Door Name	Open	7.8.2014	Update	🔒 🔓

Clicking on the table heads reorders the table view of the data.

EXPERT UI: DEVICE TAB

The Device Tab gives access to screens with more detailed information about the devices in the network and their actual status.

EXPERT UI: DEVICE TAB: STATUS

The Status screen shows the actual network status of all devices. All devices are listed by their node id and name. The date/time indicates the time of the last successful communications between the controller and this device (either confirmed sending or reception). The green checkmark indicates that the device is alive. A red sign indicates that the controller assumes the device not being active anymore. Mains powered devices can be checked for their network availability by hitting the "Check connectivity" button.

#	Device name	Sleeping	Awake	Date	DDR		
							Check all
2	⏻ Heizung			✔ 14:24	✔		pingDevice
3	⏻ CP Deckenlicht			✔ 14:24	✔		pingDevice
7	👁 CP JalSteuer	14:24 → 14:28 🕐	☾	✔ 14:24	✔		
8	💡 CP Jal			✔ 14:24	✔		pingDevice
9	⌸ CP Heizung	14:20 → 14:25 🕐	☾	✔ 14:20			
10	👁 CP Tür	14:20 → 14:25 🕐	☾	✔ 14:20	✔		
13	💡 CP Fenster			✔ 27.08.2014	✔	❓	pingDevice
14	💡 SL Deckenlicht			✔ 27.08.2014	✔		pingDevice
15	⏻ SL Schrank			✔ 27.08.2014	✔		pingDevice

In case the device interview and configuration was not performed properly a little question mark icon will indicate this. Clicking on the question mark will open a window displaying the details of the interview process. The correct loading of a Device Description File is indicated as well. For battery-operated device the time of the last wakeup, the time of the next wakeup and the current wakeup status is shown. Clicking on the table heads reorders the table view of the data. Clicking on the table heads reorders the table view of the data.

EXPERT UI: DEVICE TAB: BATTERY

The Battery screen gives an overview of the battery status of the battery-operated devices in the network. Devices are listed by name and id. The last reported battery level (0…100 %) including update time is shown as well as the number and type of battery if known. The "Update" button will request a status update from the device. The new status will be available after the next wakeup of the device. Clicking on the table heads reorders the table view of the data.

#	Devices	Battery type ▾	Level	DateTime	
21	Portable Remote Controller_21	2*AAAA	64% ☆	31.7.2014	Update
18	Device _18	2*AAA	74% ☆	11.8.2014	Update
25	Routing Binary Sensor_25_aaa	3*AA	70% ☆	09:16	Update
20	Device _20		66% ☆	07:00	Update
10	SEC_321		0% ☆	29.7.2014	Update

EXPERT UI: DEVICE TAB: TYPE INFO

The Type info screen lists all devices of the network and indicates if they support enhanced Z-Wave functions such as Security and Z-Wave Plus. Their Z-Wave protocol version, their application version and their device type indicator is shown for information purposes too. Clicking on the table heads reorders the table view of the data.

| #	Device name	Security	NWI & EF	Z-Wave Plus	SDK	App version	Device type
2	⏻ Heizung		✔		6.02.00	1.1	Binary Power Switch
3	⏻ CP Deckenlicht		✔		4.52.01	1.3	Binary Power Switch
7	👁 CP JalSteuer		✔		5.03	1.1	Portable Remote Controller
8	💡 CP Jal				4.27	2.1	Multiposition Motor Switch
9	↓≡ CP Heizung		✔		4.55.00	0.99	Thermostat
10	👁 CP Tür		✔		4.55.00	1.5	Routing Binary Sensor
13	💡 CP Fenster	✔	✔		4.54.01	3.10	Motor Control Device (B)
14	💡 SL Deckenlicht		✔		4.54.01	1.8	Routing Multilevel Switch
15	⏻ SL Schrank				5.02 pl1	1.0	Binary Power Switch
16	💡 SL Jal				4.27	2.1	Multiposition Motor Switch
19	Stromzähler		✔		4.55.00	1.5	Simple Meter

EXPERT UI: DEVICE TAB: ACTIVE ASSOCIATIONS

The Active associations screen shows the current association set in the network. The lifelines (association to the gateway to report status changes and heard beat) can be hidden if needed. A ‚Change' button leads right to the Configuration page of the device to change association settings.

#	Device name	Assoc group name	Show lifeline
7	CP JalSteuer	**Single press and hold of up/down buttons** (#8) CP Jal **Double press and press-hold of up/down buttons** (#8) CP Jal	Change
14	SL Deckenlicht	**Single press and hold of up/down buttons** (#15) SL Schrank **Double press and press-hold of up/down buttons** (#15) SL Schrank	Change

EXPERT UI: CONFIGURATION TAB

The Configuration Tab allows configuring the functions of the device.

Pick the device to be configured from the drop down menu, then navigate between configuration screens using the additional tabs.
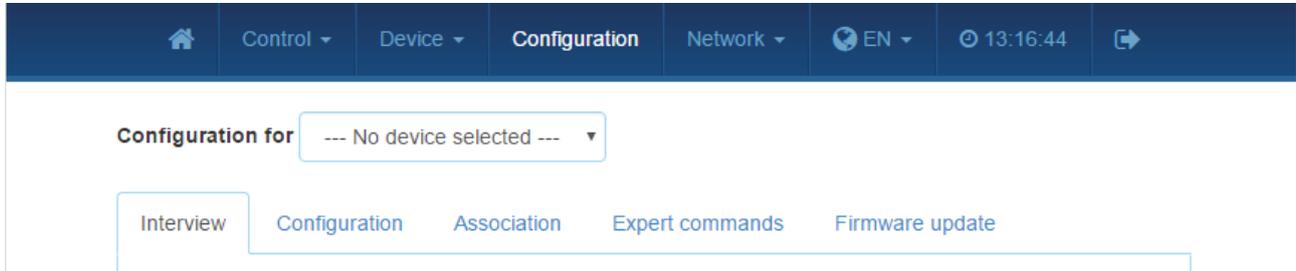
EXPERT UI: CONFIGURATION TAB: INTERVIEW

The Interview screen the result of the device interview. In this process the controller tries to get information about the device. In case the controller find a device description record for the device it will display further information about the device that can not be obtained from the device itself. If the software will not automatically recognize the device and load the description record a button "Choose Device Description Record" allows to do this manually.

Node Id	3
Name	CP Deckenlicht
Brand	Z-Wave.Me
Device type	Binary Power Switch
Product	Flush-Mountable Switch v1.3
Description	One paddle wall switch
To (re-)include	Button triple press
Interview stage	Interview complete + +++ ++++++++++
Device state	✔ Device is operating
Application version	1.3
SDK version	4.52.01
Command Class	Basic, SwitchBinary, SwitchAll, Configuration, ManufacturerSpecific, PowerLevel, Protection, NodeNaming, Association, Version, Indicator, MultiChannelAssociation

The only configuration option on this tab is to change the given name of the device. During inclusion the software generated a generic name but it is highly recommended to change this name. The given name should be descriptive bit not too long.

The interview stage line gives information about the progress of the device interview by splitting it into the different command classes supported by the device. '+' indicate a successful interview, '0' a permanent fail and a '.' that this command class is still in the waiting queue to be completed. There are a few reasons why an interview is not complete: In most cases the devices went to deep sleep too early to has some problems. The button "Force Interview" allows re-doing the whole interview. The button "Request NIF" requests a Node Information Frame from the device.

The Button "Show interview results" allows displaying the information about the different command classes found during the interview. It is also possible to force the interview of a certain command class only.

Interview results   ✕

Interview results for device CP Deckenlicht

Instance	CommandClass	Result
0	Basic	Done
	SwitchBinary	Done
	SwitchAll	Done
	Configuration	Done
	ManufacturerSpecific	Done
	PowerLevel	Done
	Protection	Done
	NodeNaming	Done
	Association	Done
	Version	Done
	Indicator	Done
	MultiChannelAssociation	Done

Close

EXPERT UI: CONFIGURATION TAB: CONFIGURATION

The Configuration screen allows configuring the device.

There are four more command classes that may need additional configuration work and that are displayed if the certain device supports it. The actual data of the different sections are shown in the UI and can be updated using the button "Update from device" A time indication shows when the time where the values where received from the device (Beware, that an update may be delayed if the device if battery operated an in deep sleep state)

• Wakeup: Define the wakeup interval and the node is of the main controller taking care of the wakeup sequence. The controller will set a standard wakeup time of 1800 seconds unless the devices sets a different minimal or maximal wakeup time. In most cases the node id of the controller is the correct setting for the target node id and should not be changed. In case this controller is only secondary controller this value may change. A tool tip on the input field shows the allowed minimum and maximum wakeup time as reported by the device.

• Protection: In case the device supports local protection – means suppressing local use of the device – the behavior of this function can be defined. The protection command class actually offers more options than displayed here, Refer to the 'Expert Commands' tab for a complete set of controls.

• Switch All configuration: Z-Wave supports the so called switch all function as a broadcast to all switches and dimmers. This setup defines the reaction of the device to such a "Switch All" command. The setting is also displayed in the "Switches " section as little gray/green icon.

• Configuration: In case the controller can identify the device and finds information about further configuration options these options are shown. The little (i) symbol may give more descriptive information about the configuration value. If no device description of the device is found no configuration options are shown. In case the device does have configuration options its possible to set them using the expert command section.

Note: For mains powered devices and FLIRS device the button "Apply configuration to device" will activate the changes within few seconds. For battery operated devices the commands are stored to the next wakeup. Its possible and recommended to wakeup the device manually to speed up the change of configuration values.

EXPERT UI: CONFIGURATION TAB: ASSOCIATION

The Association screen allows configuration of Z-Wave associations. Z-Wave associations allow switching a Z-Wave device B (target) as a result of an event in Z-Wave device A (source). Z-Wave device A offers lists of devices to switches for each event supported. The list of these events - also called association groups - and the devices that are associated with it are shown in the Association screen.

In case the information is provided either by the device or by the device record stored in the software the meaning of the events is written. Otherwise only event group is shown unnamed. In this case refer to the devices manual for more information about the association group meaning. The stored devices can be called from the actual device using a button. The buttons '+/-' used to add and remove device from the group. A dialog is opened and a device can be picked. In case this device has multiple instances an instance drop down list will appear allowing to choose the right instance of the target device. The node ID and - if applicable – the instance id are shown in the target device list. Move the mouse over the ID to show the complete given name of this device.

EXPERT UI: CONFIGURATION TAB: EXPERT COMMANDS

The Expert commands screen displays the status values and possible commands in a very generic way.

On the left hand side the different channels of the device are listed in a column. In case there is only one channel (that's the case for most devices) only channel 0 is shown. Clicking on the number opens a dialog showing all internal variables for the channel. The next column shows all the command classes exposed by the device. Again clicking on the name opens a dialog with more internal status variable information for this command class. On the right hand side there is a list of commands. This UI is auto-generated from the information provided by the command class itself and not optimized for daily usage.

EXPERT UI: CONFIGURATION TAB: FIRMWARE UPDATE

The Firmware update screen allows performing a firmware update of the device if the device supports 'over the air' firmware update.

The firmware can be provided in two ways: either as URL in the format http://IP:PORT/file or as file upload using the file upload dialog. The firmware file must be available in raw 'BIN' format or 'HEX' format. The target field allows specifying the target memory/processor for the update process. For updating the Z-Wave firmware part a '0' must be set. The firmware updating process will take up to 10 minutes. Please don't do any other operation during this time. It may be required to activate the firmware update mode on the device to be updated. Please refer to the manual for further information about activation.

EXPERT UI: NETWORK TAB

The Network tab of the UI focuses on the network as such and offers all controls and information to build, manage and repair the wireless network of the controller.

EXPERT UI: NETWORK TAB: CONTROL

The Control screen summarizes all commands needed to manage the network and the controller. The page is structured in four boxes.

The device management box allows including and excluding Z-Wave devices. A status display shows the status of the controller. The "Start Inclusion" and "Start Exclusion" buttons turn the controller into the Inclusion and Exclusion modes. In this case the status display changes and the button turns into a "Stop" function. The inclusion and exclusion modes will time out after about 20 seconds but can always be terminated using the "Stop" button.

Another way to stop the inclusion mode is to actually include a new device. In this case the inclusion mode will stop and the node id of the new device is shown. The controller generated a default name of the device as combination of its primary function and the new node id. Clicking on this default name leads to the Configuration page where the name can be changed and other configuration tasks can be performed.

Please refer to the devices manual on how to do an inclusion. In case the inclusion does not work as expected, please exclude the device first. More than 90 % of all inclusion problems are caused by still included in a different network and can then not being included again.

The Exclusion mode also stops when one device was successfully excluded. This function can exclude devices from other networks too but the device need be available and functioning. To remove non functioning or disappeared devices please refer to "Replace Failed node" or "Remove Failed node".

In case the new device supports enhanced security function (Security Command Class) this controller will include the device securely. After this all data exchange between the controller and the new device is encrypted using AES encryption. For performance reasons it mays be desired not to use the security function. The slider "Force unsecure inclusion" turns the controller into a mode where all security functions are suppressed for the included device. Security functions of other devices are not impacted.

The "Backup and Restore" section allows creating and using a backup. The backup file is stored on the local computer. Please note that any restore will overwrite the existing network. The restore operation must therefore be confirmed in another message box. A checkbox defines if the node information in the z-wave chip itself shall be overwritten as well. This operation results in a possible loss of all network relationships and may require a reinclusion of devices. Handle with care.

The "Controller Maintenance" section offers two reset buttons. The "Reset API" restarts the operating system of the Z-Wave transceiver chip (reboots the chip). This can be done safely all the time.

The "Controller Factory Default" turns the controller back into factory reset. All connections to included devices and all configurations and settings are lost. This function must be handled with extreme case. An additional dialog requires to explicitly confirm the function. Only use this function if you know what you do!

The function "Remove Failed Node" allows removing a node that is not longer communicating with the controller. After multiple failed communications with a device the controller will mark this device as failed and avoid further communication. This function finally removes such a device from the network configuration. The drop down list will only show IDs of failed nodes. If this list is empty this is a good sign!

It is also possible to "Replace a Failed node" with a new node. This is a combination of removing the failed node and adding a new node. Using this function makes sure the next included node has the same node ID as the failed node. The drop down list will only show IDs of failed nodes. If this list is empty this is a good sign!

Battery operated devices are mainly in deep-sleep state and will not answer to communication requests. Hence the controller will never automatically detect if a certain device is defect or gone. The function "Mark battery device as failed" manually marks battery-operated devices as failed so that they can be removed or replaces. The dropdown list shows all battery operated devices but this does not mean that they are failed.

The next two functions deal with the controller role in the network. With "Start Learn Mode" this controller can become a secondary controller in another network. This is only possible if this controller did not include any other device before. Clicking the "Start Learn Mode" button turns the controller in a function where it will accept inclusion requests from other controllers. The controller status dialog on the upper left hand side shows this status. The Learn mode will time out after about 20 seconds or when the device was included successfully. It is also possible to manually terminate the mode.

The "Start NWI Learn Mode" function actively hands over the role of the primary controller of the network to a controller that will be included using the normal inclusion process. The controller status dialog shows the mode and its termination.

The "Call NIF from all devices" function is just a convenient way to retrieve a Node Information Frame from all devices of the network.

EXPERT UI: NETWORK TAB: ROUTING

The routing screen shows the neighborhood relationship of devices. The id, the name and the type of the node are listed.

Dark green indicates that the two devices are in direct wireless neighborhoods and don't need any other device to forward their signals. A Light green connection needs one router between. Yellow color indicates that the communication route is just ok. This can be achieved by longer but multiple routes. A red color between two nodes indicated an insufficient communication link. A little black dot in the colored field indicates that the current configuration of the network requires these two nodes to communicate with each other due to an association relationship. The 'Update' button calls the device to scan its neighborhood and report back the result to update its own line of the routing table.

EXPERT UI: NETWORK TAB: REORGANIZATION

The reorganization screen controls an algorithm that reorganizes the network relationships and fixes problems. With checkboxes different stages of the algorithm can be selected. The result of the reorganization is shown in a log and can be downloaded.

EXPERT UI: NETWORK TAB: TIMING INFO

The Timing Info screen shows some very valuable timing information of communications between the controller and other devices.

Node	Device name	Type	Total (pkts)	Ok	Last packets (in 10 ms units)
2	Heizung	Mains	67	100%	4 3 8 23 15 5 73 11 59 1 17 9 7 33 32 2 52 14 6 6 37
3	CP Deckenlicht	Mains	68	100%	1 4 3 40 5 4 5 14 4 10 7 48 4 15 4 12 13 8 5 37 7
7	CP JalSteuer	Battery/Wakeup	12	83%	7 11 3 11 7 12 10 3 10 15 6 8
8	CP Jal	Mains	34	100%	7 5 3 3 6 6 3 6 7 8 3 3 3 8 3 8 3 4 3 3 8
9	CP Heizung	Battery/Wakeup	16	94%	292 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
10	CP Tür	Battery/Wakeup	5	80%	20 3 3 3 9
13	CP Fenster	Mains	1	100%	8

All other devices the controller has communicated with are shown in a list. The number of packets and the percentage of successful communication are shown. This can give an indication about the stability of the communication link between the controller and this device. On the right hand side the timing delay of each communication is shown and color-coded. A red number indicates that this communication finally failed. A communication without rerouting attempts as shown as green and a rerouting attempt is coded in black. The fact that a communication failed (red) may indicate that there is a severe problem in the network or in the device. It is however also possible that a battery operated device just went back to sleep too fast. Z-Wave pros can read a lot out of this timing information particularly when combined with the routing table

EXPERT UI: NETWORK TAB: CONTROLLER INFO

The Controller Info screen shows some internal technical data of the controller hardware used.

This includes the detailed information about the Role of the controller in the network, the Z-Wave transceiver hardware used, firmware running on the Z-Wave transceiver and the release information of the Z-Way software. This information may be needed during support and debugging.

"View Job Queue" button shows the screen which offers some deep insight into the dynamics of the controller software. It visualizes the job queue of the system. Every communication attempt of the controller is queues into a job queue and then handed over to the Z-Wave chip for execution. The list shows the jobs pending and the jobs that are completed or failed.

Legend
n = Send count, W = Wait wakeup, S = Wait security, E = Encapsulated, D = Done, U = Urgent

n	U	W	S	E	D	Ack	Resp	Cbk	Timeout	NodeId	Description	Progress	Buffer
0		W				-	-	-	0.20	21	Battery Get		15 2 80 2 5
0						-	-	-	0.20	11	Meter Version Get		b 3 86 13 32 25
0						-	-	-	0.20	11	Configuration Version Get		b 3 86 13 70 25
0						-	-	-	0.20	11	ManufacturerSpecific Version Get		b 3 86 13 72 25
0						-	-	-	0.20	11	PowerLevel Version Get		b 3 86 13 73 25
0						-	-	-	0.20	11	Association Version Get		b 3 86 13 85 25
0						-	-	-	0.20	11	Version Version Get		b 3 86 13 86 25
0		W				-	-	-	0.20	22	Basic Version Get		16 3 86 13 20 5
0		W				-	-	-	0.20	22	SensorBinary Version Get		16 3 86 13 30 5
0		W				-	-	-	0.20	22	Configuration Version Get		16 3 86 13 70 5
0		W				-	-	-	0.20	22	ManufacturerSpecific Version Get		16 3 86 13 72 5
0		W				-	-	-	0.20	22	Battery Version Get		16 3 86 13 80 5
0		W				-	-	-	0.20	22	Wakeup Version Get		16 3 86 13 84 5
0		W				-	-	-	0.20	22	Association Version Get		16 3 86 13 85 5
0		W				-	-	-	0.20	22	Version Version Get		16 3 86 13 86 5
0						-	-	-	0.20	11	SwitchMultilevel Set		b 3 26 1 40 25

A legend informs about the meaning of the different flags n, U, D, E, S and W. The timeout value counts back from 20 seconds once the job was sent. Even when it was completed the job will stays in the queue marked as done (D) for some more time to allow inspection. The target node ID, a description of the communication message, a information about the process and the real Bytes of the message are shown as well.

Z-WAVE TERMS

The following Z-Wave terms are used in this manual:

- Static controller is a Z-Wave device with capabilities to manage the network available on a fixed location in the home.
- Secure environment: For sensitive applications like door lock control Z-.Wave offers an enhanced encryption wrapping defined in the command class Security.
- Controller Replication: Copy the information of one controller to another controller.
- SIS: The central database of nodes and ids.
- Primary Controller: If no SIS is present one controller becomes the primary controller only able to include new devices.
- Secondary Controller: If no SIS is present, all other controllers than the primary controller are called secondary.
- Inclusion: the process of bringing new Z-Wave devices into a network.
- Exclusion: the process of removing Z-Wave devices from the network.
- Association is a control relationship between a controlling device and a controlled device.
- Association Group is the list of devices controller by association.
- SwitchMultilevel, SwitchBinary and Basic are certain command classes.
- Node Information Frame is a special wireless message issued by a Z-Wave device to announce its capabilities and functions.

The information contained in this document is subject to change without notice.