
RAone SmartPower

Z-Wave Technical Document - Device Number:00100001

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General Z-Wave Device Information

Table 1. General Information

Z-Wave Developer's Kit Version	4.25
API Library	zw_slave_routing_ZW020xs.lib
Chip	ZW0301 Single Chip
Z-Wave Device Class Version	13
RF Operating Frequency	868 MHZ (EU)
Basic Type	Routing Slave
Generic Device Type	Binary Switch
Specific Type	Binary Power Switch
Listening	Yes
Optional Functionality	Yes

Supported Command Classes

The following subchapters lists the supported command classes, with information specific to the device.

Manufacturer Specific

Supported command class version is 1. Manufacturer specific command class, makes it possible to uniquely identify this type of device in a Z-Wave network. On receiving a Manufacturer Specific Get the device will respond with the following:

Table 2. Manufacturer Specific Report

Manufacturer ID 1	0x00
Manufacturer ID 2	0x77
Product Type ID 1	0x00
Product Type ID 2	0x10
Product ID 1	0x00
Product ID 2	0x01

With Inovus products, Product Type ID uniquely identifies a specific product, this could be as in this instance a RAone SmartPower or a RAone SmartDimmer. Product ID identifies a feature set of the specific product. If for instance a command class is added, removed or changed in a future version of the product, Product ID will be changed.

Binary Toggle Switch

Supported command class version is 1. When receiving a Binary Toggle Switch Set, the device will toggle its status. If its on it will turn off, if its off it will turn on. When receiving a Binary Toggle Switch Get, the device will report its status with a Binary Toggle Switch Report:

Table 3. Binary Toggle Switch Report

Value	Status (on = 0xFF, off = 0x00)
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Multilevel Sensor

Supported command class version is 2. When receiving a Multilevel Sensor Get, the device will report the measured power usage in a Multilevel Sensor Report:

Table 4. Multilevel Sensor Report

Sensor Type	0x04
Precision Scale Size	0x22
Sensor Value 1	Measured Power Usage (MSB)
Sensor Value 2	Measured Power Usage (LSB)

Binary Switch

Supported command class version is 1. When receiving a Binary Switch Set, Status will be set to on (0xFF) if the Switch Value is larger than 0 and less than 100 or 0xFF, otherwise it will se to off (0x00).

When receiving a Binary Switch Get, the device will report its status in a Binary Switch Report:

Table 5. Binary Switch Report

Value	Status (on = 0xFF, off = 0x00)
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Association

Supported command class version is 1. Association makes it possible to make other devices react to operations on the local device, ie. when the device is turned on or off by touching it, all associated devices will be turned on or off as well.

When receiving an Association Supported Groupings Get the device will respond with the supported number of groupings supported as follows:

Table 6. Association Supported Groupings Report

Supported Groupings	0x01
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In the following commands all grouping identifier fields are ignored, since the device only supports one group.

When receiving an Association Set command, the device will create an association in the group with the given node ids. The maximum number of nodes supported by the device is 4, if the device reaches this amount of associations, further attempts to associate will be ignored.

When receiving an Association Remove command, the device will remove the given node ids from the group. If a node is not associated the request to remove it will be ignored. If no node ids are given, the whole group will be deleted.

When receiving an Association Get, the device will respond with an Association Report:

Table 7. Association Report

Grouping Identifier	0x01
Max Nodes Supported	0x04
Reports to Follow	0x00
NodeID1	Associated Node 1
...	...
NodeID4	Associated Node 4

It is important to setup correct routes to the device, when configuring associations. The device is a routing slave and therefore requires a controller to do this. Every associated device needs a route. Innovus controllers, like for instance the SmoothRemote or MyHome Controller does this automatically when associations are created.

Node Naming

Supported command class version is 1. Node Naming makes it possible to give the device a name and a location.

When receiving a Node Name Set / Node Location Set, the device updates it's name / location with the specified Char. Presentation and Node Name / Location Chars, this can later on be retrieved as a Node Name / Location Report using Node Name / Location Get. The maximum amount of supported characters is 16.

All Switch

Supported command class version is 1. The All Switch command class can be used to switch the device on and off.

It is possible to configure what sort of All Switch commands the device should react to or not by using the All Switch Set command. For instance this makes it possible to guard the freezer from being turned off and the iron from being turned on. The default mode is 0xFF, which indicates that the device is included in all on / all off functionality. Additionally its possible to configure the device to be excluded from all off (mode = 0x02), all on (mode = 0x01) or both (mode = 0x00).

Protection

Supported command class version is 1. The protection command class makes it possible to protect the device against local operation. For instance to keep a child from operating the device.

The Protection State can be changed using Protection Set, possible states are Unprotected (0x00), Protection by Sequence (0x01) and No Operation Possible (0x02). The default state is Unprotected.

When protected by sequence the device won't react to local operation unless protection is temporarily disabled. This is done by a tripple click on the device. The device can then be operated normally for 10 seconds.

Protection only stops operations that turn the device or associated devices on or off, not Z-Wave specific actions like for instance entering learn mode.

Powerlevel

Supported command class version is 1. The Powerlevel command class makes it possible to carry out RF transmit power controlling commands useful when installing or testing a network. It is possible to make the device temporarily change the level at which Z-Wave commands are transmitted, send a number of test frames and read out how many reached the destination. All test frames are send without routing.

Version

Supported command class version is 1. The Version command class makes it possible to read version information from the device. This includes Z-Wave library type, protocol version, command class versions and the application software version.

When requesting the version information using Version Get, the device will respond with the following:

Table 8. Version Report

Z-Wave Library Type	0x06
Z-Wave Protocol Version	0x02
Z-Wave Protocol Sub Version	0x1F
Application Version	0x01
Application Sub Version	0xD0

Meter

Supported command class version is 1. When receiving a Meter Get, the device will respond with a Meter Report containing the measured accumulated consumption of power in kWh with 5 decimals precision:

Table 9. Meter Report

Meter Type	0x01
Precision Scale Size	0xA4
Meter Value 1	Accumulated Power Usage (BYTE 1 (MSB))
Meter Value 2	Accumulated Power Usage (BYTE 2)
Meter Value 3	Accumulated Power Usage (BYTE 3)
Meter Value 4	Accumulated Power Usage (BYTE 4 (LSB))

Controlled Command Classes

The following subchapter list the controlled command class with information specific to the device.

Command Class Basic

Controlled command class version is 1. When the device is turned on or off by the touch plate, it will first toggle its own status and then set its associated devices to the same value with a Basic Set. For instance if its off (status = 0) initially and its turned on (status = 0xFF) it will send a basic set with the value 0xFF to all the associated devices effectively turning them all on.

Inclusion and Exclusion

Inclusion or exclusion is started by putting a controller into add node or remove node state, when it signals that the process can continue (see the controller manual), the device is put into learn mode by touching the touchplate. The controller starting the process will then include or exclude the device. When excluded the device is put into factory default state resetting all protocol and application data to defaults.

As part of the process, the device sends a node information frame at normal power. Low power inclusion or low power exclusion is not possible.

Repeater

The device is listening, which means it can function as a repeater in a Z-Wave network. Any packet send from one device to another device, regardless of manufacturer can be relayed through it and up to 3 other devices, effectively increasing range by 4 times.

Network Topology Updates

The device can use a Static Update Controller to keep it's routes up to date. The device will request the SUC for updates two times a day if one is present. It is possible to manually make the device do a network update, by two short and a long touch.

Rediscovery

Neighbour discovery is a process whereby the device finds it's place in the Z-Wave network ie. what other devices it can send directly to. This information is then relayed to the Static Update Controller, if such a one is present, or another controller if not and used to construct the routing table that every device in the network uses. Neighbour discovery is done when a device is included in the network, which is why it is important to include listening devices at the physical positions they are going to be operating at. The RAone SmartPower additionally does rediscovery of its neighbours once every week and at a random interval after being powered on to guard against it being moved after inclusion.

Factory Default

It is possible to reset the device to factory default settings by three short touches and then keeping the fingers on the plate for 10 seconds. However this action should only be used as a last resort since it will leave the rest of the Z-Wave network in an undefined state. A better option is to use a controller, which is part of the network, to exclude the device.