Connected Universal Push-button Dimmer

Zigbee Interface and Behaviour

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Legal Information

Connected Universal Push-button Dimmer

Device Integration

This document covers the information for system integration for the corresponding device which includes:

- Commissioning Journey with and without Install Code
- Factory Reset
- LED behavior
- Guidelines for System Integration
- Zigbee Specification
    - Endpoints
    - Clusters
    - Attributes
    - Commands

The Connected Device covered in this document is certified with Zigbee 3.0.

Commissioning Journey

There are 2 ways of commissioning:

1. Commissioning by using the Install Code (QR code)
2. Commissioning without using the Install Code

Commissioning with Install Code

Commissioning using the Install Code is the most secure way in Zigbee networks. During the commissioning process, it uses the unique install code that is lasered on the product in text format and as a QR code.
Therefore, there is no possibility to use a network sniffer to get the network encryption key when install code commissioning is used.

The Install Code can be found on the product itself in 2 formats:

- Text format containing the Zigbee MAC address of the product in the EUI-64 line and the random generated Install Code afterwards.
- QR code format containing the Zigbee MAC address and the Install Code in a special format for smart phone applications to read easily.
  The QR code format is: <ZBE MAC ADDRESS>|<INSTALL CODE>

To start the commissioning with install code, the user must either scan the QR code from the App or enter the Zigbee MAC address and the Install Code manually in the App. Afterwards, the user should short press 3x on the pushbutton (upper right pushbutton in case there are multiple buttons).
When the commissioning starts, the product will scan all the Zigbee channels and find a network to join that has the correct MAC address and Install Code.
The commissioning window is 30 seconds and during this time, the device LED blinks in orange color.

Commissioning without Install Code

It is highly recommended that the system supports Install Code Commissioning as it is the most secure way. However, the devices also support commissioning without the install code.

In this case, the user has to open the network to add a new device (most probably from the App) and short press 3x on the pushbutton (upper right pushbutton in case there are multiple buttons).
The device will scan the channels to find an open network to join using the standard ZigbeeAlliance09 (for centralized network) and the standard Zigbee Distributed Network (for distributed network) key.
The commissioning window is 30 seconds and during this time, the device LED blinks in orange color.

Factory Reset

The factory reset process for the devices follows a standard approach.

To perform the factory reset manually on the product, the user has to short press the pushbutton 3x and then on the 4th press, hold the button for 10 seconds.
If the pattern is done correctly, after 10 seconds the LED will start blinking in red color.
At this point, the user can release the pushbutton. The device will perform the factory reset and restart.
After the restart, the LED will be in Orange color indicating that it is not a part of any Zigbee network.

Refer to the supplied installation manual for details.

LED Behavior

The device have a bi-color LED with green and red color. When both LED's are on, the color is orange.

Different LED color meanings in the default settings

LED	Meaning

Solid Orange	Device is not part of any Zigbee network.
Blinking Orange	Device is trying to join a Zigbee network, timeout 30 seconds. (Starts after 3x short press when device is not commissioned) .
Solid Red	After device is commissioned to a Zigbee network, Solid Red means output is ON.
LED OFF	After device is commissioned to a Zigbee network, LED Off means the output is OFF.
Solid Green: (In default settings)	It means the Zigbee network is open to add new devices.
Short Green Blinking	Simplified Room Control mode is active. Actuator is trying to pair with a Wireless Switch.
Blinking Red @1Hz	Only possible after factory reset pattern is done (3x short press and hold for 10 seconds).

LED behavior when output is ON and OFF for different user settings

LED behavior	Explantion
Consistent with Load	LED is red when load is ON, LED is Off when load is OFF
Reverse with Load	LED is Off when load is ON, LED is green when load is OFF.
Always ON	LED is red when load is ON, LED is green when load is OFF.
Always OFF	LED is Off regardless of the state of the output (ON or OFF).

The LED setting can be found on endpoint 21 and/or Endpoint 22, Schneider manufacture specific Switch Configuration Cluster (0xFF17), Attribute SwitchIndication (0x0000).

Guidelines for System Integration

The integrating system should fulfill requirements listed below to achieve a smooth user experience when using this product.

1. Commissioning
    a. The system shall support commissioning by using the Install Code, either by scanning the QR code (recommended) and/or entering the values manually.
    b. The system shall support commissioning without using the Install Code for the cases where the device is installed in such a way that scanning the QR code is not convenient.
2. Dimmer Integration
    a. The system shall support configuration of the minimum and maximum brightness level settings via the App. The standard Zigbee Ballast Configuration Cluster is used for this settings.
    This is important for achieving a better dimming performance and improve customer experience.
    b. The system shall support the configuration of the ControlMode (0xE000) attribute in Ballast Configuration Cluster via the App. The attribute can se changed between Auto and RL-LED mode. This setting is important for achieving a better dimming performance with LED lights and preventing flickering.
    c. The system shall support the configuration of the OnLevel (0x0011) attribute in Level Control Cluster to enable the Memory Mode functionality (dimmer turns on at the same level it was turned off).

Common rules

Meaning of colors

Color	Meaning
	Schneider manufacture specific.
	Value depends on device type, see device description.
	Used as note and explanation.

Table sizes for router devices

Table	Count of entries
Routing table	16
Child table	10
Broadcast table	15
Neighbor table	26
Binding table	100
Scene table	80
Reporting table	20

Common rules for some clusters for Router devices

Cluster name	Cluster id	Cluster type	Note
BASIC	0x0000	SERVER	Shared across all endpoints except endpoint 242
DIAGNOSTIC	0x0B05	SERVER	Shared across all endpoints except endpoint 242
OTAU	0x0019	CLIENT	Present only on first (non zero) endpoint in device
OUTBOUND	0x0021	CLIENT	Present only on endpoint 242

Device depended values of some attributes

Attribute name	Cluster	Endpoint	Value	Note
Model identifier (0x0005)	Basic (0x0000)	all	NHPB/DIMMER/1	Former dimmer cores. Dimmer can work **only in 2 wired** mode.
			NHPB/UNIDIM/1	For new dimmer cores. UNI dimmer worked **either in 2 wired or 3 wired mode**.
Product model (0xE009)	Basic (0x0000)	all	NHPB/DIMMER/1	Former dimmer cores. Dimmer can work **only in 2 wired** mode.
			NHPB/UNIDIM/1	For new dimmer cores. UNI dimmer worked **either in 2 wired or 3 wired mode**.
Product identifier (0xE007)	Basic (0x0000)	all	17421	
Image Type ID (0x0008)	OTAU (0x0019)	first non zero	0x0011	
Switch Actions (0x0001)	Schneider switch configuration (0xFF17)	21	1	

Endpoint 0

Endpoint	Profile	Device ID	Description	Application
0	0x0000: Zigbee device profile			ZigBee Device Object (ZDO) – standard management features.

Endpoint 3

Endpoint	Profile	Device ID	Description	Application
3	0x0104: Common profile (HA)	0x0101	Dimmable Light	This endpoint provides control of the output via on/off and level control clusters. It supports groups and scenes, as well as reporting for on/off state and level feedback. The identify cluster allows for push-button commissioning as a target.

This endpoint corresponds to the first output channel.

Server clusters

Basic cluster server, cluster id 0x0000

Basic cluster is shared across all endpoints (except of endpoint 242).

Common attributes

ID	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0x0000	ZCL version	uint8	0	255	1/0	3	1		0xFFFF	
Setting ZCLVersion to 3 means this product complies with ZCL V7.										
0x0007	Power source	enum8	0	255	1/0	1	1		0xFFFF	
0 = Unknown, 1 = Mains (singe phase), 2 = Mains (3 phase), 3 = Battery, 4 = DC source, 5 = Emergency mains constantly powered, 6 = Emergency mains and transfer switch.										
0x0001	Application version	uint8	0	255	1/0	See note	1		0xFFFF	
Major version of attribute 0xE001.										
0x0002	Stack version	uint8	0	255	1/0	6	1		0xFFFF	
Default value regarding communication stack.										
0x0003	HW version	uint8	0	255	1/0	See note	1		0xFFFF	
Major version of 0xE002 attribute.										
0x0004	Manufacture name	string			1/0	Schneider Electric	1		0xFFFF	
The ManufacturerName attribute is 'Schneider Electric'.										
0x0005	Model identifier	string			1/0	See note	1		0xFFFF	
Value is formated as 'A/B/C' where: A (gang): 1GANG, 2GANG, PUCK, NHROTARY, NHMOTION, NHPB, FLS B (type of device): SWITCH, DIMMER, 1-10V, ESWITCH, SHUTTER, DALI, CU, AIRLINK, SYSTEM-M C (count of channels): 1, 2, 4 Look on device description to find default value for your device.										
0x4000	SW build id	string			1/0	See note	1		0xFFFF	
Identical value as in attribute 0xE001.										
0x0006	DateCode	string			1/0	See note	1		0xFFFF	
The DateCode attribute is a ZigBee character string with a maximum length of 16 bytes. The first 8 characters specify the date of manufacturer of the device in international date notation according to ISO 8601, i.e., YYYYMMDD, e.g., 20060814. Could be empty for some series, otherwise following format will be used: YYYYMMDD.										
0x000A	ProductCode	octetstring			1/0		1		0xFFFF	
The ProductCode attribute allows an application to specify a code for the product. Empty string for this device.										
0x000B	ProductUrl	string			1/0	http://www.schneider-electric.com	1		0xFFFF	
Shall have identical value as 0xE00B.										
0xE001	Application FWVersion	string			1/0	See note	1		0xFFFF	
The Application FW Version attribute specifies the firmware version of the application. The format of this attribute is XXX.YYY.ZZZ V. XXX = major version YYY = minor version ZZZ = patch version V = Build Type (One of the following: D = Development version, T0, T1 = Verification version, V = Validation version, R = Official Release version).										

0xE002	Application HWVersion	string			1/0	See note	1		0xFFFF	
The Application HWVersion attribute specifies the hardware version of the application design in format AAA.BBB.CCC. Meaning: AAA - major version BBB - minor version CCC - patch version If version is 000.000.000, HW version is not available.										
0xE004	SerialNumber	string			1/0	See note	1		0xFFFF	
Device serial number. Hexadecimal string of 15 chars length.										
0xE007	ProductIdentifier	enum16			1/0	See note	1		0xFFFF	
The ProductIdentifier attribute specifies the unique internal numerical identifier of the product. See device description for this value.										
0xE008	ProductRange	string			1/0	Wiser Light	1		0xFFFF	
The ProductRange attribute specifies the name of the range to which the product belongs.										
0xE009	ProductModel	string			1/0	See note	1		0xFFFF	
The ProductModel attribute specifies the name of the product model. Same value as model identifier attribute 0x0005.										
0xE00A	ProductFamily	string			1/0	Wiser Home	1		0xFFFF	
The ProductFamily attribute specifies the name of the family to which the product belongs.										
0xE00B	VendorURL	string			1/0	http://www.schneider-electric.com	1		0xFFFF	
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	2	1		0xFFFF	

Attributes for lighting devices

ID	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0x0008	GenericDeviceClass	enum8	0	255	1/0	0	1		0xFFFF	
The GenericDeviceClass attribute define the field of application of the GenericDeviceType attribute. Value 0 used for lighting.										
0x0009	GenericDeviceType	enum8	0	255	1/0	0xE1	1		0xFFFF	
The GenericDeviceType for light control devices is 0xE1 (Wall switch).										

Commands received

Command id	Name	Length [bytes]	Bytes
0x00	Reset to factory default	0	
On receipt of this command, the device resets all the attributes of all its clusters to their factory defaults. Local bindings are not created. If device supports some default scenes, scenes are recreated.			

Identify cluster server, cluster id 0x0003

Usage

Identify action depends on used endpoint. E.g. endpoint 6, 21, 22 blinks with front LED, endpoints 1, 2, 3, 4 flash with lights, endpoint 5 is going little bit down/up with shutter. Time step is defined as 1.5 seconds.

Attributes

ID	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0x0000	IdentifyTime	uint16	0	0xFFFF	1/1	0	0		0xFFFF	
If this attribute is set to a value other than 0x0000 then the device SHALL enter its identification procedure, in order to indicate to an observer which of several devices it is. The IdentifyTime attribute SHALL be decremented every second. To start identification you can either write some non zero value in this attribute or send command identify. Value 0 stops identification.										
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	1	1		0xFFFF	

Commands received

ID	Name	Length [bytes]	Bytes	Meaning	Notes
0x00	Identify	2	0	identify time LSB	LSB of timeout, how long device shall stay in identification in seconds.
			1	identify time MSB	MSB of timeout, how long device shall stay in identification in seconds.
The identify command starts or stops the receiving device identifying itself. Value 0 in field 'identify time' stops identification, otherwise device stays in identification for time defined in field 'identify time'.					
0x01	Identify query	0			
This command has no payload and allows the sending device to request the target or targets to respond if they are currently identifying themselves.					

Groups cluster server, cluster id 0x0004

Attributes

ID	Name	Type	Min	Max	Read/ Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0x0000	Name support	map8	0	0x80	1/0	0	1		0xFFFF	
0 = names are not supported, 0x80 = names supported.										
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	2	1		0xFFFF	

Commands received

ID	Name	Length [bytes]	Bytes	Meaning	Notes
0	Add group	2+x	0	LSB group ID	LSB of group Id 0x0000-0xFFF7.
			1	MSB group ID	MSB of group Id 0x0000-0xFFF7.
			x	group name	Not supported, use value 0 as string terminator.
On receipt of this command, the device SHALL (if possible) add the Group ID and Group Name to its Group Table. The Group Name field is ignored.					
1	View group	2	0	LSB group ID	LSB of group Id 0x0000-0xFFF7.
			1	MSB group ID	MSB of group Id 0x0000-0xFFF7.
The view group command allows the sending device to request that the receiving entity or entities respond with a view group response command containing the application name string for a particular group.					
2	Get group membership	1+x	0	group count	Count of groups in field 'group list'.
			x	group list	List of 16-bits integers.
Responds with group membership information using the get group membership response.					
3	Remove group	2	0	LSB group ID	LSB of group Id 0x0000-0xFFF7.
			1	MSB group ID	MSB of group Id 0x0000-0xFFF7.
Removes this endpoint from the specified group. Also removes all scenes that refer to this group. Device SHALL then generate an appropriate Remove Group Response command indicating success or failure.					
4	Remove all groups	0			
Removes this endpoint from all groups. Also removes all scenes that refer to any of the existing groups.					
5	Add group if identifying	2+x	0	LSB group ID	LSB of group Id 0x0000-0xFFF7.
			1	MSB group ID	MSB of group Id 0x0000-0xFFF7.
			x	group name	Not supported, use value 0 as string terminator.
Adds this endpoint to the group, if the endpoint is identifying. The Group Name field is ignored.					

Scenes cluster server, cluster id 0x0005

Attributes

Id	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0x0000	SceneCount	uint8	0	10	1/0	See note	1		0xFFFF	
Holds the total number of scenes (across all groups) currently stored on the device. For C4B 2 Gang devices with shutter, 1 channel relay switch, 1 channel electronic switch, DALI dimmer, 1-10V dimmer and 1 channel dimmer inserts default value is 2. For all other devices default value is 0.										
0x0001	CurrentScene	uint8	0	255	1/0	0	0	5	3600	1
If the SceneValid attribute is true, this attribute, together with the CurrentGroup attribute, indicates the currently active scene.										
0x0002	CurrentGroup	uint16	0	0xFFF7	1/0	0	0	5	3600	1
If the SceneValid attribute is true, this attribute, together with the CurrentScene attribute, indicates the currently active scene.										
0x0003	SceneValid	bool	0	1	1/0	0	0	5	3600	1
If true, the scene identified by CurrentGroup and CurrentScene is currently active, i.e. all device attribute values match the values in the scene field set.										
0x0004	NameSupport	map8	0	0x80	1/0	0	1		0xFFFF	
0 = names are not supported, 0x80 = names supported. Device does not support names.										
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	2	1		0xFFFF	

Commands received

Id	Name	Length [bytes]	Bytes	Meaning	Notes
0	Add scene	5+x	0	LSB group ID	LSB of group Id 0x0000-0xFFF7.
			1	MSB group ID	MSB of group Id 0x0000-0xFFF7.
			2	scene id	Scene ID 0x00-0xFF.
			3	LSB transition time	LSB of the time in seconds, it will take for the device to change from its current state to the requested scene. Not supported.
			4	MSB transition time	MSB of the time in seconds, it will take for the device to change from its current state to the requested scene. Not supported.
			5	string len	Length of scene name. If name is not present, value here shall be 0xFF. Our device does not support scene name.
			x	scene definition	Scene name followed by Extension field set. For more explanation please tak a look in ZCL specification scene extension field set for cluster you define the scene.
Adds a scene with or without a scene field set. Detalied description in ZCL specification. The format of each extension field set is a 16 bit field carrying the cluster ID, followed by an 8 bit length field and the set of scene extension fields specified in the relevant cluster. The length field holds the length in octets of that extension field set. Extension field sets = {{clusterId 1, length 1, {extension field set 1}}, {clusterId 2, length 2, {extension field set 2}} ...}.					
1	View scene	3	0	LSB group ID	LSB of group Id 0x0000-0xFFF7.
			1	MSB group ID	MSB of group Id 0x0000-0xFFF7.
			2	scene id	Scene ID 0x00-0xFF.
On receipt of this command, except for the restrictions in 3.7.2.4.1 ZCL specification, the device SHALL generate an appropriate View Scene Response command.					
2	Remove scene	3	0	LSB group ID	LSB of group Id 0x0000-0xFFF7.
			1	MSB group ID	MSB of group Id 0x0000-0xFFF7.
			2	scene id	Scene ID 0x00-0xFF.
Removes a scene from the scene table. If the command was addressed to a single device (not a group) then it SHALL generate an appropriate Remove Scene Response command indicating success or failure.					
3	Remove all scenes	2	0	LSB group ID	LSB of group Id 0x0000-0xFFF7.
			1	MSB group ID	MSB of group Id 0x0000-0xFFF7.

Removes all scenes that belong to a particular group. If the command was addressed to a single device (not to a group) it SHALL then generate an appropriate Remove All Scenes Response command indicating success or failure.					
4	Store scene	3	0	LSB group ID	LSB of group Id 0x0000-0xFFF7.
			1	MSB group ID	MSB of group Id 0x0000-0xFFF7.
			2	scene id	Scene ID 0x00-0xFF.
Stores the device's current state as a scene or updates a previously stored scene accordingly. If the command was addressed to a single device (not to a group) then it SHALL generate an appropriate Store Scene Response command indicating success or failure.					
5	Recall scene	5	0	LSB group ID	LSB of group Id 0x0000-0xFFF7.
			1	MSB group ID	MSB of group Id 0x0000-0xFFF7.
			2	scene id	Scene ID 0x00-0xFF.
			3	LSB transmittion time	May or not be present. LSB transmittion time in 1/10 seconds.
			4	MSB transition time	May or not be present. MSB transmittion time in 1/10 seconds.
Recall the scene stored in device under group and scene ID.					
6	Get scene membership	2	0	LSB group ID	LSB of group Id 0x0000-0xFFF7.
			1	MSB group ID	MSB of group Id 0x0000-0xFFF7.
Returns the set of scenes (within the scope of the specified group) currently stored on the device. On receipt of this command, the device SHALL if addressed to a single device generate an appropriate Get Scene Membership Response command.					

OnOff cluster server, cluster id 0x0006

Common attributes

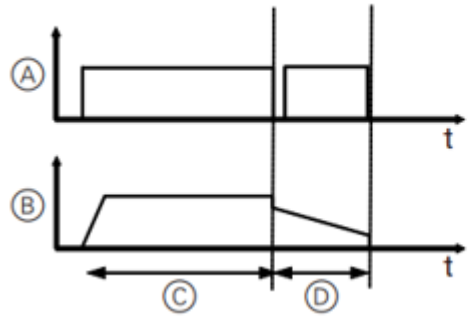
Id	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0x0000	OnOff	bool	0	1	1/0	0	0	5	600	1
Indicates the current state of the output relay, either on = 'true' or off = 'false'.										
0x4002	OffWaitTime	uint16	0	0xFFFF	1/1	0	0		0xFFFF	
The OffWaitTime attribute specifies the length of time (in 1/10ths second) that the 'off' state SHALL be guarded to prevent an on command turning the device back to its 'on' state (e.g., when leaving a room, the lights are turned off but an occupancy sensor detects the leaving person and attempts to turn the lights back on). If this attribute is set to 0x0000, the device SHALL remain in its current state. This attribute is used only with conjunction with 'On with timed off' command.										
0xE001	OnTimeReload	uint32	0	0xFFFFFFFF	1/1	0	1		0xFFFF	
Defines number of seconds before the light is switched off automaticaly. Time is in seconds. Value 0 disable the functionality. When brightness is changed, or ON command is received, timer is always restarted. Check OnTimeReloadOptions for possible impulse mode (if attribute is implemented).										
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	2	1		0xFFFF	

Attributes (lighting devices)

Id	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0x4001	OnTime	uint16	0	0xFFFF	1/1	0	0		0xFFFF	
Time, in tenths of a second, the device remains on, before it automatically turns off. This value is set by the 'On with timed off' command. This is a 'live' down counter. Value 0x0000 or 0xFFFF means, that device is not automaticaly switched off. This attribute is not set if device state is ON and device has OnTimeReload attribute set to non zero value (will be switched OFF automaticaly).										
0xE000	PreWarningTime	uint16	0	6553	1/1	0	1		0xFFFF	
Has meaning only if attribute OnTimeReload is not 0. Defines number of seconds before the light is switched off automaticaly when the user is somehow inform the light will be switched off automaticaly. Value 0 or 0xFFFF disables prewarning. For switch is is just short switch OFF and ON, for dimmer device goes to 60 percent and starts slowly dimm down. During this time user can reload the time and postpone automatic switch off for time defined in OnTimeReload. If you enter value greater that 6553, after reboot you will read again value 6553. If you enter 0xFFFF, functionality will be disabled. See Prewarning behavior picture below.										
0xE002	OnTimeReloadOptions	map8	0	1	1/1	1	1		0xFFFF	
bit0: 1 = OnTimeReload timer can be canceled by receiving OFF command -> light is going OFF immediately, 0 = can not be canceled, is always restarted. bit1 added later, check release notes for your FW version. bit1 : 1 = Impulse mode active. Whenever output should be switched ON, will be switched ON only for 200msec. OnTimeReload attributes is ignored, also bit0 inside this attribute has no sense. 0=impulse mode is disabled. bit2-bit7: reserved.										

Prewarning behavior

A:Switch, B:Dimmer, C:Timer value, D:pre-warning time (30sec)

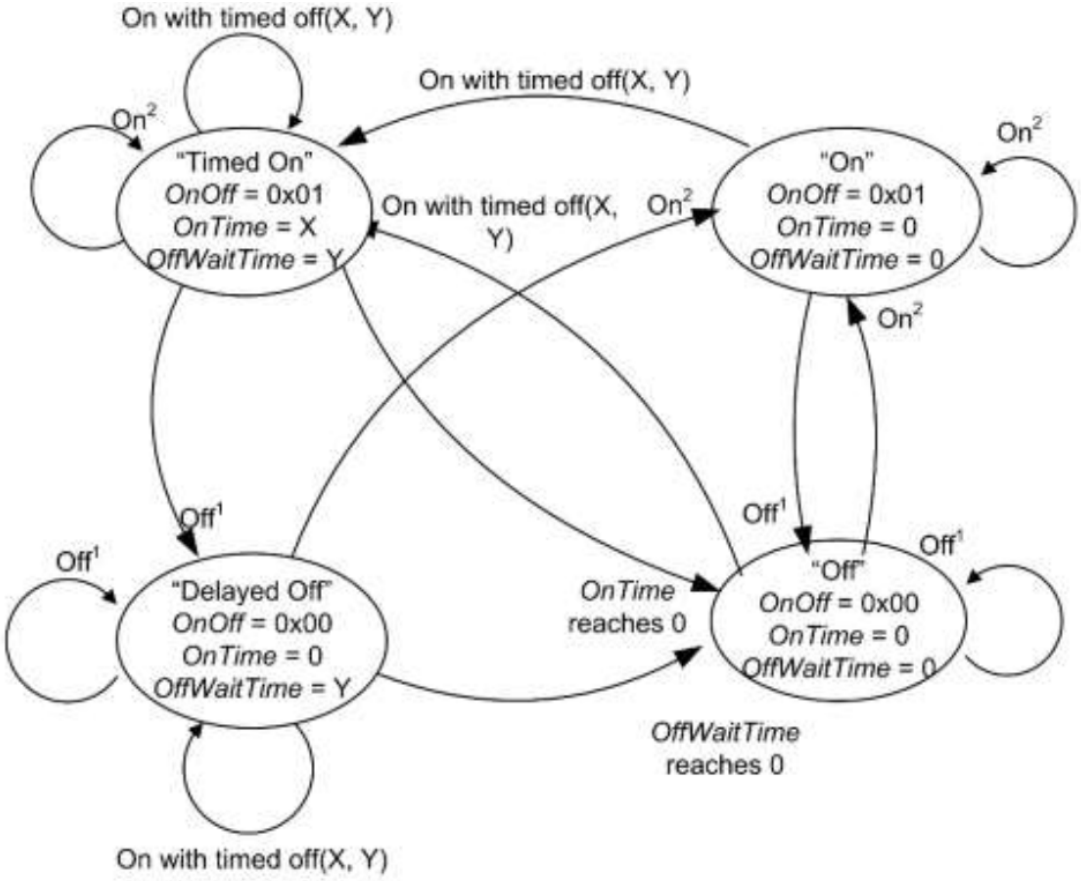


Commands received

Id	Name	Length [bytes]	Bytes	Meaning	Notes
0	Off	0			
Turns the output off. The attached load will be disconnected from the mains					
1	On	0			
Turns the output on. The attached load will be connected to the mains.					

2	Toggle	0			
Turns the output off, it was turned on or turns the output on, if it was turned off.					
0x42	On with timed off	5	0	on/off control	bit0 - 1 = accept only when ON
			1	LSB on time	LSB stay ON for this time in 1/10 sec. Range 0-0xfffe
			2	MSB on time	MSB stay ON for this time in 1/10 sec. Range 0-0xfffe
			3	LSB off wait time	LSB after switched OFF, ignore ON command for this time in 1/10 sec. Range 0-0xfffe.
			4	MSB off wait time	MSB after switched OFF, ignore ON command for this time in 1/10 sec. Range 0-0xfffe.
Turns the output on and then automatically turns it off after the specified time has elapsed. For implementation check the below picture.					

On with timed off command



Note 1: Any command which causes the *OnOff* attribute to be set to 0x00, e.g. Off, Toggle or Off with
Note 2: Any command which causes the *OnOff* attribute to be set to 0x01, e.g. On, Toogle or On with
global scene.

Level control cluster server, cluster id 0x0008

Attributes

Id	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0x0000	CurrentLevel	uint8	1	0xFE	1/0	0xFE*	0	5	600	1
Indicates the current level of the dimmer output, where 0 = off, 254 = 100 percent. A value of 0x00 SHALL not be used. A value of 0x01 SHALL indicate the minimum level that can be attained on a device. A value of 0xfe SHALL indicate the maximum level that can be attained on a device. A value of 0xff SHALL represent an undefined value. For understanding relationchip between *OnOff* attribute and *CurrentLevel* please read explanation in the table below.										
0x000F	Options	map8	0	3	1/1	0	1		0xFFFF	
The Options attribute is meant to be changed only during commissioning. The Options attribute is a bitmap that determines the default behavior of some cluster commands. Each command that is dependent on the Options attribute SHALL first construct a temporary Options bitmap that is in effect during the command processing. The temporary Options bitmap is has the same format and meaning as the Options attribute, but includes any bits that may be overridden by command fields. bi0: 0 = Do not execute command if OnOff is 0x00, 1 = Execute command if OnOff is 0x00 Command execution SHALL NOT continue beyond the Options processing if all of these criteria are true: • The command is one of the'without On/Off' commands: Move, Move to Level, Stop, or Step. • The On/Off cluster exists on the same endpoint as this cluster. • The OnOff attribute of the On/Off cluster, on this endpoint, is 0x00 (FALSE). • The value of the ExecuteIfOff bit is 0. For more details please check the Move to Level command explanation below.										
0x4000	StartUpCurrentLevel	uint8	0	0xFF	1/1	0x00	1		0xFFFF	
Specifies the initial level to be applied after reboot. When this attribute is set to the invalid value (0xFF), the light will return to the previously active level (before power was cut), when it is turned on again. Otherwise the current level will be set to the value specified here subject to range limitations imposed by the ballast configuration cluster on this endpoint. 0x00 = Output is off. 0x01 - 0xFE = Set the CurrentLevel attribute to this value. 0xFF = Set the CurrentLevel attribute to its previous value.										
0x0011	OnLevel	uint8	1	0xFF	1/1	0xFF*	1		0xFFFF	
Specifies the level that shall be applied, when an on/toggle command causes the light to turn on. When this attribute is set to the invalid value (0xFF), the light will return to the previously active level (before it was turned off), when it is turned on again.										
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	2	1		0xFFFF	

*** Note to CurrentLevel and OnLevel default values**

New values are valid from FW versions 2.6.x. Up to FW version 2.5.x default value of CurrentLevel attribute was 0x01 and OnLevel attribute 0xFE.

Effect of On/Off Commands on the CurrentLevel Attribute

The attribute *OnLevel* determines whether commands of the On/Off cluster have a permanent effect on the *CurrentLevel* attribute or not. If this attribute is **defined (i.e., implemented and not 0xff)** they do have a permanent effect, otherwise they do not. There is always a temporary effect, due to fading up / down. The effect on the Level Control cluster on receipt of the various commands of the On/Off cluster are as detailed in following table. In this table, and throughout this cluster specification, 'level' means the value of the *CurrentLevel* attribute.

Command	Action on receipt
On	• Temporarily store *CurrentLevel*. • Set *CurrentLevel* to the minimum level allowed for the device. • Change *CurrentLevel* to *OnLevel*, or to the stored level if *OnLevel* is not defined, over the time period OnOffTransitionTime.
Off	• Temporarily store *CurrentLevel*. • Change *CurrentLevel* to the minimum level allowed for the device over the time period OnOffTransitionTime. • If *OnLevel* is not defined, set the *CurrentLevel* to the stored level.
Toggle	If the *OnOff* attribute has the value Off, proceed as for the On command. Otherwise proceed as for the Off command.

Intention of the actions described in the table above is that *CurrentLevel*, which was in effect before any of the On, Off or Toggle commands were issued, shall be restored, after the transition is completed. If another of these commands is received, before the transition is completed, the originally stored *CurrentLevel* shall be preserved and restored.

Effect of Level Control Commands on the OnOff Attribute

There are two sets of commands provided in the Level Control cluster. These are identical, except that the first set (Move to Level, Move and Step) **SHALL NOT** affect the *OnOff* attribute, whereas the second set (with On/Off variants) **SHALL**.

- The first set is used to maintain independence between the *CurrentLevel* and *OnOff* attributes, so changing *CurrentLevel* has no effect on the *OnOff* attribute. As examples, this represents the behavior of a volume control with a mute button, or a 'turn to set level and press to turn on/off' light dimmer.
- The second set is used to link the *CurrentLevel* and *OnOff* attributes. When the level is reduced to its minimum the *OnOff* attribute is automatically turned to Off, and when the level is increased above its minimum the *OnOff* attribute is automatically turned to On. As an example, this represents the behavior of a light dimmer with no independent on/off switch.

Commands received

Id	Name	Length [bytes]	Bytes	Meaning	Notes
0x00	Move to level	3(+2)	0	level	Requested level 0-0xFE.
			1	LSB of transition time	LSB of transition time in tenths of seconds.
			2	MSB of transition time	MSB of transition time in tenths of seconds.
Moves the current level to a certain target level within a specified transition time in tenths of seconds. If the Transition time field takes the value 0xffff then device moves to its new level as fast as it is able. If output is OFF, output is not switched ON and if is ON is not switched OFF when reaches minimum level. Additional 2 bytes are OptionsMask and OptionsOverride. Both fields SHALL both be present or both omitted in the command. A temporary Options bitmap SHALL be created from the Options attribute, using the OptionsMask and OptionsOverride fields, if present. Each bit of the temporary Options bitmap SHALL be determined as follows: Each bit in the Options attribute SHALL determine the corresponding bit in the temporary Options bitmap, unless the OptionsMask field is present and has the corresponding bit set to 1, in which case the corresponding bit in the OptionsOverride field SHALL determine the corresponding bit in the temporary Options bitmap. For more details please check the Move to Level command explanation below.					
0x01	Move	2(+2)	0	move mode	Direction. 0 = up, 1 = down.
			1	rate	The Rate field specifies the rate of movement in units per second. **Not taken in account.**
Moves the level either up or down at a specified rate. **Field rate is not taken in account, rate is predefined in device itself**. If output is OFF, command has no effect. If output is ON and should dimm down, after reaching minimum level is not switched OFF. Additional 2 bytes are OptionsMask and OptionsOverride. Both fields SHALL both be present or both omitted in the command. A temporary Options bitmap SHALL be created from the Options attribute, using the OptionsMask and OptionsOverride fields, if present. Each bit of the temporary Options bitmap SHALL be determined as follows: Each bit in the Options attribute SHALL determine the corresponding bit in the temporary Options bitmap, unless the OptionsMask field is present and has the corresponding bit set to 1, in which case the corresponding bit in the OptionsOverride field SHALL determine the corresponding bit in the temporary Options bitmap.					
0x02	Step	4(+2)	0	step mode	Direction. 0 = up, 1 = down.
			1	step size	Step size 1-254.
			2	LSB of transition time	LSB of transition time in tenths of seconds.
			3	MSB of transition time	MSB of transition time in tenths of seconds.
Increments or decrements the level by a certain amount within a specified transition time. Increase/decrease CurrentLevel by 'Step size' field units (1-254), or until it reaches the maximum / minimum level allowed for the device. If the Transition time field takes the value 0xffff then device moves to its new level as fast as it is able. If output is OFF, command has no effect. If output is ON and should jump down, after reaching minimum level is not switched OFF. Additional 2 bytes are OptionsMask and OptionsOverride. Both fields SHALL both be present or both omitted in the command. A temporary Options bitmap SHALL be created from the Options attribute, using the OptionsMask and OptionsOverride fields, if present. Each bit of the temporary Options bitmap SHALL be determined as follows: Each bit in the Options attribute SHALL determine the corresponding bit in the temporary Options bitmap, unless the OptionsMask field is present and has the corresponding bit set to 1, in which case the corresponding bit in the OptionsOverride field SHALL determine the corresponding bit in the temporary Options bitmap.					
0x03	Stop	0(+2)			
Stops any level change in progress due to a move, move to level, step or recall scene command. Additional 2 bytes are OptionsMask and OptionsOverride. Both fields SHALL both be present or both omitted in the command. A temporary Options bitmap SHALL be created from the Options attribute, using the OptionsMask and OptionsOverride fields, if present. Each bit of the temporary Options bitmap SHALL be determined as follows: Each bit in the Options attribute SHALL determine the corresponding bit in the temporary Options bitmap, unless the OptionsMask field is present and has the corresponding bit set to 1, in which case the corresponding bit in the OptionsOverride field SHALL determine the corresponding bit in the temporary Options bitmap.					
0x04	Move to level (with on /off)	3(+2)	0	level	Requested level 0-0xFE.
			1	LSB of transition time	LSB of transition time in tenths of seconds.
			2	MSB of transition time	MSB of transition time in tenths of seconds.
Moves the current level to a certain target level within a specified transition time in tenths of seconds. If the Transition time field takes the value 0xffff then device moves to its new level as fast as it is able. If output is OFF, output is switched ON and if is ON is switched OFF when reaches minimum level. Additional 2 bytes are OptionsMask and OptionsOverride. Both fields SHALL both be present or both omitted in the command. A temporary Options bitmap SHALL be created from the Options attribute, using the OptionsMask and OptionsOverride fields, if present. Each bit of the temporary Options bitmap SHALL be determined as follows: Each bit in the Options attribute SHALL determine the corresponding bit in the temporary Options bitmap, unless the OptionsMask field is present and has the corresponding bit set to 1, in which case the corresponding bit in the OptionsOverride field SHALL determine the corresponding bit in the temporary Options bitmap. For more details please check the Move to Level command explanation below.					
0x05	Move (with on/off)	2(+2)	0	move mode	Direction. 0 = up, 1 = down.
			1	rate	The Rate field specifies the rate of movement in units per second. Not taken in account.
Moves the level either up or down at a specified rate. Field rate is not taken in account, rate is predefined in device. If output is switched OFF and device should dim up, output is first switched ON to minimal level and then dimmed UP. If output is ON and should dim down, after reaching minimum level is switched OFF. Additional 2 bytes are OptionsMask and OptionsOverride. Both fields SHALL both be present or both omitted in the command. A temporary Options bitmap SHALL be created from the Options attribute, using the OptionsMask and OptionsOverride fields, if present. Each bit of the temporary Options bitmap SHALL be determined as follows: Each bit in the Options attribute SHALL determine the corresponding bit in the temporary Options bitmap, unless the OptionsMask field is present and has the corresponding bit set to 1, in which case the corresponding bit in the OptionsOverride field SHALL determine the corresponding bit in the temporary Options bitmap.					
0x06	Step (with on/off)	4(+2)	0	step mode	Direction. 0 = up, 1 = down.

			1	step size	Step size 1-254.
			2	LSB of transition time	LSB of transition time in tenths of seconds.
			3	MSB of transition time	MSB of transition time in tenths of seconds.
Increments or decrements the level by a certain amount within a specified transition time. Increase/decrease CurrentLevel by 'Step size' field units (1-254), or until it reaches the maximum/minimum level allowed for the device. If the Transition time field takes the value 0xffff then device moves to its new level as fast as it is able. If output is switched OFF and device should increase its level, output is first switched ON to minimal level and then the level is increased. If output is ON and device should decrease its level, after reaching minimum level is switched OFF. Additional 2 bytes are OptionsMask and OptionsOverride. Both fields SHALL both be present or both omitted in the command. A temporary Options bitmap SHALL be created from the Options attribute, using the OptionsMask and OptionsOverride fields, if present. Each bit of the temporary Options bitmap SHALL be determined as follows: Each bit in the Options attribute SHALL determine the corresponding bit in the temporary Options bitmap, unless the OptionsMask field is present and has the corresponding bit set to 1, in which case the corresponding bit in the OptionsOverride field SHALL determine the corresponding bit in the temporary Options bitmap.					
0x07	Stop (with on/off)	0(+2)			
Stops any level change in progress due to a move, move to level, step or recall scene command. Behavior of device is same as by receiving command Stop. Additional 2 bytes are OptionsMask and OptionsOverride. Both fields SHALL both be present or both omitted in the command. A temporary Options bitmap SHALL be created from the Options attribute, using the OptionsMask and OptionsOverride fields, if present. Each bit of the temporary Options bitmap SHALL be determined as follows: Each bit in the Options attribute SHALL determine the corresponding bit in the temporary Options bitmap, unless the OptionsMask field is present and has the corresponding bit set to 1, in which case the corresponding bit in the OptionsOverride field SHALL determine the corresponding bit in the temporary Options bitmap.					

Move to level command explanation

Symbol	Explanation
EiO	ExecuteIfOff field in the *Option* attribute
OnOff	Attribute value of OnOff cluster, 0=Off, 1=On
MIN	MinLevel
MAX	MaxLevel
MID	Midpoint between MinLevel and MaxLevel

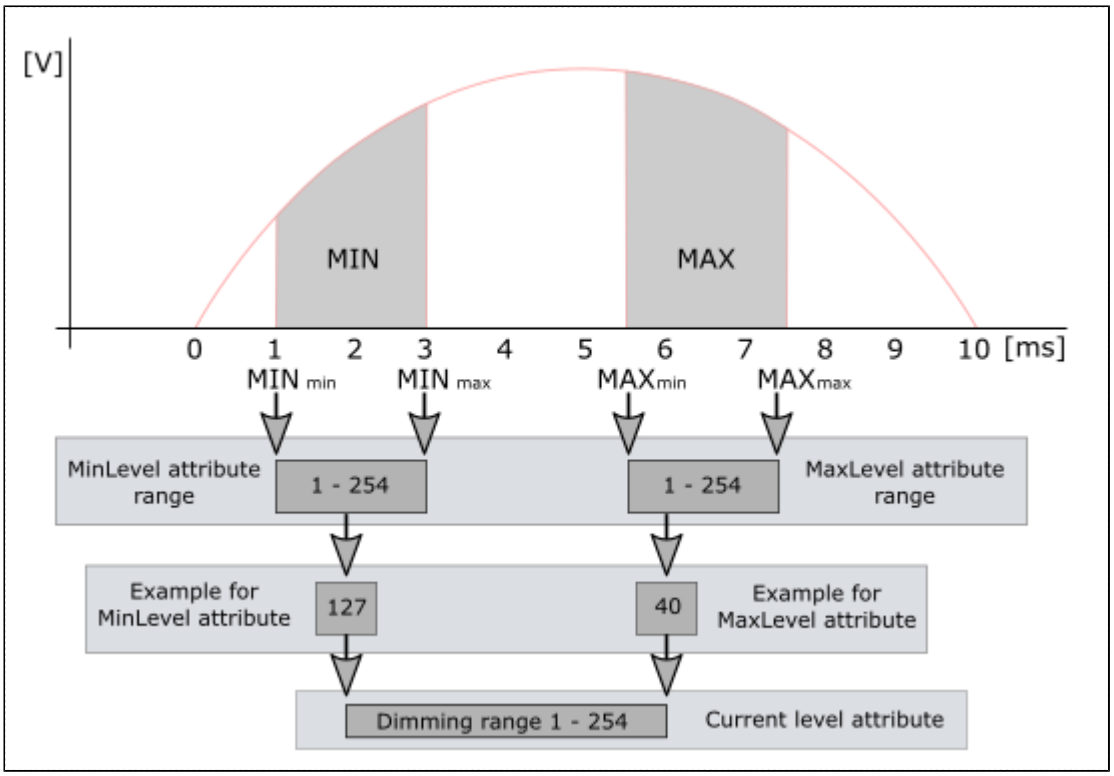
Current Level	*EiO*	*OnOff*	Physical Device	Command ← Before After →	*Current Level*	*OnOff*	Physical Device	Device Output Result
any	0	0	Off	Move to level *MID* over 2 sec	*same*	0	Off	stays off
any	0	0	Off	Move with On/Off to level *MID* over 2 sec	*MID*	1	On (mid-point brightness)	turns on and output level adjusts or stays at half
any	1	0	Off	Move to level *MID* over 2 sec	*MID*	0	Off	stays off
any	1	0	Off	Move with On/Off to level *MID* over 2 sec	*MID*	1	On	turns on and output level adjusts to or stays at half
any	1	0	Off	Move rate = up 64 per second	*MAX*	0	Off	stays off
any	1	0	Off	Move with On/Off rate = up 64 per second	*MAX*	1	On	turn on and output level adjusts to or stays at full
any	1	0	Off	Move (with On/Off) rate = down 64 per second	*MIN*	0	Off	stays off
any	*any*	1	On (any brightness)	Move (with On/Off) to level *MID* over 2 sec	*MID*	1	On (mid-point brightness)	output level adjusts to or stays at half
any	*any*	1	On (any brightness)	Move (with On/Off) rate = up 64 per second	*MAX*	1	On (full brightness)	output level adjusts to or stays at full
any	*any*	1	On (any brightness)	Move rate = down 64 per second	*MIN*	1	On (at minimum brightness)	output level adjusts to minimum
any	*any*	1	On (any brightness)	Move with On/Off rate = down 64 per second	*MIN*	0	Off	output level adjusts to off

Ballast configuration cluster server, cluster id 0x0301 (devices with model identifier x /DIMMER/x)

Attributes

Id	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0x0000	PhysicalMinLevel	uint8	1	0xFE	1/0	1	1		0xFFFF	
The PhysicalMinLevel attribute is 8 bits in length and specifies the minimum light output the ballast can achieve.										
0x0001	PhysicalMaxLevel	uint8	1	0xFE	1/0	0xFE	1		0xFFFF	
The PhysicalMaxLevel attribute is 8 bits in length and specifies the maximum light output the ballast can achieve according to the dimming light curve.										
0x0002	BallastStatus	map8	0	3	1/0	0x00	0	5	3600	1
Device always sets value to 0. Ballast status. bit0: 0 = ballast fully operational, 1 = ballast not fully operational bit1: 0 = lamp in socket, 1 = lamp not in socket (not used)										
0x0010	MinLevel	uint8	1	0xFE	1/1	See note	1		0xFFFF	
Default value is 0x64, but can be various for different devices. For explanation take a look on picture min-max-dimmer-values. **Whenever you change this value, device sets output to this new value directly**.										
0x0011	MaxLevel	uint8	1	0xFE	1/1	See note	1		0xFFFF	
Default value is 0xFE, but can be various for different devices. For explanation take a look on picture min-max-dimmer-values. **Whenever you change this value, device sets output to this new value directly**.										
0xE000	ControlMode	enum8	0	3	1/1	0	1		0xFFFF	
Setting of dimmer mode. You can change value here, if dimming of your bulb is not smooth enough or load is flickering. 0 = automatic (dimmer detects on the load what the best mode would be) 1 = RC mode (load is dimmed by cutting the phase on the trailing edge) 2 = RL mode (load is dimmed by cutting the phase on the leading edge) 3 = RL-LED (artificial RL mode for LEDs) 0x04-0xFF = reserved										
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	2	1		0xFFFF	

Min max dimmer values



Ballast configuration cluster server, cluster id 0x0301 (devices with model identifier x /UNIDIM/x)

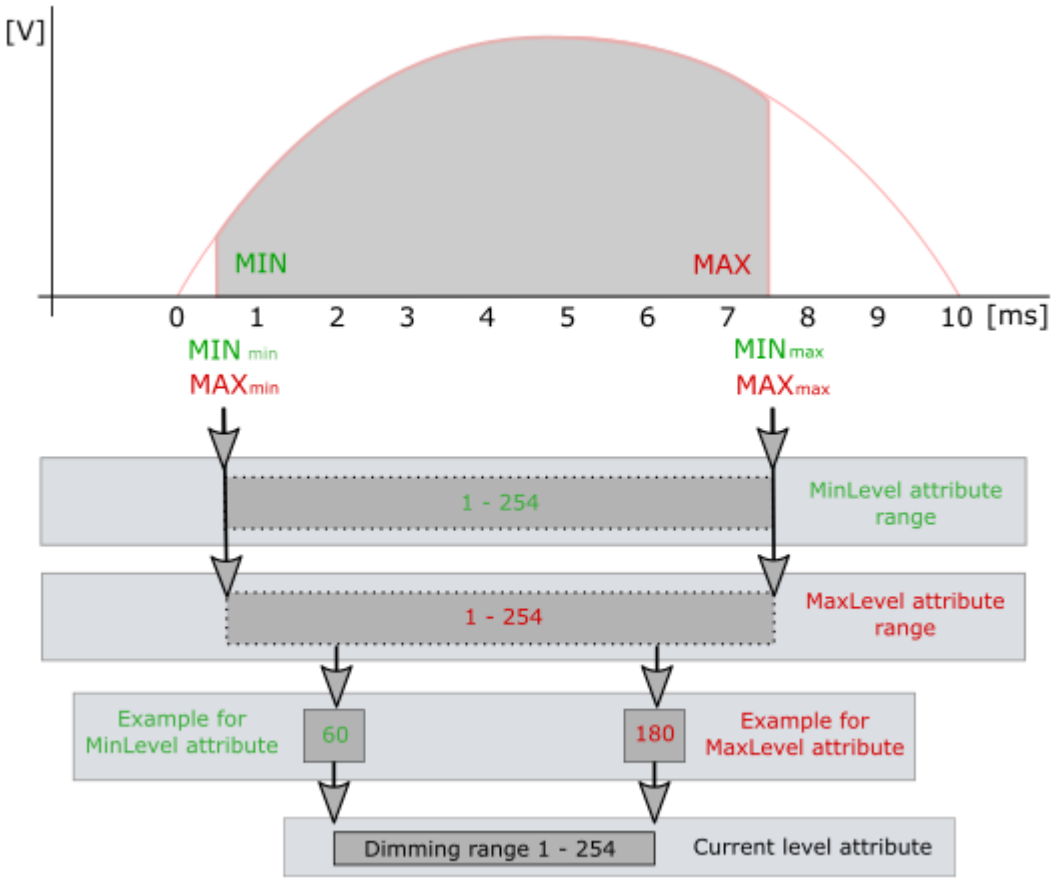
Attributes

Id	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0x0000	PhysicalMinLevel	uint8	1	0xFE	1/0	1	1		0xFFFF	
The PhysicalMinLevel attribute is 8 bits in length and specifies the minimum light output the ballast can achieve.										
0x0001	PhysicalMaxLevel	uint8	1	0xFE	1/0	0xFE	1		0xFFFF	
The PhysicalMaxLevel attribute is 8 bits in length and specifies the maximum light output the ballast can achieve according to the dimming light curve.										
0x0002	BallastStatus	map8	0	3	1/0	0x00	0	5	3600	1

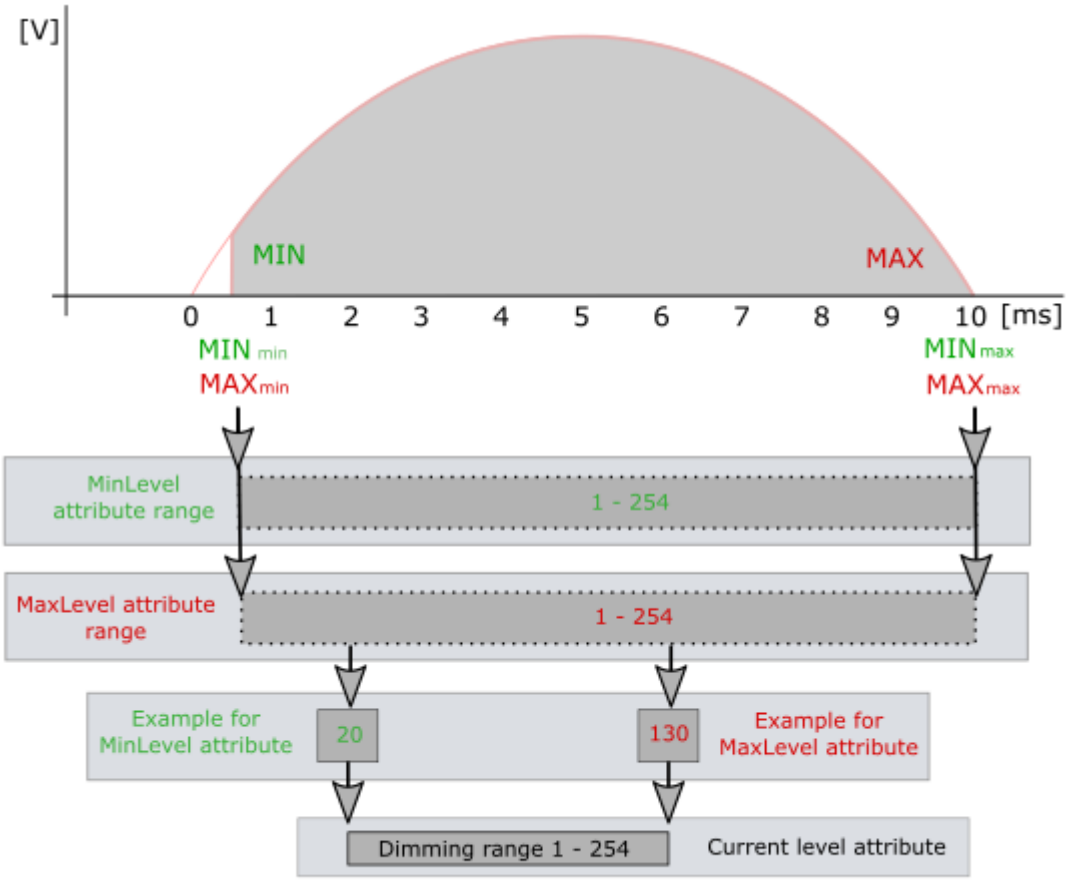
bit0	bit1	State	Description
0	0	**OK**	Ballast fully operational.
1	0	**WARNING 1**	Not supported.
0	1	**WARNING 2**	For WiringMode attribute equal to 1 (3 wired mode connection): Not supported. For WiringMode attribute equal to 0 (2 wired mode connection): Consumption of conected lamp is lower than allowed, therefore maximal posible brightness is decresed.
1	1	**ERROR**	Switching ON is not possible anymore, because overload or some internal error has been detected. User has to do power cycle of device.

0x0010	MinLevel	uint8	1	0xFE	1/1	See note	1		0xFFFF	
Default value for 2 wired connection is 74, for 3 wired connection is 57. Whenever you change this value, device sets output to this new value directly. If you try set value of attribute MinLevel > MaxLevel, previous value stays unchanged and device respons with INVALID VALUE response. For more understanding take a look on picture min-max-dimmer-values.										
0x0011	MaxLevel	uint8	1	0xFE	1/1	See note	1		0xFFFF	
Default value for 2 wired connection is 226, for 3 wired connection is 254. Whenever you change this value, device sets output to this new value directly. If you try set value of attribute MaxLevel < MinLevel, previous value stays unchanged and device respons with INVALID VALUE response. For more understanding take a look on picture min-max-dimmer-values.										
0xE000	ControlMode	enum8	0	3	1/1	0	1		0xFFFF	
Setting of dimmer mode. You can change value here, if dimming of your bulb is not smooth enough or load is flickering. 0 = automatic (dimmer detects on the load what the best mode would be) 3 = RL-LED (artificial RL mode for LEDs) All other values are reserved.										
0xE001	WiringMode	enum8	0	1	1/0	See note	0		0xFFFF	
Default value depends on how the dimmer is connected to the mains. How is the dimmer connected to the mains. Either via 2 wires, or 3 wires. 0 = 2 wired mode 1 = 3 wired mode 2-0xFF = reserved										
0xE002	DimmingCurve	enum8	0	2	1/1	0	1		0xFFFF	
The dimming curve 0 = logarithmic 1 = linear (not supported) 2 = exponential (not supported)										
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	2	1		0xFFFF	

Min max dimmer values in 2 wired mode (WiringMode attribute = 0)



Min max dimmer values in 3 wired mode (WiringMode attribute = 1)


[V]
MIN
MAX
0 1 2 3 4 5 6 7 8 9 10 [ms]
MIN min
MAXmin
MIN max
MAXmax
MinLevel attribute range
1 - 254
MaxLevel attribute range
1 - 254
Example for MinLevel attribute
20
130
Example for MaxLevel attribute
Dimming range 1 - 254
Current level attribute

Diagnostic cluster server, cluster id 0x0B05

Diagnostic cluster is shared accross all endpoints (except of endpoint 242).

Attributes common

ID	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0x011C	Last Message LQI	uint8	0	0xFF	1/0	See note	0	900	900	255
Default value depends on currentLQI. This is the Link Quality Indicator for the last message received. There is no current agreed upon standard for calculating the LQI. For some implementations LQI is related directly to RSSI for others it is a function of the number of errors received over a fixed number of bytes in a given message. The one thing that has been agreed is that the Link Quality Indicator is a value between 0 and 255 where 0 indicates the worst possible link and 255 indicates the best possible link. Note that for a device reading the Last Message LQI the returned value SHALL be the LQI for the read attribute message used to read the attribute itself.										
0x011D	Last Message RSSI	int8	-127	127	1/0	See note	0	900	900	127
Default value depends on current RSSI. This is the receive signal strength indication for the last message received. As with Last Message LQI, a device reading the Last Message RSSI, the returned value SHALL be the RSSI of the read attribute message used to read the attribute itself.										
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	2	1		0xFFFF	

Client clusters

Otau cluster client, cluster id 0x0019 (always only on the first non-zero endpoint on device)

Attributes

ID	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting			Notes
								Min [s]	Max [s]	Change [-]	
0x0000	UpgradeServerId	eui64	0	0xFFFFFFFFFFFFFFFF	1/0	0xFFFFFFFFFFFFFFFF	0		0xFFFF		
IEEE address of upgrade server.											
0x0001	FileOffset	uint32	0	0xFFFFFFFF	1/0	0xFFFFFFFF	0		0xFFFF		
The parameter indicates the current location in the OTA upgrade image. It is essentially the (start of the) address of the image data that is being transferred from the OTA server to the client. The attribute is optional on the client and is made available in a case where the server wants to track the upgrade process of a particular client.											
0x0002	CurrentFileVersion	uint32	0	0xFFFFFFFF	1/0	See note	0		0xFFFF		
The file version of the running firmware image on the device. Correlation between Application FW Version attribute 0xE001 in basic cluster and this attribute is visible on following example: '003.002.001 D' = 0x03020100 '003.002.001 T0' = 0x03020102 '003.002.001 T1' = 0x03020103 '003.002.001 V' = 0x03020104 '003.002.001 R' = 0x030201FF											
0x0006	ImageUpgradeStatus	enum8	0	0xFF	1/0	0x00	0		0xFFFF		
The upgrade status of the client device. 0 = Normal 1 = Download in progress 2 = Download complete 3 = Waiting to upgrade 4 = Count down 5 = Wait for more **Note for devices running version prior 2.0.0. If output of device is ON, or shutter is running, value in this attribute is set to 4 so long, till device is switched OFF permanently for 10 seconds or shutter remains 10 seconds on the same position.**											
0x0007	Manufacturer ID	uint16	0	0xFFFF	1/0	0x105E	1		0xFFFF		
Schneider manufacture ID.											
0x0008	Image Type ID	uint16	0	0xFFFF	1/0	0xFFFF	1		0xFFFF		
This attribute SHALL indicate the image type identifier of the file that the client is currently downloading, or a file that has been completely downloaded but not upgraded to yet. The value of this attribute SHALL be 0xFFFF when the client is not downloading a file or is not waiting to apply an upgrade. Each ZB device inside SE has unique id. Please look into device description.											
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	3	1		0xFFFF		

Commands received

- It is out of scope of this document. All mandatory commands are supported.

Command generated

- After reboot in 5 minutes (randomly) device asks for new image.
- Every **6 hours mains powered** devices ask for new image, **battery** powered devices ask **every 96 hours**.
- If OTAU server asks device for waiting before applying downloaded image, device asks every 10 minutes for applying image.
- Discovering of OTA server for **mains powered** devices is done every **1 minute**, if not discovered before, **battery** powered devices discover **every 48 hours**.

Responses received

- It is out of scope of this document. All mandatory responses are supported.

Endpoint 21

Endpoint	Profile	Device ID	Description	Application
21	0x0104: Common profile (HA)	0x0104	Dimmer switch	This endpoint is used to transmit on/off, level, open/close and scene control commands triggered by pushbuttons. Used for 1-gang or for right buttons in case of 2-gang devices. For FLS look into FLS device description.

To be able to control first channel on device locally must be bound to local actuator's endpoint (first one) on the same device (is done automatically when device joins network). However you are free to disconnect it or connect to some other device via ZigBee.

Server clusters

Basic cluster server, cluster id 0x0000

Cluster is shared. More details you find on first (non-zero) endpoint.

Identify cluster server, cluster id 0x0003

Usage

Identify action depends on used endpoint. E.g. endpoint 6, 21, 22 blinks with front LED, endpoints 1, 2, 3, 4 flash with lights, endpoint 5 is going little bit down/up with shutter. Time step is defined as 1.5 seconds.

Attributes

ID	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0x0000	IdentifyTime	uint16	0	0xFFFF	1/1	0	0		0xFFFF	
If this attribute is set to a value other than 0x0000 then the device SHALL enter its identification procedure, in order to indicate to an observer which of several devices it is. The IdentifyTime attribute SHALL be decremented every second. To start identification you can either write some non zero value in this attribute or send command identify. Value 0 stops identification.										
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	1	1		0xFFFF	

Commands received

ID	Name	Length [bytes]	Bytes	Meaning	Notes
0x00	Identify	2	0	identify time LSB	LSB of timeout, how long device shall stay in identification in seconds.
			1	identify time MSB	MSB of timeout, how long device shall stay in identification in seconds.
The identify command starts or stops the receiving device identifying itself. Value 0 in field 'identify time' stops identification, otherwise device stays in identification for time defined in field 'identify time'.					
0x01	Identify query	0			
This command has no payload and allows the sending device to request the target or targets to respond if they are currently identifying themselves.					

Schneider switch configuration cluster server, cluster id 0xFF17

This is a manufacture specific cluster. Is used for configuration, what command and from what client cluster is sent when user presses the button on HMI interface.

Attributes

Id	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0x0000	SwitchIndication	enum8	0	3	1/1	0	1		0xFFFF	
Attribute is shared between all endpoints where this cluster is presented. Attribute defines the meaning of indicator (LED) on the device, which provides the feedback to user about state of output. 0 = indicator is on when load is on 1 = Indicator is always on 2 = indicator is on when load is off 3 = Indicator is always off.										
0x0010	UpSceneID	uint8	0	0xFF	1/1	0x00	1		0xFFFF	
The UpSceneID attribute represents the Scene Id field value of any Scene command cluster transmitted by the device when user activates is rocker up side according to the rocker configuration. See SwitchActions attribute.										
0x0011	UpGroupID	uint16	0	0xFFFF	1/1	0x0000	1		0xFFFF	
The UpGroupID attribute represents the Group Id field value of any Scene command cluster transmitted by the device when user activates is rocker up side according to the rocker configuration. Value greater than 0xFFF7 means, no command is sent. See SwitchActions attribute.										
0x0020	DownSceneID	uint8	0	0xFF	1/1	0x01	1		0xFFFF	
The DownSceneID attribute represents the Scene Id field value of any Scene command cluster transmitted by the device when user activates is rocker down side according to the rocker configuration. See SwitchActions attribute.										
0x0021	DownGroupID	uint16	0	0xFFFF	1/1	0x0000	1		0xFFFF	
The DownGroupID attribute represents the Group Id field value of any Scene command cluster transmitted by the device when user activates is rocker down side according to the rocker configuration. Value greater than 0xFFF7 means, no command is sent. See SwitchActions attribute.										
0x0001	SwitchActions	enum8	0	0xFF	1/1	See note	1		0xFFFF	
Default values depends on endpoint and device type. More info you find in device description. See SwitchActions attribute picture. If value is one of non defined, switch does not send any action when pressed.										
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	1	1		0xFFFF	

Definition of SwitchActions attribute for rocker switch

Switch actions used as enumeration for SwitchActions manufacture specific attribute in Switch Configuration manufacture specific cluster (rocker switch HMI)				
Function name [value]	**first press**	**short release UP/DOWN BUTTON**	**long press UP/DOWN BUTTON**	**long release UP/DOWN BUTTON**
Light [0x00]	x	ON / OFF	ON / OFF	x
Light opposite [0xFE]	x	OFF / ON	OFF / ON	x
Dimmer [0x01]	x	ON / OFF	UP(WITH ON_OFF) / DOWN	STOP / STOP
Dimmer opposite [0xFD]	x	OFF / ON	DOWN/UP(WITH ON_OFF)	STOP / STOP
Standard Shutter [0x02]	x	STOP / STOP	OPEN / CLOSE	x
Standard Shutter opposite [0xFC]	x	STOP / STOP	CLOSE / OPEN	x
Schneider Shutter [0x03]	x	STOP_STEP_UP / STOP_STEP_DOWN *	OPEN / CLOSE	x
Schneider Shutter opposite [0xFB]	x	STOP_STEP_DOWN / STOP_STEP_UP *	CLOSE / OPEN	x
Scene** [0x04]	x	RECALL_SCENE_X / RECALL_SCENE_Y	SAVE_SCENE_X / SAVE_SCENE_Y	x
Toggle light [0x05]	x	x	x	x
Toggle dimmer [0x06]	x	x	x	x
Alternate light [0x07]	x	x	x	x
Alternate dimmer [0x08]	x	x	x	x
Not Used [0x7F]	x	x	x	x

Definition of SwitchActions attribute for rotary

Switch actions used as enumeration for SwitchActions manufacture specific attribute in Switch Configuration manufacture specific cluster (rotary HMI)						
Function name [value]	**first press**	**short release**	**long press**	**long release**	**step RIGH /LEFT**	**rotate RIGHT/LEFT**
Light [0x00]	x	TOGGLE	OFF	x	ON / OFF	ON
Light opposite [0xFE]	x	TOGGLE	ON	x	OFF / ON	OFF
Dimmer [0x01]	x	TOGGLE	OFF	x	STEP_UP (WITH ON_OFF) / STEP_DOWN (with fixed step size)	STEP_UP (WITH ON_OFF) / STEP_DOWN (step size depends on rotation speed)
Dimmer opposite [0xFD]	x	TOGGLE	OFF	x	STEP_DOWN / STEP_UP (WITH ON_OFF) (with fixed step size)	STEP_DOWN / STEP_UP (WITH_ON_OFF) (step size depends on rotation speed)
Standard Shutter [0x02]	x	STOP	x	x	STOP / STOP	OPEN / CLOSE
Standard Shutter opposite [0xFC]	x	STOP	x	x	STOP / STOP	CLOSE / OPEN
Schneider Shutter [0x03]	x	STOP	x	x	STOP_STEP_UP / STOP_STEP_DOWN *	OPEN / CLOSE

Schneider Shutter opposite [0xFB]	x	STOP	x	x	STOP_STEP_DOWN / STOP_STEP_UP *	CLOSE / OPEN
Scene** [0x04]	x	x	x	x	x	x
Toggle light [0x05]	x	x	x	x	x	x
Toggle dimmer [0x06]	x	x	x	x	x	x
Alternate light [0x07]	x	x	x	x	x	x
Alternate dimmer [0x08]	x	x	x	x	x	x
Not Used [0x7F]	x	x	x	x	x	x

Color	Meaning
	Command will be sent from Level control cluster
	Command will be sent from ON/OFF cluster
	Command will be sent from Scene Cluster
	Command will be sent from Window covering cluster
*	This is a Schneider manufacture specific command from Window Covering Cluster
**	Scene number is taken from attribute Up/DownSceneID and group from Up/DownGroupID. Command is sent via binding table. If Up /DownGroupID attribute is set to 0xFFFF, no command is sent. If pushbutton HMI is used, UpSceneId and UpGroupId is used.
x	No reaction

Diagnostic cluster server, cluster id 0x0B05

Cluster is shared. More details you find on first (non-zero) endpoint.

Client clusters

Identify cluster client, cluster id 0x0003

Attributes

ID	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	1	1		0xFFFF	

Commands received

- None.

Command generated

- Identify Query Command

Responses received

- Identify Query Response command

Group cluster client, cluster id 0x0004

Attributes

ID	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	2	1		0xFFFF	

Commands received

- None.

Command generated

- None.

Responses received

- None.

OnOff cluster client, cluster id 0x0006

Attributes

ID	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	2	1		0xFFFF	

Commands received

- None.

Commands generated

In principal following commands are supported:

- On.
- Off.
- Toggle.

Which command is used depends on device type.

- For motion devices look on *OccupancyActions* attribute in Schneider manufacture specific cluster *occupancy setting*.
- For all other devices look on *SwitchActions* attribute in Schneider manufacture specific cluster *Schneider switch configuration*.

In some FW versions commands are sent only as unicast using binding table. Please check the release notes.

Responses received

- None.

Level control cluster client, cluster id 0x0008

Attributes

ID	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	2	1		0xFFFF	

Commands received

- None.

Commands generated

In principal following commands are supported:

- Move with on off (only direction UP).
- Move without on off (only direction DOWN).
- Step with on off (only direction UP, with fixed step size).
- Step without on off (only direction DOWN, with fixed step size).
- Stop.
- Move to level with on off (only motion devices).

Which command is used depends on device type.

- For motion devices look on *OccupancyActions* attribute in Schneider manufacture specific cluster *occupancy setting*.
- For all other devices look on *SwitchActions* attribute in Schneider manufacture specific cluster *Schneider switch configuration*.

In some FW versions commands are sent only as unicast using binding table. Please check the release notes.

Responses received

- None.

Scene cluster client, cluster id 0x0005

Attributes

ID	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	2	1		0xFFFF	

Commands received

- None.

Commands generated

In principal following commands are supported:

- Store scene.
- Recall scene.

If and how commands are used depends on *SwitchActions* attribute in Schneider manufacture specific cluster S*chneider switch configuration.*

In some FW versions commands are sent only as unicast using binding table. Please check the release notes.

Responses received

- Out of scope of this document.

Window covering cluster client, cluster id 0x0102

Attributes

ID	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	2	1		0xFFFF	

Commands received

- None.

Commands generated

In principal following commands are supported:

- Open.
- Close.
- Stop.
- StopOrStepLiftPercentage (manufacture specific - see section 'received commands' in *window covering cluster*). This command is send with field '*step value'* to 25 = 25% of *TiltOpenCloseAndStepTime* attribute.

If and how commands are used depends on *SwitchActions* attribute in Schneider manufacture specific cluster *Schneider switch configuration*

In some FW versions commands are sent only as unicast using binding table. Please check the release notes.

Responses received

- Out of scope of this document.

Endpoint 242

Endpoint	Profile	Device ID	Description	Application
242	0xA1E0: Green Power Profile	0x0061	GreenPowerProxyBasic	ZigBee Green Power Combined Proxy and Sink.

Server clusters

None

Client clusters

Outbound cluster client, cluster id 0x0021

Attributes

ID	Name	Type	Min	Max	Read /Write	Default	Persistent	Reporting		
								Min [s]	Max [s]	Change [-]
0x0010	GppMaxProxyTableEntries	uint8	0	0	1/0	5	0		0xFFFF	
Maximum number of Proxy Table entries supported by this device. (In Specs default value is 0x14)										
0x0011	ProxyTable	longoctetstring			1/0		1		0xFFFF	
Proxy Table, holding information about pairings between a particular GPD ID and the sinks in the network. (In Specs default value is 0x00)										
0x0016	GppFunctionality	bitmap24	0	0xFFFFFF	1/0	0x09AC2F	0		0xFFFF	
The optional GP functionality supported by this proxy. See Zigbee Cluster Library for more information.										
0x0017	GppActiveFunctionality	bitmap24	0	0xFFFFFF	1/0	0xFFFFFF	0		0xFFFF	
The optional GP functionality supported by this proxy that is active. See Zigbee Cluster Library for more information.										
0x0022	GpLinkKey	securityKey	0	0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	1/1	0x5a6967426565416c6c69616e63653039	1		0xFFFF	
The security key to be used to encrypt the key exchanged with the GPD. See Zigbee Cluster Library for more information.										
0xFFFD	ClusterRevision	uint16	1	0xFFFE	1/0	1	1		0xFFFF	

Commands received

- It is out of scope of this document. All mandatory commands are supported.

Command generated

- It is out of scope of this document. All mandatory commands are supported.

Responses received

- It is out of scope of this document. All mandatory responses are supported.