Local Interfaces of LifeSmart Smart Station

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1.0	2019/06/03	Ye Zhengqiang	This document is prepared according to LifeSmart's third-party access rules.
1.1	2019/11/26	Ye ZhengQiang	OpenDev adds backup, restore interfaces
1.2	2020/08/11	Ye ZhengQiang	OpenDev Adds Smart Station version query interface, upgrade interface, device renaming interface, refer to 3.3.10 Smart Station configuration commands (upgrade, devname, getver)
1.3	2020/11/10	Ye ZhengQiang	OpenDev Smart Station version query interface adds Smart Station type and system version response. Smart Station adds Defed series devices, refer to 6.11 Defed series for details
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1. Introduction

The LifeSmart Smart Station series devices provide interface services (OpenDev) to allow local query and control by third parties so that they can operate and manage the smart devices connected to the Smart Station. The channels for local query and control are carried over UDP and the interaction mode is request-answer. In addition, in order to ensure connection security and perform access control, all requests must comply with the signature rules of the local interfaces of the Smart Station. The services consist of the discovery service, interface service, and event service.

This section describes 2 ways about how to enable interfaces. You only can enable either of the two interfaces.

1.1 Interface Enabling Process - App Enabling

Before a third-party app uses the local interface service (OpenDev), apply for the device model, token, and key (encrypt) from LifeSmart. Then, configure the OpenDev smart template via the LifeSmart app for the third-party app so as to enable the Smart Station to provide services. The following describes how to configure the smart template:

(1) Select the Smart tab on the homepage. Then, touch the + button. The page shown in Figure 1 is displayed.

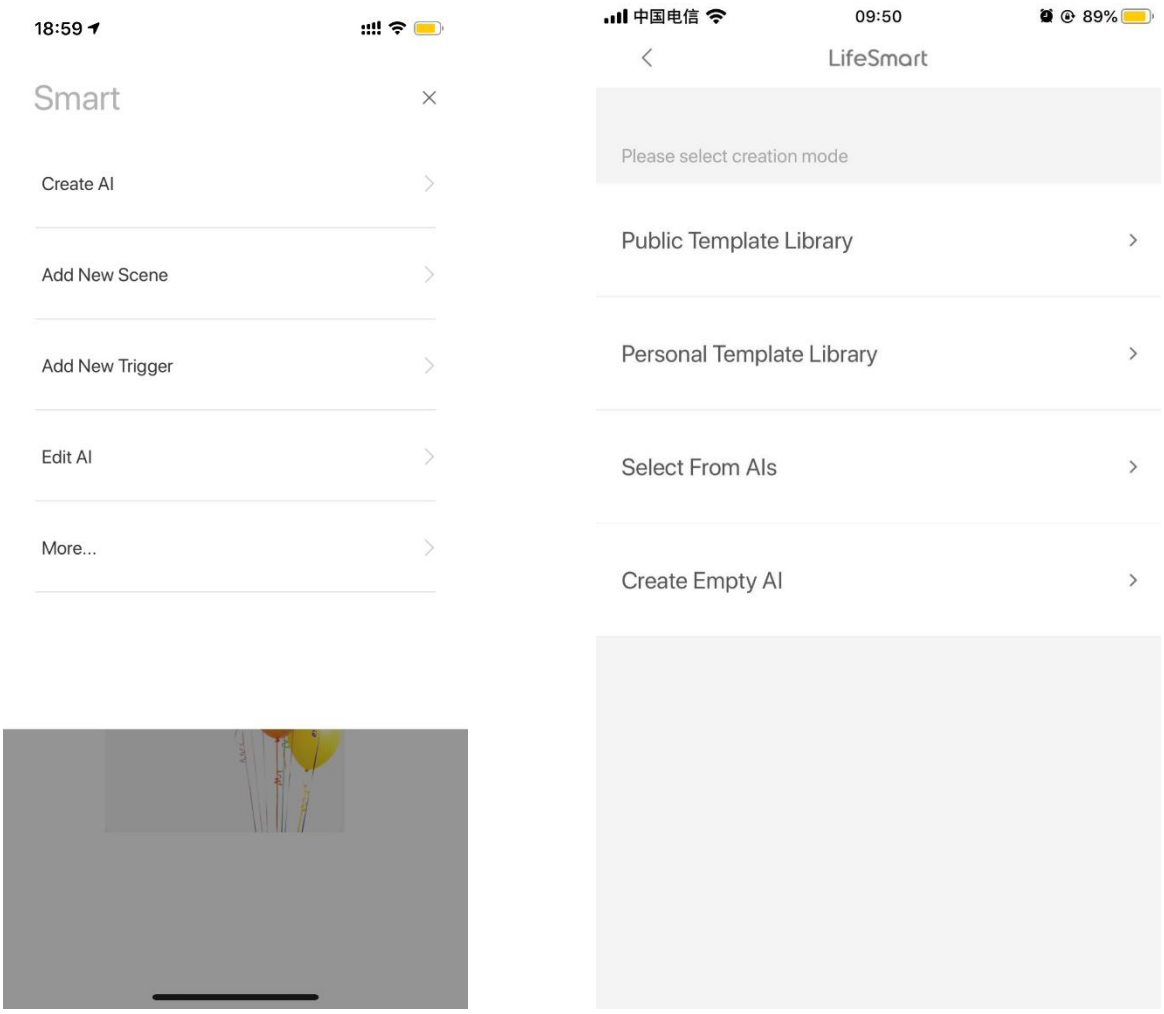
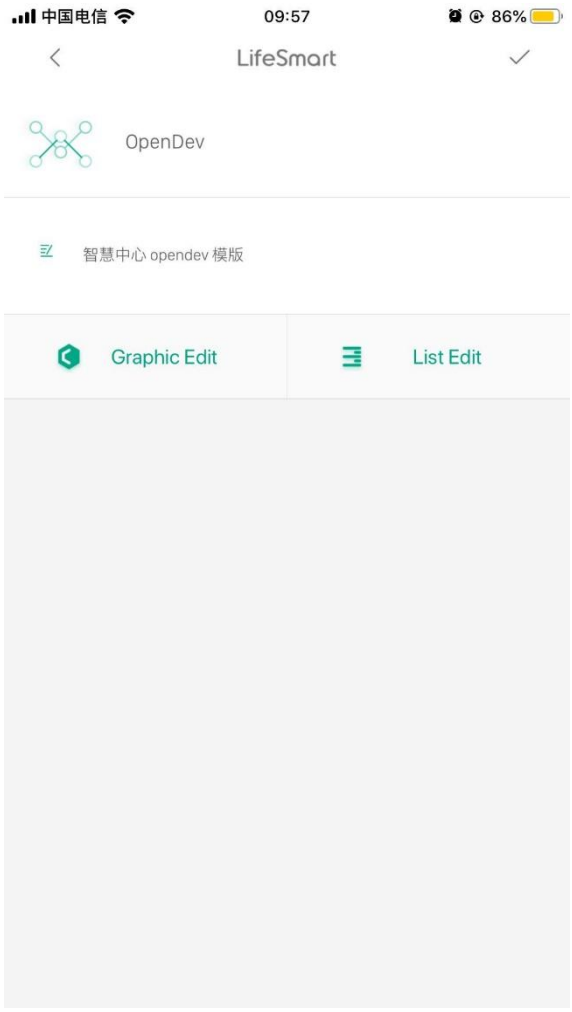


Figure 1 Figure 2

(2) Choose Smart Template Management and touch Add Template. The page shown in Figure 2 is displayed.

(3) Choose Common Templates, enter OpenDev to search for templates, and touch the OpenDev template to begin configuration. The page shown in Figure 3 is displayed.



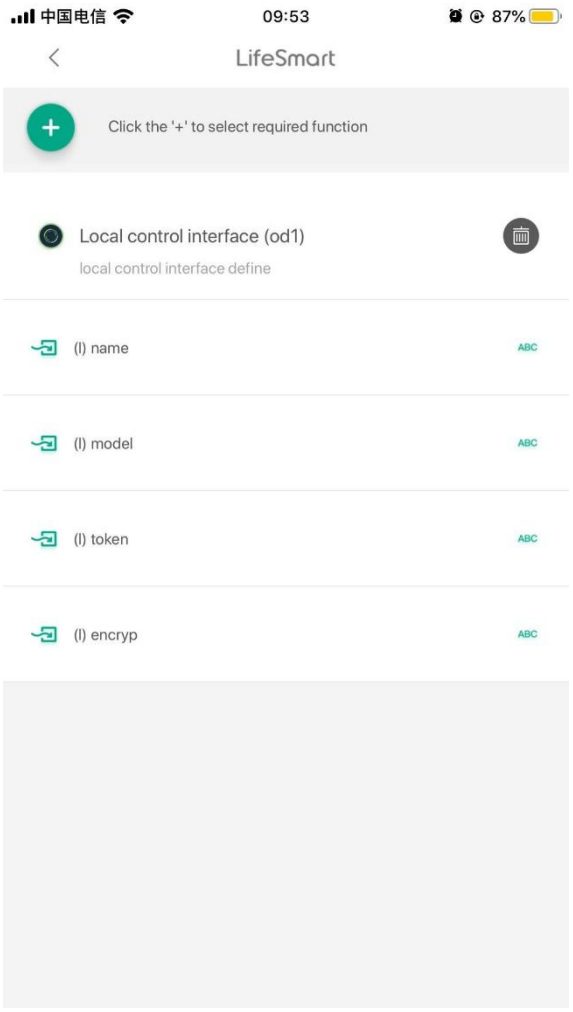


Figure 3 Figure 4

(4) Choose Edit List Mode. On the page shown in Figure 4, set the name, model, token, and encrypt and then return to the previous page. Then, touch the "tick" button to finish the configuration. If no error is displayed, the configuration is successful.

(5) When the OpenDev interface enabled via the app is used to provide services in UDP mode, the third-party app uses port 12346 to receive requests and send responses.

1.2 Interface Enabling Process - Scanning Code for Enabling

Before a third-party app uses the local interface service (OpenDev), apply for the device model, token, and encrypt from LifeSmart, and provide the QR code for enabling.

(1) The third party app user upgrades the Smart Station to the latest official version via the LifeSmart app.

(2) The user uses the scanning function of the LifeSmart app to scan the code and selects the Smart Station to be configured. If the account has only one Smart Station, skip the selection.

(3) After the scanning is successful, the app will prompt the user for confirmation and deliver configurations. After checking the configurations, the user touches OK.

(4) Then, the user restarts the Smart Station. After the restart succeeds, the user selects the function of viewing all devices. A device whose name is the same as the configured one is displayed in the Smart Station, indicating that the configuration is successful.

(5) When the OpenDev interface enabled by using the scanning function is used to provide services in UDP mode, the third-party app does not have to only use port 12346 to receive requests and send responses.

2. Discovery Protocol

When the local interface service of the Smart Station is used, the third-party device and the LifeSmart Smart Station communicate with each other in the local area network. The Smart Station broadcasts UDP messages to search and discover the third-party device.

After receiving the UDP broadcast messages, the third-party device responds with the device information. The data packets carry UTF8-encoded text strings.

In the response message of the third-party device, MOD indicates the model applied, and NAME indicates the device name. SN indicates the unique serial number of the device, which can be the MAC address of the device. VER indicates the device version. New keys can be added. They are separated by '\n'.

Note:

By receiving the UDP broadcast messages, a third-party device can determine the IP address of the LifeSmart Smart Station for subsequent communications.

When the Smart Station is enabled by scanning code, the third-party device does not need to reply.

Protocol	UDP
Port No.	12345
Message type	Broadcast message
Broadcast command word	Z-SEARCH * \r\n
Message returned by the third-party device	MOD=xxxx\nSN=xxxx\nNAME=xxxx\nVER=xxxx\n

Third party devices can also obtain a list of LifeSmart smart stations within the local area network through broadcast messages.

The LSID in the smart station echo message is the unique id of the smart station, MGAMOD is the type of smart station, and other keys can currently be ignored, separated by the character ' n'.

Protocol	UDP
Port No.	12345
Message type	Broadcast message
Broadcast command word	Z-SEARCH * \r\n
Message returned by the smart station	LSID=xxxx\nMGAMOD=xxxx\nWLAN=xxxx\nNAME=xxxx\n

3. API Protocol

Interface services use UDP for communications. The Smart Station uses port 12348 to receive interface requests. After the processing is completed, results are returned.

Note:

The Smart Station enabled by the App returns responses to port 12346 of the third-party device. The Smart Station enabled by scanning code returns responses to the sending port of the third-party device.

Control requests and pairing requests are sent over the synchronization interface. Results are returned only after the request processing is completed.

Network protocol	UDP	UDP
Object	Smart Station	Device
Port No.	12348	12346
Description	The device sends requests to port 12348 of the Smart Station.	The Smart Station returns responses to port 12346 of the device.

3.1 Message Format

The message of the local interface protocol of the Smart Station consists of two parts: the 10-byte header and the body of JSON string, as shown in the following table.

Name	Description	Length (Byte)	Type	Remarks
header	Message start identifier	2	String	JL: Normal
version	Protocol version number	2	Integer	The default value is 0.
pkg_type	Message type	2	Integer	0: Reserved 1: GET

				2: GET-REPLY 3: SET 4: SET-REPLY 5: ADD 6: ADD-REPLY 7: DELETE 8: DELETE-REPLY 9: NOTIFY 10: NOTIFY-REPLY
pkg_size	Body length	4	32-bit unsigned integer	
content	Body	pkg_size	UTF-8 encoded string	The content is in JSON format.

3.1.1 Request Data Format

The message body carries request data in JSON format. The data structure is as follows:

sys	ver	Protocol version, number 1
	sign	Signature value. See 3.2.1 Signature Algorithm.
	model	Device model
	ts	UTC timestamp. The time is after January 1, 1970 and in the unit of second.
obj		Object name
args	<attr>:<val>, … <attr>:<val>	Set of parameters used by the HTTP method
id		Message serial number

sys: sys parameter meaning

- ver: protocol version number. Currently, it is fixed to number 1.
- sign: signature value. It is used by the server for signature verification, and the signature algorithm is described in 3.2 Signature Security Algorithm.
- model: the model obtained when the third-party module is registered
- ts: timestamp of request (UTC), time of the zero-time zone

obj: For details about the currently supported objects, see 3.3 API Interfaces.

args: Object-specific parameters need to be input. For details, see 3.3 API Interfaces.

id: message ID. The ID of a response message is consistent with the ID of its request message.

3.2 Signature Security Algorithm

To ensure the security of communications between third-party devices and the Smart Station, this protocol requires that all requests in JSON format should carry the signature information of the request source. The signature value is assigned to the sign parameter in the sys parameter set of

the JSON requests.

After receiving a request, the Smart Station first checks the ts timestamp information carried in the JSON request. If the difference between the timestamp and the local time of the Smart Station is greater than 5 minutes, the request packet is considered invalid and an error code is returned.

If the timestamp checking passes, the sign signature value is verified by using the unified signature algorithm. A JSON request is accepted only when the signature value is consistent.

To implement the above security mechanism, the user must communicate with LifeSmart first to obtain the model and token of the local interface of the Smart Station before connecting the third-party device to the Smart Station.

3.2.1 Signature Algorithm

The detailed procedure of the signature algorithm is as follows:

(1) Calculate the "original signature string": Original signature string = obj + args parameter set (all fields are sorted in ascending order and then all field names and corresponding values are input) + ts string in the sys parameter set + model + token. The following is an example.

obj:<obj>,<arg>:<val>,…,< arg >:<val>,ts:<val>,model:<val>,token:<val>

(2) The "original signature string" is processed based on MD5 and converted into a hexadecimal 32-bit lowercase string, which is used as the signature value sign.

Note:

The model and token are assigned by LifeSmart and used together.

If the args parameter is in array or list format, this parameter is not used during signature calculation.

Example:

Request:


```
{
"id": 1,
"args": {
"tag": "03",
"me": "80fa",
"idx": "L1",
"type": 128,
"val": 0,
}
"obj": "ep",
"sys": {
"ver": 1,
"ts": 1571976095,
"sign": "dbe2076ba2a67fe886aa5098d165ac7a",
"model": "OD_XXX_XXX"
```

}

}

Original signature string:

obj:ep,idx:L1,me:80fa,tag:m,type:128,val:0,ts:1571976095,model:OD_XXX_XXX,token:token123456token123456

3.3 API Description

In the interface description, the Smart Station is referred to as station, agent, or agt. The devices connected to the Smart Station, for example, sockets and temperature-humidity sensors, are referred to as ep. Third-party devices are referred to as Device.

This section briefly describes the APIs supported by the OpenDev interface request service and provides request examples and returned values for reference.

Note: For details about the device type and attribute parameters, see 6. Sub-devices. For details about scene type and parameter meaning, see 5. Scenes.

3.3.1 Obtaining Information About a Single Sub-device of the Smart Station

obj	ep
Pkg_type	GET
Direction	Device->Station
Request	**{** **"id": 2,** **"args": {** **"me": "2711",** **}** **"obj": "ep",** **"sys": {** **"ver": 1,** **"ts": 1571976095,** **"sign": "dbe2076ba2a67fe886aa5098d165ac7a",** **"model": "OD_XXX_XXX"** **}** **}**
Response	**{** **"code": 0,** **"id": 2,** **“agtid": "mga",** **"msg": {** **"stat": 1,** **"data": {**

```
            "L1": {
                "valts": 0,
                "v": 0
            }
        },
        "agt": "mga",
        "devtype": "SL_OL_3C",
        "name": "2711",
        "me": "2711"
    }
}
```


3.3.2 Obtaining the Sub-device List of the Smart Station

obj	eps
Pkg_type	GET
Direction	Device->Station

Request	{
	"id": 1,
	"args": {
	},
	"obj": "eps",
	"sys": {
	"ver": 1,
	"ts": 1571976095,
	"sign": "dbe2076ba2a67fe886aa5098d165ac7a",
	"model": "OD_XXX_XXX"
	}
	}

Response	{
	"code": 0,
	"id": 1,
	"agtid": "mga",
	"msg": [
	{
	"stat": 1,
	"data": {
	"L1": {
	"valts": 0,
	"v": 0
	}
	},
	"agt": "mga",
	"devtype": "SL_OL_3C",
	"name": "2711",
	"me": "2711"
	},
	{
	"stat": 1,
	"data": {
	"0": {
	"valts": 0,
	"v": 0
	}
	},
	"agt": "mga",
	"devtype": “SL_OL_3C",
	"name": "2713",
	"me": "2713"
	}
	]
	}

Args	Degree: Device list level, optional parameter, parameter type value [0, 1, 2]. When the parameter exists and is equal to 0 or 1, the returned device list will not contain data (sub device exclusive attribute), and the parameter defaults to 2;

3.3.3 Controlling a Single Sub-device of the Smart Station

Obj	ep
Pkg_type	SET
Direction	Device->Station

Request	{
	"id": 2,
	"args": {
	"tag": "m",

<table>
<tr><td></td><td>"me": "2711",
"idx": "L1",
"type": 128,
"val": 0,
}
"obj": "ep",
"sys": {
"ver": 1,
"ts": 1571976095,
"sign": "dbe2076ba2a67fe886aa5098d165ac7a",
"model": "OD_XXX_XXX"
}
}</td></tr>
<tr><td>Response</td><td>{
"code": 0,
"id": 2,
“agtid": "mga",
"msg": {
}
}</td></tr>
</table>

3.3.4 Controlling Multiple Sub-devices of the Smart Station

obj	eps
Pkg_type	SET
Direction	Device->Station
Request	{ "id": 2, "args": [{ "tag": "m", "me": "2713", "idx": "O", "type": 129, "val": 1, }, {

	"tag": "m",
	"me": "2711",
	"idx": "L1",
	"type": 128,
	"val": 0,
	},
	],
	"obj": "eps",
	"sys": {
	"ver": 1,
	"ts": 1571976095,
	"sign": "dbe2076ba2a67fe886aa5098d165ac7a",
	"model": "OD_XXX_XXX"
	}
	}

Response	{
	"code": 0,
	"id": 2,
	“agtid": "mga",
	"msg": {
	}
	}

3.3.5 Obtaining the Scene List of the Smart Station

obj	scene
Pkg_type	GET
Direction	Device->Station

Request	{
	"id": 2,
	"args": {
	},
	"obj": "scene",
	"sys": {
	"ver": 1,
	"ts": 1571976095,
	"sign": "dbe2076ba2a67fe886aa5098d165ac7a",

	"model": "OD_XXX_XXX" } }

Response	{
	"code": 0,
	"id": 2,
	“agtid": "mga",
	"msg": [
	{
	"id": “AI1571987214",
	"desc": "scene",
	"cls": "scene",
	"name": "2711"
	},
	{
	"id": “AI1571987314",
	"desc": "groupirc",
	"cls": "groupirc",
	"name": "2711"
	}
	]
	}

3.3.6 Triggering a Single Scene of the Smart Station

obj	doscene
Pkg_type	SET
Direction	Device->Station

Request	**{** **"id": 2,** **"args": {** **"id": “AI1571987214",** **"args": {** **"type": 128,** **}** **},** **"obj": "doscene",** **"sys": {** **"ver": 1,** **"ts": 1571976095,** **"sign": "dbe2076ba2a67fe886aa5098d165ac7a",** **"model": "OD_XXX_XXX"** **}** **}**
Response	**{** **"code": 0,** **"id": 2,** **“agtid": "mga",** **"msg": {** **}** **}**

3.3.7 Adding a Sub-device of the Smart Station (Applicable to CoSS Devices Only)

Obj	dopair
Pkg_type	SET
Direction	Device->Station
Request	**{** **"id": 2,** **"args": {** **},** **"obj": "dopair",** **"sys": {** **"ver": 1,**

	"ts": 1571976095, "sign": "dbe2076ba2a67fe886aa5098d165ac7a", "model": "OD_XXX_XXX" } }

Response	{
	"code": 0,
	"id": 2,
	“agtid": "mga",
	"msg": {
	}
	}

Args	Period: The timeout period for pairing CoSS protocol sub devices. If left blank, it defaults to 20 seconds; Chn: Pairing special CoSS protocol sub devices needs to be filled in and paired with bps; Bps: Pairing special CoSS protocol sub devices needs to be filled in and matched with chn; The required chn/bps devices are as follows: The parameter is set to {chn=1, bps=0x73}, Support device types SL_ SW_ ND1/SL_ SW_ ND2/SL_ SW_ ND3 (Star, Chenxing Switch Series) SL_ MC_ ND1/SL_ MC_ ND2/SL_ MC_ ND3 (Star, Chenxing Switch Companion Series) SL_ SW_ NS1/SL_ SW_ NS2/SL_ SW_ NS3 (Star Jade Switch Series Lower Left Button Paired Version) SL_ SW_ BS1/SL_ SW_ BS2/SL_ SW_ BS3 (Polar Star Switch 120 Zero Fire Series) SL_ SW_ MJ1/SL_ SW_ MJ2/SL_ SW_ MJ3 (Singularity Switch Module Series) SL_ LK_ LS_ V3 (Special Requirements Version Intelligent Door Lock)

	SL_ DF_ BB/SL_ DF_ GG/SL_ DF_ MM/SL_ DF_ SR (Defed series) SL_ R_ B (Intelligent Scene Remote Control)/SL_ P_ IR (Super Bowl Mini Edition) SL_ SW_ WW (0-10V 86 dimmer switch) SL_ CP_ VL (Heating Temperature Control Valve) Note: The value of chn/bps can be set to {chn={false, 1}, bps={false, 0x3}}, indicating that both special parameter devices and non special parameter devices are allowed to be added during pairing; The format of the exargs parameter is exargs={value=0}. The parameter mainly changes value, and its value is an integer: exargs parameter example: SL_LK_SWIFTE->value=0(speed),value=0x22(powersaving),value=0xff(remote disabled)

3.3.8 Removing Sub-devices from the Smart Station

obj	remove
Pkg_type	SET
Direction	Device->Station

Request	<pre>{
	"id": 2,
	"args": {
	"me": "2711",
	},
	"obj": "remove",
	"sys": {
	"ver": 1,
	"ts": 1571976095,
	"sign": "dbe2076ba2a67fe886aa5098d165ac7a",
	"model": "OD_XXX_XXX"
	}
	}</pre>

Response	<pre>{
	"code": 0,</pre>

	"id": 2,
	“agtid": "mga",
	"msg": {
	}
	}

3.3.9 Obtaining Signal Value of the Sub-device of the Smart Station

obj	rssi
Pkg_type	GET
Direction	Device->Station

Request	{
	"id": 2,
	"args": {
	"me": "2711",
	},
	"obj": "rssi",
	"sys": {
	"ver": 1,
	"ts": 1571976095,
	"sign": "dbe2076ba2a67fe886aa5098d165ac7a",
	"model": "OD_XXX_XXX"
	}
	}

Response	{
	}
	"code": 0,
	"id": 2,
	"agtid": "mga",
	"msg": {
	"noise": 29,
	"fromrssi": 145,
	"torssi": 155,
	}

Args	*Me: the id of subdevices* *If there is no is in me,means getting the rssi of GW*
Response	Meaning of returned data:

Msg	**noise**: indicates the value of the background noise. The lower the value, the better. **fromrssi**: indicates the strength of the signals sent by the Smart Station to the sub-devices. The higher the value, the better. **torssi**: indicates the strength of the signals sent by the sub-devices to the Smart Station. The higher the value, the better. Error code 102 indicates that the signal request fails. Other error codes indicate that request commands are incorrect. For devices powered by battery, only 102 will be returned. To obtain the signal value of the devices powered by battery, please use get-eps or get-ep to obtain the lDbm attribute of the sub-device to obtain the signal strength value of the device. Therefore, battery devices can only obtain the signal strength from the sub-device to the smart station, and cannot obtain "noise" and "fromrssi" ***Conversion formula between LifeSmart RSSI value and dbm:*** *RF_Input_Level_dBm =(RSSI_value /2)-MODEM RSSI_COMP-70* *MODEM_RSSI_COMP = 0x40 = 64d is appropriate for most applications.* *RSSI_value should be between 0 and 255. However, it cannot reach 255. Generally, it reaches up to 220.*

3.3.10 Configuration Commands of the Smart Station

obj	config
Pkg_type	SET
Direction	Device->Station
Request	**{** **"id": 2,** **"args": {** **"cfg": "reboot",** **},** **"obj": "config",**

	<pre>"sys": {
	"ver": 1,
	"ts": 1571976095,
	"sign": "dbe2076ba2a67fe886aa5098d165ac7a",
	"model": "OD_XXX_XXX"
	}
	}</pre>

Response	<pre>{
	"code": 0,
	"id": 2,
	"agtid": "mga",
	"msg": {
	}
	}</pre>

Args	The current SET-> config commands include the following: cfg:reboot —> Controls the restart of the Smart Station. No additional parameters are required. cfg:reset —> Restores the factory settings of the Smart Station and restarts it. No other parameters are required, and the gateway is not used. cfg:notify —> Configures the OpenDev event service of the Smart Station. You need to add the parameters **host** and **port**. The **host** parameter is the IP address of the device receiving the event, and the **port** parameter is the port receiving the event. cfg:airctrl —> Configures the search panel of the HVAC controller under the Smart Station. You need to add the parameters **me** (mandatory), **addr** (mandatory), **pval** (mandatory), **x** (optional), and **y** (optional). The **me** parameter is the address of the HVAC controller, and the device type is SL_TR_XX. The **addr** parameter is the address to be searched. The value range is (0-255), and it is usually set to 1. The **pval** parameter is the **val** value of the P1 attribute of the HVAC controller, which is used to distinguish the type of the central air conditioning system. Currently, only two types are supported, that is, the low 24-bit values of **pval** are 0x000001 and 0x000002.

When the low 24-bit value of **pval** is 0x000002, the **x** and **y** values are mandatory. The value of **x** is a group value and the range is 0-3. The value of **y** is a channel value, and the range is 0-254.

Note:

If the number of air conditioner panels, group value, and channel value are unknown when the HVAC controller is used for the first time, the **addr** values need to be tried one by one. When the low 24-bit value of **pval** is 0x000002, it is necessary to use the **x** and **y** values and make tries one by one.

If there is no master control panel for the HVAC controller, a master control panel will be created when the call is successful, for example, (80fa:255_255@1).

cfg:getver -> get the current version number of the Smart Station, no other parameters are required.

cfg:devname -> set the name of the Smart Station or the sub-device under the Smart Station, required parameter name, optional parameter me, me is a string indicating the sub-device, me parameter does not exist means configure the name of the Smart Station itself.

cfg:upgrade -> upgrade and download the Smart Station software package, no other parameters are required, the Smart Station needs to be restarted after the upgrade before the latest version will take effect, the software package will obtain the latest official version of the software package from the LifeSmart server.

The optional parameters are as follows: reboot (optional), url (optional), info (to be used with url)

reboot: Automatically restarts the Smart Station after a successful download of the package;

url: other download address of the Smart Station package, http address, and must be used with the info parameter;

info: contains the signature and MD5 information of the Smart Station package and the entire contents of the tar.gz.md5 file. It must be used with the url parameter;

	cfg:timezone -> set the timezone of the Smart Station and whether it is daylight saving time, parameter description:timezone(optional), summer(optional), timezone is the time zonen whose range is [-12,12], -12 is west 12, 12 is east 12; summer is whether daylight saving time, boolean variable, true or false; when timezone and summer are empty it can be used as a view of the current time zone and daylight saving time status. .
Response Msg	Meaning of returned data: **reboot**: If the result is success, msg {} is empty. **reboot**: If the result is success, msg {} is empty. **notify**: If the result is success, msg {} is {time=1572000773}. **time** is the system time of the Smart Station (UTC). **airctrl**: If the result is success, msg {} is {panel=["80fa:0_1@1"]}. **panel** is the list of identified panels. If error codes other than 0 are returned, request errors occur. getver : the ver in success msg means version number, mgatype is the Smart Station device type, and osver is the Smart Station system version, mgatype is listed as follows. LSJZX1K : Smart Station / Smart Station Pro LSSSMINIV1 : Smart Station Mini LSNAMIV1 : NatureMini LSNAMIV3 : NatureMiniPRO LSNAMIV4 : NatureMiniL LSMGANAV1 : NatureMiniS / Nature7 LSHI3518 : Old version of Smart Station devname :if success the msg is success. upgrade : if success the msg is success. timezone : if success, the msg is whether the Smart Station is currently in daylight saving time, timezone is the current time zone of the Smart Station. return a non-zero error code indicating a request error.

4. Local Event Service

The LifeSmart Smart Station sends UDP messages to specific ports of devices to notify the local events, including the changes of device status, addition of sub-devices, deletion of sub-devices, and sub-devices' actions of going online and offline. For more information about event packet format, see 3.1 Message Format. The value of pkg_type is 9 (NOTIFY).

To use local events, you need to set the notify command under SET-> config in section 3.3.10 to configure the IP address and port used by the third-party device to receive events. After the configuration is complete, notify configuration packets are sent every 300s. Otherwise, expiration occurs and events are not sent to the original IP address and port.

The notify configuration is continuously maintained. When the status of the sub-device changes, an event is sent to the configured IP address and port. Multiple IP addresses and ports can be configured.

4.1 Event Attribute Description

Attribute Name	Parameters	Parameter Meaning	Attribute Meaning
id			Event ID
agtid			Unique ID of the Smart Station
chg	devtype	Device type, used to indicate the type of the device whose status is changed.	Parameters related to the status change
	me	Sub-device ID, used to indicate the ID of the device whose status is changed.	
	name	Device name, used to indicate that the name of the device has changed to this value.	
	stat	Device connection status (1: online, 0: offline), used to indicate that the device connection status has changed to this value.	
	O/M/L1/L2/L3, etc.	Device-specific attributes. For more information about the meaning and value of these parameters, see 6. Sub-devices.	
add	devtype	Device model	Parameters related to newly added devices
	me	Sub-device ID. Parameters obtained by Get eps.	
	name	Device name	
	stat	Device connection status (1: online, 0:	

		offline)	
del	devtype	Device model	Parameters related to deleted devices
	me	Sub-device ID. Parameters obtained by Get eps.	

5. Scenes

OpenDev interfaces support scene query and triggering. Every member of the scene list (array) returned by the scene query request contains the attribute values described in the query attribute description. The specific parameters required for different types of scene triggering are described in the scene triggering attributes. The specific scene number is required for scene triggering, which can be obtained by requesting the scene list.

5.1 Scene Query Attribute Description

Attribute Name	Attribute Value	Attribute Meaning
id	The value is a string that starts with an AI character.	Obtain the scene number in the Smart Station (it is the same as the id parameter in scene triggering control requests).
name	Scene name set by the LifeSmart app	Obtain the scene name in the Smart Station.
desc	Scene description set by the LifeSmart app	Obtain the scene description in the Smart Station.
cls	Includes "scene", "groupirc", "groupsw", "grouphw", and "grouprgbw".	Obtain the scene type in the Smart Station.

5.2 Scene Triggering Attributes

Type (cls)	Name	Parameter	Control Parameter	Control Parameter Value	Scene Type Description
scene	Scene mode	N/A	N/A	N/A	Execute a scene mode.
groupirc	One-button infrared emission	N/A	N/A	N/A	Execute the configured one-button infrared emission scene.
groupsw	One-button switching	args	type	0x81: On 0x80: Off	Turn on or off a group of switches/bulbs.
grouphw	Extreme speed light	args	type	0x81: On 0x80: Off	Set a group of light bulbs. Broadcast

	group			0xff: set the color and turn on the light. 0xfe: set the color and turn off the light.	messages are used for turning on or off. The response is faster.
			RGBW	4byte: WRGB. For more details, see RGBW IO description in 6.5.1 Light Strip and Bulb.	
grouprgbw	Light group	args	type	0x81: On 0x80: Off 0xff: set the color and turn on the light. 0xfe: set the color and turn off the light.	Turn on or off a group of switches/bulbs.
			RGBW	4byte: WRGB. For more details, see RGBW IO description in 6.5.1 Light Strip and Bulb.	

6. Sub-device

In addition to common attributes, each type of the device has specific attribute values. For more information, see section 5.2.

6.1 Common Attributes of Sub-devices

Attribute Name	Attribute Value	Attribute Meaning
devtype		Sub-device type, which distinguishes device types.
fulltype		The complete parameter for the subdevice type, which is a complement to devtype
name		Sub-device name set in the Smart Station

agt		Device ID of the Smart Station to which the sub-device belongs
me	2-byte hexadecimal string ("271f")	Sub-device ID in the Smart Station
stat	0: offline 1: online	Sub-device connection status
lDbm	The value is number, in the unit of dbm	RF signal strength in transmission direction from sub device to smart station
epver	The value is a string, the format is d.d.d.d	sub-devices version
data	The value is in JSON format. It is the device-specific attributes.	Device-specific attributes
valts	The value is a number in the unit of millisecond (ms).	Time when the specific attribute changes. It is used for specific attributes.

6.2 Attributes Specific to Sockets

6.2.1 Traditional Sockets

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description

SL_OL_3C
SL_OL_DE
SL_OL_UK
SL_OL_UL
OD_WE_OT1
	O	Switch	v==1, on
			v==0, off
				RW	To turn on the socket, deliver the following command:
					type=0x81, val=1;
					To turn off the socket, deliver the following command:
					type=0x80, val=0;

6.2.2 Metering Socket

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_OE_W SL_OE_3C SL_OE_DE	O	Switch	v==1, on v==0, off	RW	To turn on the socket, deliver the following command: type=0x81, val=1; To turn off the socket, deliver the following

					command: type=0x80, val=0;
	EE	Electricity amount	v indicates the cumulative power consumption, and the value is a floating point number in kwh.	R	
	EP	Power	Current load power. The value is a floating point number and the unit is W.	R	

6.3 Attributes Specific to Switches

6.3.1 Traditional Switch

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description

SL_SF_RC
SL_SW_RC
SL_SW_IF3
SL_SF_IF3
SL_SW_CP3
SL_SW_RC3
	L1,L2,L3	Switch	v==1, on
			v==0, off
			L1 indicates the first-way switch.
			L2 indicates the second-way switch.
			L3 indicates the third-way switch.
				RW	To turn on the socket, deliver the following command:
					type=0x81, val=1;
					To turn off the socket, deliver the following command:
					type=0x80, val=0;

SL_SW_IF2
SL_SF_IF2
SL_SW_CP2
SL_SW_FE2
SL_SW_RC2
	L1,L2	Switch	v==1, on
			v==0, off
			L1 indicates the first-way switch.
			L2 indicates the second-way switch.
				RW	To turn on the socket, deliver the following command:
					type=0x81, val=1;
					To turn off the socket, deliver the following command:
					type=0x80, val=0;

SL_SW_IF1 SL_SF_IF1 SL_SW_CP1 SL_SW_FE1 SL_SW_RC1	L1	Switch	v==1, on v==0, off L1 indicates the first-way switch.	RW	To turn on, deliver the following command: type=0x81, val=1; To turn off, deliver the following command:

					type=0x80, val=0;

6.3.2 Stellar Switch/Sterry Switch/Polar Switch

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description

SL_SW_ND3	L1,L2,L3	Switch	v==1,on;
			v==0,off;
			L1 indicates the first-way switch.
			L2 indicates the second-way switch.
			L3 indicates the third-way switch.
				RW	To turn on, command as follows:
					type=0x81, val=1;
					To turn off,command as follows:
					type=0x80, val=0;

	V	Electricity amount	v is the battery level. Range (0-100) Units (%)	R	

SL_SW_ND2	L1,L2	Switch	v==1,on;
			v==0,off;
			L1 indicates the first-way switch.
			L2 indicates the second-way switch.
				RW	To turn on, command as follows:
					type=0x81, val=1;
					To turn off,command as follows:
					type=0x80, val=0;

	V	Electricity amount	v is the battery level.	Range (0-100) Units (%)	R

SL_SW_ND1	L1	Switch	v==1,on;
			v==0,off;
			L1 indicates the first-way switch.
				RW	To turn on,
					command as follows:
					type=0x81, val=1;
					To turn off,command as follows:
					type=0x80, val=0;

	V	Electricity amount	v is the battery level. Range (0-100) Units (%)	R	

6.3.3 Polar Switch (LN)

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description

SL_SW_BS3	L1,L2,L3	Switch	v==1, on
			v==0, off
			L1 indicates the first-way switch.
			L2 indicates the second-way switch.
			L3 indicates the third-way switch.
				RW	To turn on the switch, command as follows:
					type=0x81, val=1;
					To turn off the switch, command as follows:
					type=0x80, val=0;

SL_SW_BS2	L1,L2	Switch	v==1, on
			v==0, off
			L1 indicates the first-way switch.
			L2 indicates the second-way switch.
				RW	To turn on the switch, command as follows:
					type=0x81, val=1;
					To turn off the switch, command as follows:
					type=0x80, val=0;

SL_SW_BS1	L1	Switch	v==1, on v==0, off L1 indicates the first-way switch.	RW	To turn on the switch, command as follows: type=0x81, val=1; To turn off the switch, command as follows: type=0x80, val=0

6.3.4 Moonstone Switch

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description

SL_SW_NS3	L1,L2,L3	Switch	v==1, on
			v==0, off
			L1 indicates the first-way switch.
			L2 indicates the second-way switch.
			L3 indicates the third-way switch.
				RW	To turn on , deliver the following command:
					type=0x81, val=1;
					To turn off, deliver the following command:
					type=0x80, val=0;

SL_SW_NS2	L1,L2	Switch	v==1, on v==0, off L1 indicates the first-way switch. L2 indicates the second-way switch.	RW	To turn on, deliver the following command: type=0x81, val=1; To turn off, deliver the following command: type=0x80, val=0;
SL_SW_NS1	L1	Switch	v==1, on v==0, off L1 indicates the first-way switch.	RW	To turn on, deliver the following command: type=0x81, val=1; To turn off, deliver the following command: type=0x80, val=0;

6.3.5 Stellar Switch/Sterry Switch/Polar Multi-control Accessory

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_MC_ND3	L1,L2,L3	Switch	v==1, on v==0, off L1 indicates the first-way switch. L2 indicates the second-way switch. L3 indicates the third-way switch.	RW	To turn on, deliver the following command: type=0x81, val=1; To turn off, deliver the following command: type=0x80, val=0;
	V	Electricity amount	v indicates the battery power. The range is (0-100) in the unit of %.	R	
	B1,B2,B3	Button	v==1, press v==0, release B1 indicates the first button. B2 indicates the second button.	R	

			B3 indicates the third button.		
SL_MC_ND2	L1,L2	Switch	v==1, on v==0, off L1 indicates the first-way switch. L2 indicates the second-way switch.	RW	To turn on, deliver the following command: type=0x81, val=1; To turn off, deliver the following command: type=0x80, val=0;
	V	Electricity amount	v indicates the battery power. The range is (0-100) in the unit of %.	R	
	B1,B2	Button	v==1, press v==0, release B1 indicates the first button. B2 indicates the second button.	R	
SL_MC_ND1	L1	Switch	v==1, on v==0, off L1 indicates the first-way switch.	RW	To turn on, deliver the following command: type=0x81, val=1; To turn off, deliver the following command: type=0x80, val=0;
	V	Electricity amount	v indicates the battery power. The range is (0-100) in the unit of %.	R	
	B1	Button	v==1, press v==0, release B1 indicates the first button.	R	

6.3.6 CUBE Clicker(old version)

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_SC_BB	B	Button	v==1, press v==0, release	R	
	V	Electricity	v indicates the	R	

		amount	battery capacity. The range is (0-100) in the unit of %.		

6.3.7 CUBE Clicker (new version)

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_SC_BB_V2	BN	Button event	v==1, press v==2, double-press v==255, press and hold	R	
	V	Electricity amount	v indicates the battery power. The range is (0-100) in the unit of %.	R	

6.3.8 CUBE Switch Module

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description

SL_SW_MJ2	L1,L2	Switch	v==1, on
			v==0, off
			L1 indicates the first-way switch.
			L2 indicates the second-way switch.
				RW	To turn on the switch, deliver the following command:
					type=0x81, val=1;
					To turn off the socket, deliver the following command:
					type=0x80, val=0;

SL_SW_MJ1	L1	Switch	v==1, on
			v==0, off
			L1 indicates the first-way switch.
				RW	To turn on the switch, deliver the following command:
					type=0x81, val=1;
					To turn off the socket, deliver the following command:
					type=0x80, val=0;

6.3.9 Nature Mini/Nature Mini S/Nature Mini L/Nature Mini Pro(as switch)

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_NATURE	L1,L2,L3	Switch	v==1, on	RW	To turn on, deliver the

			v==0, off
			L1 indicates the first-way switch.
			L2 indicates the second-way switch.
			L3 indicates the third-way switch.
					following command:
					type=0x81, val=1;
					To turn off, deliver the following command:
					type=0x80, val=0;

6.3.10 Smart Remote Controller

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_R_B	eB1	Button event	v==1, press	R	
	eB2	Button event	v==1, press	R	
	eB3	Button event	v==1, press	R	
	eB4	Button event	v==1, press	R	
	eB5	Button event	v==1, press	R	
	eB6	Button event	v==1, press	R	
	eB7	Button event	v==1, press	R	
	eB8	Button event	v==1, press	R	
	V	Electricity amount	v indicates the battery power. The range is (0-100) in the unit of %.	R	

6.4 Attributes Specific to Curtain Controllers

6.4.1 Curtain Control Switch

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_SW_WIN SL_CN_IF SL_CN_FE	OP	Open the curtain (open)	v==1, open the curtain	RW	To turn on the switch, deliver the following command: type=0x81, val=1;

					To turn off the socket, deliver the following command: type=0x80, val=0;

	ST	Stop the curtain (stop)	v==1, stop the curtain	RW	To turn on the switch, deliver the following command:
					type=0x81, val=1;
					To turn off the socket, deliver the following command:
					type=0x80, val=0;

	ST	Close the curtain (close)	v==1, close the curtain	RW	To turn on the switch, deliver the following command:
					type=0x81, val=1;
					To turn off the socket, deliver the following command:
					type=0x80, val=0;

6.4.2 DOOYA Curtain Motor

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_DOOYA	P1	Curtain state	Type%2==1, The control is underway. Type%2==0, The control is not underway. When the control is underway (that is, type%2==1), Val&0x80==0x80 indicates that the curtain is being opened. Otherwise, it is being closed. The value of val&0x7F indicates	R	

			the percentage of curtain opening ([0,100]). If the value of val&0x7F is greater than 100, the curtain opening state cannot be obtained. It can be obtained only after the curtain is fully opened or closed.		

	P2	Curtain control	Delivered percentage of curtain opening	RW	To fully open the curtain, deliver the following command:
					type=0xCF, val=100;
					To fully close the curtain, deliver the following command:
					type=0xCF, val=0;
					To stop the curtain, deliver the following command:
					type=0xCE, val=0x80;
					To open the curtain to a specific percentage, deliver the following command:
					Type=0xCF, val=percent;
					percentage value: [0,100];

6.4.3 MINS Curtain Motor Controller

The devtype of the MINS curtain motor controller is SL_P. The specific attributes are the same as those of the general controller. However, only three attributes P2, P2, and P4 are used for curtain control. The attribute P8 indicates the power capacity. For details, see 6.9.1 General Controller.

6.5 Attributes Specific to Lighting Devices

6.5.1 Light Strip and Bulb

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_CT_RGBW SL_LI_RGBW	RGBW	RGBW color value	Type%2==1, on Type%2==0, off The value of val is a color value and is 4 bytes in size. It is defined as follows: bit0~bit7: Blue bit8~bit15: Green bit16~bit23: Red bit24~bit31: White For example: Red: 0x00FF0000 White: 0xFF000000	RW	Turn on the light: type=0x81, val=1; Turn off the light: type=0x80, val=0; Turn on the light and set the color value: Type=0xff, val=color value; Turn off the light and set the color value: Type=0xfe, val=color value; Note: If the action is "turn off", the light device will be turned off. If the action is "turn on", you need to refer to the DYN configuration. If DYN is enabled, the DYN configuration has a higher priority than the RGBW configuration. If you only want to display the color, please disable DYN. You can set the DYN and RGBW values together by calling the SET eps interface commands.
	DYN	Dynamic color value	Type%2==1, enable dynamic color Type%2==0, disable dynamic color val indicates the dynamic color value. For specific dynamic color values, see	RW	Enable: type=0x81, val=1; Disable: type=0x80, val=0; Enable and set dynamic color values: Type=0xff, val=dynamic color value; Disable and set dynamic color values: type=0xfe,

			Appendix 7.2 Dynamic Color (DYN) Definition.		val=dynamic color value; Note: Currently, DYN configurations cannot be delivered separately and must be delivered with RGBW configurations. Please use the EpsSet interface commands to set the DYN and RGBW values together. If the current light is turned off, you need to enable RGBW, that is RGBW type=0x81; val=1. Then set DYN to specific values.
SL_SC_RGB	RGB	RGB color value	Type%2==1, on Type%2==0, off The value of val is a color value and is 4 bytes in size. It is defined as follows: bit0~bit7:Blue bit8~bit15: Green bit16~bit23:Red bit24~bit31:White (When White> =128, dynamic mode is used) For more information about specific dynamic values, see Appendix 7.2 Dynamic Color (DYN) Definition.	RW	Turn on the light: type=0x81, val=1; Turn off the light: type=0x80, val=0; Turn on the light and set the color or enable dynamic color: Type=0xff, val=color or dynamic value; Turn off the light and set the color or enable dynamic color: type=0xfe, val=color or dynamic value;

6.5.2 SPOT

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description

MSL_IRCTL	RGBW	RGBW color value	Type%2==1, on Type%2==0, off The value of val is a color value and is 4 bytes in size. It is defined as follows: bit0~bit7: Blue bit8~bit15: Green bit16~bit23: Red bit24~bit31: White For example: Red: 0x00FF0000 White: 0xFF000000	RW	Turn on the light: type=0x81, val=1; Turn off the light: type=0x80, val=0; Turn on the light and set the color value: Type=0xff, val=color value; Turn off the light and set the color value: Type=0xfe, val=color value; Note: If the action is "turn off", the light device will be turned off. If the action is "turn on", you need to refer to the DYN configuration. If DYN is enabled, the DYN configuration has a higher priority than the RGBW configuration. If you only want to display the color, please disable DYN. You can set the DYN and RGBW values together by calling the SET eps interface commands.
	DYN	Dynamic color value	Type%2==1, enable dynamic color Type%2==0, off Dynamic val indicates the dynamic color value. For specific dynamic color values, see Appendix 7.2	RW	Enable: type=0x81, val=1; Disable: type=0x80, val=0; Enable and set dynamic color values: Type=0xff, val=dynamic color value; Disable and set dynamic

			Dynamic Color (DYN) Definition.		color values: type=0xfe, val=dynamic color value; Note: Currently, DYN configurations cannot be delivered separately and must be delivered with RGBW configurations. Please use the EpsSet interface commands to set the DYN and RGBW values together. If the current light is turned off, you need to enable RGBW, that is RGBW type=0x81; val=1. Then set DYN to specific values.
OD_WE_IRCTL	RGB	RGB color value	Type%2==1, on Type%2==0, off The value of val is a color value and is 4 bytes in size. It is defined as follows: bit0~bit7: Blue bit8~bit15: Green bit16~bit23: Red bit24~bit31: White (When White> =128, the dynamic mode is used) For more information about specific dynamic values, see Appendix 7.2 Dynamic Color (DYN) Definition.	RW	Turn on the light: type=0x81, val=1; Turn off the light: type=0x80, val=0; Turn on the light and set the color or enable dynamic color: Type=0xff, val=color or dynamic value; Turn off the light and set the color or enable dynamic color: type=0xfe, val=color or dynamic value;
SL_SPOT	RGB	RGB color value	Type%2==1, on Type%2==0, off The value of val is a	RW	Turn on the light: type=0x81, val=1; Turn off the light:

			color value and is 4 bytes in size. It is defined as follows: bit0~bit7: Blue bit8~bit15: Green bit16~bit23: Red bit24~bit31: White (When White>=128, dynamic mode is used) For more information about specific dynamic values, see Appendix 7.2 Dynamic Color (DYN) Definition.		type=0x80, val=0; Turn on the light and set the color or enable dynamic color: Type=0xff, val=color or dynamic value; Turn off the light and set the color or enable dynamic color: type=0xfe, val=color or dynamic value;
SL_P_IR	P2	Pairing button status	For the 922 RF version of the Spot (mini), fulltype=sl_ P_ IR_ V2, P2 is used to indicate the pairing button status. type%2==1,indicates the pairing button is pressed; type%2==0,indicates the pairing button is released; Note: P2 only indicates the pairing button is pressed, not indicates whether it is currently in the pairing state P2 for the 433 RF Spot(mini),	R	

			fulltype=sl_ P_ IR_ V1 does not exist.		

6.5.3 Lights Series

Devtype/Cls	IO idx	IO Name	Description of Attribute value	RW	Description of Issued Command

SL_LI_GD1	L	Brightness value	type%2==1,turn on;
			type%2==0,turn off;
			val value is the brightness value whose size is 1 byte with a range of [0~255].
			0 is 0% brightness,
			255 is 100% brightness.
				RW	turn on: type=0x81, val=1;
					turn off: type=0x80, val=0;
					turn on and set the brightness:
					type=207, val=brightness value;
					turn off and set the brightness：
					type=206, val=brightness value;

	M	Motion detection	v==1, motion detected; v==0, No motion detected;	R	
	Z	Illumination intensity	v value means Illumination intensity with unit(lux)	R	
SL_SPWM	L	Brightness value	type%2==1, turn on;	type%2==0,turn off;	

SL_SW_DM1	L	Brightness value	type%2==1, turn on;
			type%2==0,turn off;
			val value is the brightness value whose size is 1 byte with a range of [0~255].
			0 is 0% brightness,
			255 is 100% brightness.
				RW	turn on: type=0x81, val=1;
					turn off: type=0x80, val=0;
					turn on and set the brightness:
					type=207, val=brightness value;
					turn off and set the brightness：
					type=206, val=brightness value;

	I	Indicator	type%2==1,turn on;
			type%2==0,turn off;
			
			The val is the brightness level whose size is 2 byte,defined as follows:
			
			bit0~bit7:
			brightness of indicators when the light is off,with the range of [0~255]
			
			bit8~bit15:
			brightness of indicators when the light is on ,withe the range of [0~255]
				RW	To turn on the indicator,command as follows:
					type=0x81, val=1;
					To turn off the indicator,command as follows:
					type=0x80, val=0;
					
					Enable and set the brightness value when the light is on and the brightness value when the light is off:
					type=223,
					val= the brightness value when the light is on | the brightness value when the light is off.
					
					Turn off and set the brightness value when the light is on and the brightness value when the light is off:
					type=222,
					val= the brightness value when the light is on | the brightness value when the light is off.

	M	Motion detection	v==1, move detected; v==0, no movement detected;	R	
	Z	Illuminati on intensity	v value means Illumination intensity with unit(lux)	R	

SL_LI_WW	P1	Brightnes s value	type%2==1, turn on;
			type%2==0,turn off;
			
			val value is the brightness value whose size is 1 byte with a range of [0~255].
			0 is 0% brightness,
			255 is 100% brightness.
				RW	turn on: type=0x81, val=1;
					turn off: type=0x80, val=0;
					turn on and set the brightness:
					type=207, val=brightness value;
					turn off and set the brightness：
					type=206, val=brightness value;

	P2	Color temperat ure control	val value is the color temperature value whose value range is [0,255].0 means warm light, 255 means cool	RW	To set the color tempertur,command as follows: type=207, val=color temperature value,

			light;		color temperature value=[0,255]

6.6 Attributes Specific to Sensors

6.6.1 Door Sensors

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_SC_G	G	Door state	v==1, closed v==0, open	R	
	V	Electricity amount	v indicates the battery power. The range is (0-100) in the unit of %.	R	
SL_SC_BG	G	Door state	v==1, closed v==0, open	R	
	V	Electricity amount	v indicates the battery power. The range is (0-100) in the unit of %.	R	
	B	Button	v==1, press v==0, release	R	
	AXS	Vibration state	v==0 indicates no vibration. Non-zero values of v indicates vibration.	R	

6.6.2 Dynamic Sensor

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_SC_MHW	M	Movement detection	v==1, indicates that movement is detected. v==0, indicates that no movement has been	R	

			detected.		
	V	Electricity amount	v indicates the battery capacity. The range is (0-100) in the unit of %.	R	
SL_SC_BM SL_SC_CM	M	Movement detection	v==1, indicates that movement is detected. v==0, indicates that no movement has been detected.	R	
	Z	Illuminance	The value of v represents the illuminance in lux.	R	
	V	Electricity amount	v indicates the battery capacity. The range is (0-100) in the unit of %.	R	

6.6.3 Environmental Sensor

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_SC_THL SL_SC_BE	T	Ambient temperature	The value of v represents the temperature in °C.	R	
	H	Ambient humidity	The value of v represents the humidity in %.	R	
	Z	Illuminance	The value of v represents the illuminance in lux.	R	
	V	Electricity amount	v indicates the battery capacity. The range is (0-100) in the unit of %.	R	

6.6.4 Water Leak Sensor

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_SC_WA	WA	Conductivity	v==0, indicates that no water is detected. v > 0, A larger value indicates more water and a higher conductivity.	R	
	V	Electricity amount	v indicates the battery capacity. The range is (0-100) in the unit of %.	R	

6.6.5 Gas Sensor (Formaldehyde)

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_SC_CH	CH2O	Formaldehyde concentration	The value of v represents the current formaldehyde concentration in the unit of mg/m3. The safe formaldehyde concentration range is [0,0.086] mg/m3.	R	
	O	Alarm status	1: Alarming 0: Normal	R	
	V	Electricity amount	v indicates the battery capacity. The range is (0-100) in the unit of %.	R	

6.6.6 Gas Sensor (Gas)

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description

SL_SC_CP	ANALOG	Gas concentration	The value of v represents the current gas concentration.	R	
	O	Alarm status	1: Alarming 0: Normal	R	
	V	Electricity amount	v indicates the battery capacity. The range is (0-100) in the unit of %.	R	

6.6.7 Environmental Sensor (TVOC+CO2)

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_SC_CQ	T	Ambient temperature	The value of v represents the temperature in °C.	R	
	H	Ambient humidity	The value of v represents the humidity in %.	R	
	CO2	CO2 concentration	The value of v represents the CO2 concentration in the unit of ppm. The following ranges are defined for reference. val <= 500: excellent val <= 700: good val <= 1000: medium val > 1000: poor	R	
	TVOC	TVOC concentration	The value of v represents the TVOC concentration in the unit of mg/m³. The following ranges are defined for	R	

			reference. val < 0.34: excellent val < 0.68: good val <= 1.02: medium val > 1.02: poor		
	V	Electricity amount	v indicates the battery capacity. The range is (0-100) in the unit of %.	R	

6.6.8 Smoke Sensor

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_P_A	P1	Is there an alarm?	v==1, indicates that there is a smoke alarm. v==0, indicates that there is no smoke alarm.	R	
	P2	Voltage	val indicates the voltage value in the unit of V. If a 9 V battery is used, the actual voltage value is (val/100)*3. Note that its value may exceed 9 V, for example, 9.58 V. This value is invalid if an external 12 V power supply is used.	R	

6.6.9 Environmental Sensor (CO2)

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_SC_CA	T	Ambient temperature	The value of v represents the temperature in °C.	R	
	H	Ambient humidity	The value of v represents the humidity in %.	R	
	CO2	CO2	The value of v represents	R	

		concentration	the CO2 concentration in the unit of ppm. The following ranges are defined for reference. val <= 500: excellent val <= 700: good val <= 1000: medium val > 1000: poor		
	V	Electricity amount	v indicates the battery capacity. The range is (0-100) in the unit of %.	R	

6.7 Attributes Specific to Smart Door Locks

6.7.1 Smart Door Locks

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
	BAT	Electricity amount	v indicates the battery capacity. The range is (0-100) in the unit of %.	R	
	ALM	Alarm information	The values of val are defined as follows: bit0: 1 indicates an error alarm (an alarm is generated if you try the wrong password or fingerprint or card more than 10 times). bit1: 1 indicates the kidnapping alarm (an alarm is generated if you use the anti-kidnapping password or anti-kidnapping fingerprint for unlocking). bit2: 1 indicates the anti-smashing alarm (lock is picked). bit3: 1 indicates the mechanical key alarm (a	R	

			mechanical key is used for unlocking). bit4: 1 indicates a low voltage alarm (low battery capacity). bit5: 1 indicates the alarm for abnormal actions. bit6: 1 indicates the doorbell. bit7: 1 indicates a fire alarm. bit8: 1 indicates the intrusion alarm.		
	EVTOP	Operation record	The length of val is 8, 24, or 32 bits. You can obtain the length based on the type. The method is as follows: Type=0x40+(8-1)*2 or type=0x40+(16-1)*2 or type=0x40+(32-1)*2 The general encoding order for val is as follows: [1-byte record type] [2-byte user ID] [1-byte user flag] User flag: bit01=11 indicates the administrator. bit01=01 indicates a common user. bit01=00 indicates that the user has been deleted.	R	
SL_LK_LS SL_LK_GTM SL_LK_AG SL_LK_SG SL_LK_YL	EVTLO	Real-time lock information	Type%2==1, locked Type%2==0, unlocked The values of val are defined as follows: bits 0 to 11 indicate user ID. bits 12 to 15 indicate the unlocking method. 0: not defined;	R	

			1: password; 2: fingerprint; 3: NFC; 4: mechanical key; 5: remote unlocking; 6: One-key unlocking (unlocking signals); 7: Unlocking via app 15: An error occurred. bits 16 to 27 indicate user ID. bits 28 to 31 indicate the unlocking method (as defined above). Note: Two methods may be used at the same time to open the door lock. In this case, bits 0 to 15 and bits 16 to 31 indicate respective unlocking information. If one method is used, bits 0 to 15 indicate the unlocking information and other bits are set to 0.		
	HISLK	Information about the last unlocking action	Type%2==1, locked Type%2==0, unlocked The values of val are defined as follows: bits 0 to 11 indicate user ID. bits 12 to 15 indicate the unlocking method. 0: not defined; 1: password; 2: fingerprint; 3: NFC; 4: mechanical key; 5: remote unlocking; 6: One-key unlocking	R	

			(unlocking signals); 7: Unlocking via app 15: An error occurred. bits 16 to 27 indicate user ID. bits 28 to 31 indicate the unlocking method (as defined above).		

6.7.2 C100/C200 doorlock

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
	BAT	Electricity amount	v indicates the battery capacity. The range is (0-100) in the unit of %.	R	
	ALM	Alarm information	The values of val are defined as follows: bit0: 1 indicates an error alarm (an alarm is generated if you try the wrong password or fingerprint or card more than 10 times). bit1: 1 indicates the kidnapping alarm (an alarm is generated if you use the anti-kidnapping password or anti-kidnapping fingerprint for unlocking). bit2: 1 indicates the anti-smashing alarm (lock is picked). bit3: 1 indicates the mechanical key alarm (a mechanical key is used for unlocking). bit4: 1 indicates a low voltage alarm (low battery	R	

			capacity). bit5: 1 indicates the alarm for abnormal actions. bit6: 1 indicates the doorbell. bit7: 1 indicates a fire alarm. bit8: 1 indicates the intrusion alarm. bit11: 1 indicates return to factory default alarm.		
	EVEBELL	Bell information	type%2=1 indicates that there is a doorbell message. type%2=0 indicates that there is nodoorbell message.	R	
	EVTOP	Operation record	The length of val is 8, 24, or 32 bits. You can obtain the length based on the type. The method is as follows: Type=0x40+(8-1)*2 or type=0x40+(16-1)*2 or type=0x40+(32-1)*2 The general encoding order for val is as follows: [1-byte record type] [2-byte user ID] [1-byte user flag] User flag: bit01=11 indicates the administrator. bit01=01 indicates a common user. bit01=00 indicates that the user has been deleted.	R	
SL_LK_LS SL_LK_GTM	EVTLO	Real-time lock	Type%2==1, locked Type%2==0, unlocked	R	

SL_LK_AG SL_LK_SG SL_LK_YL		information	The values of val are defined as follows: bits 0 to 11 indicate user ID. bits 12 to 15 indicate the unlocking method. 0: not defined; 1: password; 2: fingerprint; 3: NFC; 4: mechanical key; 5: remote unlocking; 6: One-key unlocking (unlocking signals); 7: Unlocking via app 15: An error occurred. bits 16 to 27 indicate user ID. bits 28 to 31 indicate the unlocking method (as defined above). Note: Two methods may be used at the same time to open the door lock. In this case, bits 0 to 15 and bits 16 to 31 indicate respective unlocking information. If one method is used, bits 0 to 15 indicate the unlocking information and other bits are set to 0.		
	HISLK	Information about the last unlocking action	Type%2==1, locked Type%2==0, unlocked The values of val are defined as follows: bits 0 to 11 indicate user ID. bits 12 to 15 indicate the unlocking method. 0: not defined;	R	

			1: password; 2: fingerprint; 3: NFC; 4: mechanical key; 5: remote unlocking; 6: One-key unlocking (unlocking signals); 7: Unlocking via app 15: An error occurred. bits 16 to 27 indicate user ID. bits 28 to 31 indicate the unlocking method (as defined above).		

6.8 Attributes Specific to Temperature Controllers

6.8.1 HVAC Controller

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description

SL_TR_XX	P1	Central air conditioning system information	The low 24-bit value of val is used to distinguish the types of central air conditioning systems. Currently, two types are supported.
			val&0xffffff=0x000001;
			val&0xffffff=0x000002;
			Note: For central air conditioning systems, the control panels should be searched by using the cfg: airctrl commands. For details, see the description of cfg:airctrl commands in 3.3.10. Configuration Commands of the Smart Station.
				R	

6.8.2 Control Panel of HVAC Controller

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
V_AIR_P	ALM	Alarm status	v> 1, indicates an alarm. v==0, off;	R	

	O	Switch	v==1, open;
			v==0, off;
				RW	To turn on the switch, deliver the following command:
					type=0x81, val=1;
					To turn off the socket, deliver the following command:
					type=0x80, val=0;

	MODE	Mode	v indicates the modes, which are defined as follows: 1: Auto 2: Fan 3: Cooling 4: Heating 5: Dehumidification	RW	In the command, type is 0xCE. The definition of values of val is the same as the attribute value description.
	F	Wind speed	v represents the wind speeds, which are defined as follows: val<30: low val<65: medium Val> =65: high	RW	In the command, type is 0xCE. The values of val are as follows: Low, val=15; Medium, val=45; High, val=75;
	tT	Target temperature	The value of v represents the temperature in °C.	RW	In the command, type is 0x88. val needs to be set to the original temperature value, that is, the target temperature value*10. For example, if the set temperature is 25℃, val=250 should be delivered.
	T	Current	The value of v	R	

		temperatur e	represents the temperature in °C.		

6.8.3 Underfloor Thermostat

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description

SL_CP_DN	P1	System configuration	For details about the type and val fields of this IO, see Table 6-8-3.	RW	To turn on the socket, deliver the following command:
					type=0x81, val=1;
					To turn off the socket, deliver the following command:
					type=0x80, val=0;
					If you need to modify the configuration of val, remain the current value of type unchanged and set val to the target value.

	P2	Valve switch	v==1, on; v==0, off;	R	
	P3	Target temperature	The value of v represents the temperature value in the unit of °C.	RW	In the command, type is 0x88. val needs to be set to the original temperature value, that is, the target temperature value*10. For example, if the set temperature is 25℃, val=250 should be delivered.
	P4	Indoor temperature	The value of v represents the temperature value in the unit of °C.	R	
	P5	Floor temperature	The value of v represents the temperature value in the unit of °C.	R	

TYPE Explanation	The lowest bit indicates the running state of the system. 0:OFF 1:ON										
VAL Explanation	Bit Number	31	24~19	18~17	16~15	14~11	10~8	7~3	2	1	0
	Setting	Mode: 0: manual mode 1: automatic mode	Temperature limit = val + 40	Temperature control mode	Time period	External probe difference = (val-10)/5	Internal probe difference = (val-10)/5	Temperature correction = val/2 + 5	Anti-freezing	Power status after power failure	Backlight

Table 6-8-3

6.8.4 Fan Coil Thermostat

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description

SL_CP_AIR	P1	System configuration	For details about the type and val fields of this IO, see Table 6-8-4.	RW	To turn on the switch, deliver the following command:
					type=0x81, val=1;
					To turn off the socket, deliver the following command:
					type=0x80, val=0;
					If you need to modify the configuration of val, remain the current value of type unchanged and set val to the target value.

	P2	Valve switch	v==1, on; v==0, off;	R	
	P4	Target	The value of v	RW	In the command, type is

	temperature	represents the temperature value in the unit of °C.		0x88. val needs to be set to the original temperature value, that is, the target temperature value*10. For example, if the set temperature is 25℃, val=250 should be delivered.
P5	Indoor temperature	The value of v represents the temperature value in the unit of °C.	R	

TYPE Explanation	The lowest bit indicates the running state of the system. 0:OFF 1:ON							
VAL Explanation	Bit Number	16~15	14~13	12~8	7~3	2	1	0
	Setting	Wind speed: 0: automatic; 1~3: 1~3 levels;	Mode: 0: cooling; 1: heating; 2: ventilation;	Dt0 external probe difference = val/2	Temperature correction = val/2 + 5	sat State after power failure	Backlight	Fan Fn

Table 6-8-4

6.8.5 Air Conditioner Control Panel

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_UACCB	ALM	Alarm status	v>1, indicates an alarm. v==0, off;	R	
	O	Switch	v==1, on; v==0, off;	RW	To turn on the socket, deliver the following command: type=0x81, val=1; To turn off the socket,

					deliver the following command: type=0x80, val=0;
	MODE	Mode	v indicates the modes, which are defined as follows: 1: Auto 2: Fan 3: Cooling 4: Heating 5: Dehumidification	RW	In the command, type is 0xCE. The definition of values of val is the same as the attribute value description.
	F	Wind speed	v represents the wind speeds, which are defined as follows: val<30: low val<65: medium Val>=65: high	RW	In the command, type is 0xCE. The values of val are as follows: Low, val=15; Medium, val=45; High, val=75;
	tT	Target temperature	The value of v represents the temperature value in the unit of °C.	RW	In the command, type is 0x88. val needs to be set to the original temperature value, that is, the target temperature value*10. For example, if the set temperature is 25℃, val=250 should be delivered.
	T	Current temperature	The value of v represents the temperature value in the unit of °C.	R	

6.8.6 Nature Mini Pro(Thermostat)

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_NATURE	L1	Switch	v==1, on; v==0, off;	RW	To turn on , deliver the following command: type=0x81, val=1; To turn off , deliver the following command:

					type=0x80, val=0;

	L2	Valve1	v==1, open;
			v==0, off;
			Note: the valve status is used to indicate the actual working status of the current equipment. The valve is mainly connected to the hot and cold valve of the coil
				R	

	L3	Valve2	v==1, open;
			v==0, off;
			Note: the valve status is used to indicate the actual working status of the current equipment. The valve is mainly connected to the hot valve of the value or floor heating valve.
				R	

	T	Current temperatur e	The value of v represents the temperature value in the unit of °C.	R	
	P5	Device type	Val indicates the device type, The format is 0xAABB, AA :useless, BB :equipment type, BB=1, switch; BB=2 Poe panel; Bb=3,temperature control panel; Note: If there is no P5	R	

		attribute, it is also a switch		
P6	HVAC configuration	For details about the type and val fields of this IO, refer to Table 6-8-6.	RW	If you need to modify the configuration of Val, : Type :keeps the current value; Val : equal to the value to be configured;
P7	Mode	Type=0xCE, fixed; val indicates the modes, which are defined as follows: 1: Auto 2: Fan 3: Cool 4: Heat 5: Dry 7:Warm 8:Warm+Heat	RW	command as follows: type=0xce, The Val value definition is the same as the attribute value description.
P8	Target temperature	Type=0x88, fixed; Val:the original temperature value, which is an integer of temperature value *10. Temperature unit: ℃	RW	When issuing the command, type=0x88, Val needs to use the original temperature value, i.e. the target temperature value *10. For example, if the setting temperature is 25 ℃, val=250 should be issued
P9	Target wind speed	type=0xCE;fixed val is wind speed which defined as follows: val=0:stop val<30: low val<65: medium Val>=65: high val>100:auto	RW	When issuing the command, type=0xce, val are as follows stop:val=0 low:val=15 medium:val=45 high:val=75 auto:val=105

	P10	Current wind speed	val is wind speed which defined as follows: val=0:stop val<30: low val<65: medium Val>=65: high val>100:auto	R	

TYPE Explanation	Fixed 0xFE			
VAL Explanation	Bit	11~9	8~6	5~0
	Setting contents	Temperature return difference, (v+1) *0.25 as temperature return difference parameter	HVAC settings: 0: fresh air; 1: Fan coil unit (single valve) mode; 2: Water heating mode; 3: Fan coil + water heating; 4: Fan coil double valve; 5: Ground heating + fresh air;	Temperature correction, 6-digit signed integer, range [-8,+8]

Table 6-8-6

6.8.7 Nature Thermostat

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description

SL_FCU	O	Switch	v==1, open;
			v==0, off;
				RW	To turn on,deliver the following command:
					type=0x81, val=1;
					To turn off,deliver the following command:
					type=0x80, val=0;

	VALVE 1	Valve1	v==1, open;
			v==0, off;
			Note: the valve status is used to indicate the
				R	

		actual working status of the current equipment. The valve is mainly connected to the hot and cold valve of the coil		

VALVE 2	Valve2	v==1, open;
		v==0, off;
		Note: the valve status is used to indicate the actual working status of the current equipment. The valve is mainly connected to the hot valve of the coil or floor heating valve.
			R	

T	Current temperatur e	The value of v represents the temperature value in the unit of °C.	R	
P5	Device type	Val indicates the equipment type, The format is 0xAABB, AA useless, BB equipment type, Bb=3,temperature control panel;	R	
P6	HVAC configuratio n	For details about the type and val fields of this IO, see Table 6-8-6.	RW	If you need to modify the configuration of Val, issue: Type keeps the current value; Val is equal to the value to be configured;
P7	Mode	Type=0xCE, fixed; val indicates the modes, which are	RW	When issuing the command, type=0xce,

			defined as follows: 1: Auto 2: Fan 3: Cool 4: Heat 5: Dry 7:Warm 8:Warm+Heat		The Val value definition is the same as the attribute value description.
	P8	Target temperature	Type=0x88, fixed; Val refers to the original temperature value, which is an integer of temperature value *10. Temperature unit: ℃	RW	When issuing the command, type=0x88, Val needs to use the original temperature value, i.e. the target temperature value *10. For example, if the setting temperature is 25 ℃, val=250 should be issued
	P9	Target wind speed	type=0xCE;fixed val is wind speed;which defined as follows: val=0:stop val<30: low val<65: medium Val>=65: high val>100:auto	RW	When issuing the command, type=0xCE, val are as follows stop:val=0 low:val=15 medium:val=45 high:val=75 auto:val=105
	P10	Current wind speed	val is wind speed;which are defined as follows: val=0:stop val<30: low val<65: medium Val>=65: high val>100:auto	R	

TYPE Explan	Fixed 0xFE

ation				
VAL Explanation	Bit	11~9	8~6	5~0
	Setting contents	Temperature return difference, (v+1) *0.25 as temperature return difference parameter	HVAC settings: 0: fresh air; 1: Fan coil unit (single valve) mode; 2: Water heating mode; 3: Fan coil + water heating; 4: Fan coil double valve; 5: Ground heating + fresh air;	Temperature correction, 6-digit signed integer, range [-8,+8]

Table 6-8-6

6.8.8 Thermostatic Radiator Valve

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description

SL_CP_VL	P1	System configuration	For details about the type and val fields of this IO, see Table 6-8-4.	RW	To turn on the switch, deliver the following command:
					type=0x81, val=1;
					To turn off the socket, deliver the following command:
					type=0x80, val=0;
					If you need to modify the configuration of val, remain the current value of type unchanged and set val to the target value.

	P2	Valve switch	v==1, on; v==0, off;	R	

	tT	Target temperature	The value of v represents the temperature value in the unit of °C.	RW	In the command, type is 0x88. val needs to be set to the original temperature value, that is, the target temperature value*10. For example, if the set temperature is 25℃, val=250 should be delivered.
	T	Current temperature	The value of v represents the temperature value in the unit of °C.	R	
	ALM	Alarm status	**Val indicates alarm information:** Bit0: high temperature protection Bit1: low temperature protection bit2:int_ sensor bit3:ext_ sensor Bit4: Low battery Bit5: The device is offline	R	
	V	Electricity amount	v indicates the battery capacity. The range is (0-100) in the unit of %.	R	

TYPE Explanation	least significant digit indicates the system startup status

	0:OFF 1:ON		
VAL Explanation	BIT	2~1	0
	Setting contents	A value of 0 indicates manual mode; A value of 1 indicates energy saving mode; A value of 2 indicates automatic mode;	A value of 0 indicates that the child lock is disabled. A value of 1 indicates that the child lock is enabled.

6.8.9 HVAC Smart Controller- ventilation

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description

V_FRESH_P	O	Switch	v==1, on;
			v==0, off;
				RW	To turn on the socket, deliver the following command:
					type=0x81, val=1;
					To turn off the socket, deliver the following command:
					type=0x80, val=0;

	O1	Switch	v==1, on; v==0, off;	RW	To turn on the socket, deliver the following command: type=0x81, val=1; To turn off the socket, deliver the following command:

					type=0x80, val=0;
	MODE	Mode	v is the mode. See Note 2 for definitions of each version.	RW	type=0xCE when the command is sent, val value setting mode, see Note 2 for version control;
	F	Wing speed	v is wind speed, which is defined as follows: v<0: stops. v<30: low; v<65: medium; v>=65: high grade;	RW	type=0xCE when the command is sent, val values are as follows: Stop, val=0; Low, val=15; Middle, val=45; High grade, val=75; Where ver=8, 9, 16, 31 Device does not support stop (val=0)
	F1	blower	v is wind speed, which is defined as follows: v<0: stops. v<30: low; v<65: medium; v>=65: high grade;	RW	type=0xCE when the command is sent, val values are as follows: Stop, val=0; Low, val=15; Middle, val=45; High grade, val=75;

	F2	Exhaust fan	v is wind speed, which is defined as follows: v<0: stops. v<30: low; v<65: medium; v>=65: high grade;	RW	type=0xCE when the command is sent, val values are as follows: Stop, val=0; Low, val=15; Middle, val=45; High grade, val=75;
	H	Ambient humidity	The value of v represents the humidity in %.	R	
	T	Current temperature	The value of v represents the temperature value in the unit of ℃.	R	
	T2	Temperature 2	The v value is the temperature value, v > 100 indicates an error, Unit: ℃	R	

Note1：Not all of the preceding IO idx all exist in the panels. Different versions of fresh air panels correspond to different external computers, so different IO idx and V_FRESH_P versions exist. You can see the ver attribute of the device.

Note2：Different models correspond to different versions of fresh air panels. The value of MODE means different meanings. For the device version, see the ver attribute

•ver=3:
Bits 0-1:0x01: manual, 0x10: timed
2-3 bits: 0x01: Heat exchange, 0x10: Frost proof
•ver=8:
v=1: automatic; v=2: blow air; v=9: sleep; v=10: time period;
•ver=9, 14, 31: none MODE;

•ver=16:
v=1: automatic; v=6: purification; v=12: internal cycle; v=13: outer cycle.

6.9 Attributes Specific to General Controller

6.9.1 General Controller

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_P	P1	Configuration	See the note in this section.	RW	See the note in this section.

	P2	Control port 1	type%2==1, on
			Type%2==0, off
				RW	To turn on the socket, deliver the following command:
					type=0x81, val=1;
					To turn off the socket, deliver the following command:
					type=0x80, val=0;

	P3	Control port 2	type%2==1, on
			Type%2==0, off
				RW	To turn on the switch, deliver the following command:
					type=0x81, val=1;
					To turn off the socket, deliver the following command:
					type=0x80, val=0;

	P4	Control port 3	type%2==1, on Type%2==0, off	RW	To turn on the switch, deliver the following command: type=0x81, val=1; To turn off the socket, deliver the following command:

				type=0x80, val=0;
P5	State port 1	Type%2==1 indicates state triggering. It is valid only in free mode.	R	
P6	State port 2	Type%2==1 indicates state triggering. It is valid only in free mode.	R	
P7	State port 3	Type%2==1 indicates state triggering. It is valid only in free mode.	R	
P8	Electricity amount	**v** indicates the battery capacity. The range is (0-100) in the unit %. It is applicable only to the MINS curtain motor controller.	R	

Note:

- The working modes of P2, P3, and P4 are determined by P1. The **val** value of P1 is a 32-bit integer, which is described as follows: bit 31 value: 1 indicates software setting. 0 indicates the working mode is set by the hardware itself. (val > > 24) & 0xe

  0: free mode

  2: two-wire curtain

  4: three-wire curtain

  6: DC motor

  8: three-way switch

  10: three-way switch (rocker)

  Jogging and holding: (val > > 24) & 1

  0: holding, for example, switch

  1: Jogging. Move when the button is pressed. Stop when the button is released.

  When modifying the value of P1, you need to keep data of unmodified bits unchanged.

- If the working mode is two-wire curtain, three-wire curtain, or DC motor:

  P2 means to open the curtain. P3 means to close the curtain. P4 means to stop the curtain.

  For details, see 6.4.1 Curtain Control Switch.

- If the working mode is three-way switch or three-way switch (rocker):

  P2 indicates the first-way switch. P3 indicates the second-way switch. P4 indicates the third-way switch.

  For details, see 6.3.1 Traditional Switch.

- If the working mode is free mode, P5, P6, and P7 indicate the status.

They can be connected to the different relay output dry contacts of the sensor device with wired output (such as smoke sensor, gas sensor, infrared fence, flame sensor, etc.). When detecting signals, P5, P6 and P7 will react accordingly.

6.9.2 485 Controller

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
V_485_P	P1	Value	the value of the current access device. 'val' is in terms of IEEE 754 standard float 32-bit integer, 'v' is a float number with the unit is the current unit of the specific access device. For example, if the access device is a pressure sensor, then val is the current pressure value of the access device, in the units set by the access device.	RW	Caution: 'val' is in terms of IEEE 754 standard float 32-bit integer. Example:1024913643 presents a float number 0.03685085, the integer number could be calculated by the float number. More details: IO float type instruction

6.9.3 DLT Smart Plug

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description

V_DLT_645_P	EE	Electricity consumption	v==1, indicates that no sound is playing. v==0, indicates that sounds are playing.	R	Caution: 'val' is in terms of IEEE 754 standard float 32-bit integer. Example:1024913643 presents a float number 0.03685085, the integer number could be calculated by the float number. More details: IO float
	EP	Power	Current load power, 'val' is in terms of IEEE 754 standard float 32-bit integer, 'v' is a float number with w.	R	Caution: 'val' is in terms of IEEE 754 standard float 32-bit integer. Example:1024913643 presents a float number 0.03685085, the integer number could be calculated by the float number. More details: IO float type instruction

6.9.4 HA Interface Adapter (JEMA)

Devtype/Cls	IO idx	IO Name	Description of Attribute Value	RW	Description of Issued Command
SL_JEMA	P1	confuguration	Refer to Note	RW	Refer to Note
	P2	Ctrl1	type%2==1 indicates turn-on; type%2==0 indicates turn-off;	RW	To turn on the general controller, issue: type=0x81; val=1; To disable, issue: type=0x80; val=0;
	P3	Ctrl2	type%2==1 indicates turn-on; type%2==0 indicates turn-off;	RW	To turn on the general controller, issue: type=0x81; val=1; To disable, issue: type=0x80; val=0;

	P4	Ctrl3	type%2==1 indicates turn-on; type%2==0 indicates turn-off;	RW	To turn on the general controller, issue: type=0x81; val=1; To disable, issue: type=0x80; val=0;
	P5	Status1	type%2==1 indicates state triggering. It is valid only in free mode.	R	
	P6	Status2	type%2==1 indicates state triggering. It is valid only in free mode.	R	
	P7	Status3	type%2==1 indicates state triggering. It is valid only in free mode.	R	
	P8	HA1	type%2==1 indicates turn-on; type%2==0 indicates turn-off;	RW	To turn on the general controller, issue: type=0x81; val=1; To disable, issue: type=0x80; val=0;
	P9	HA2	type%2==1 indicates turn-on; type%2==0 indicates turn-off;	RW	To turn on the general controller, issue: type=0x81; val=1; To disable, issue: type=0x80; val=0;
	P10	HA3	type%2==1 indicates turn-on; type%2==0 indicates turn-off;	RW	To turn on the general controller, issue: type=0x81; val=1; To disable, issue: type=0x80; val=0;

Note:

• The working modes of P2, P3, and P4 are determined by P1.

P1.val (an integer of 32-bit) .The general controller (HA), whose value is always 1, is a read-only property. (1 indicates setting by the software; 0 indicates setting by the hardware)

• Working mode: (val >>> 24) & 0xe

0. free mode

2. two-wire curtain

4. three-wire curtain

6. DC motor

8. three-way switch

10. three-way switch (rocker)

• Inching and holding: (val >>> 24) & 1

0: Holding, for example, switch

1.Inching: connect when the button is pressed; disconnect when the button is released.

• How many seconds of delay after opening before the function configuration closed automatically： val & 0x7FFFF

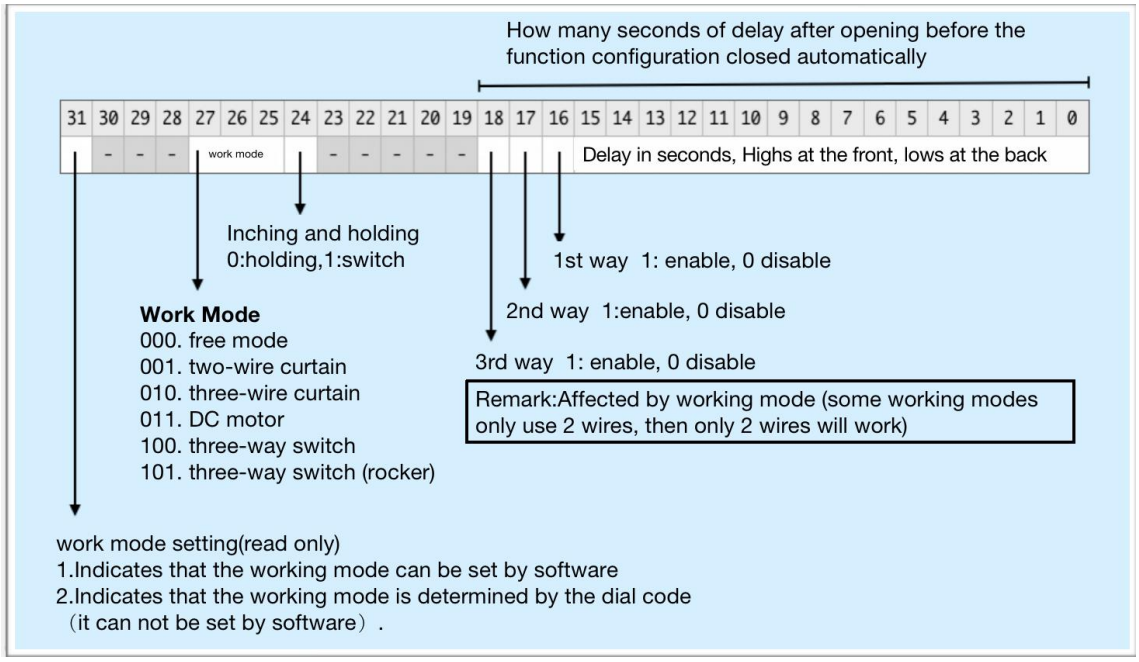
18bit: 3rd way 1: enable, 0 disable

17bit: 2nd way 1:enable, 0 disable

16bit: 1st way 1: enable, 0 disable

15-0bit: Delay in seconds, Highs at the front, lows at the back

Affected by working mode (some working modes only use 2 wires, then only 2 wires will work)



• When modifying the P1 value, you need to keep data of unmodified bits unchanged.

• If the working mode is two-wire curtain, three-wire curtain, or DC motor:
P2 means to open the curtain; P3 means to close the curtain; P4 means to stop the curtain.
For specific meaning, please refer to **6.4.1Curtain Controller.**
• If the working mode is three-way switch or three-way switch (rocker):
P2 indicates the first-way switch; P3 indicates the second-way switch; P4 indicates the third-way switch.
For specific meaning, please refer to **6.3.1 Switch Series.**
• If the working mode is free mode, P5, P6, and P7 indicate the state.
They can be connected to different relay output dry contacts of sensor devices with wired output (such as smoke sensor, gas sensor, infrared fence, flame sensor, etc.). When detecting signals, P5, P6 and P7 will reflect state accordingly.
• P8, P9 and P10 are the switch interfaces of HA (Home Automation), which are independent and will not be affected by P1. For concrete commands, see description of the above table.

6.9.5 Status Indicator

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
V_IND_S	L1…L20	Switch 1…Switch20	v==1indicates on; v==0indicates off	RW	Turning it on, deliver the following command: type=0x81,val=1; Turning it off, deliver the following command: type=0x80,val=0;

6.9.6 Eliq Electricity meter

Devtype/Cls	IO idx	IO	Read Attribute Value	RW	Control Command

		Name	Description		Description
ELIQ_EM	EPA	power	V is the current load power, the value is a floating number, and the unit is w.	R	
	V	Battery	V is battery percentage, range(0-100) unit(%)	R	

6.10 Attributes Specific to Smart Station MINI

6.10.1 Built-in Alarm of the Smart Station MINI

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
LSSSMINIV1	P1	Alarming status	v==1, indicates that no sound is playing. v==0, indicates that sounds are playing.	RW	To stop playing sounds, deliver the following: type=0x80; To set the playback sound, deliver the following: type=0x81, mandatory val=int type, alarm sound ID, range (1-4, expandable to 7), mandatory loop=int type, the number of times the alarm sound is played, less than 20, optional vol=int type, volume, effective volume (60-100), optional clear=bool type, whether to clear the sound being played, optional

6.11 Defed Series

6.11.1 Defed PIR Sensor

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_DF_MM	M	Motion Detection	v==1, indicates motion v==0, indicates no motion	R	
	T	Temperatu re	V indicates temperature, Unit: ℃	R	
	TR	Tamper Alarm	v==1, indicates tampered v==0, indicates no tamper	R	
	V	Battery	V is battery percentage, range(0-100) unit(%)	R	

6.11.2 Defed Door/window sensor

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_DF_GG	A	Door/wind ow sensor	v==1, indicates open v==0, indicates closed	R	
	A2	Alarm	v==1, indicates alarm v==0, indicates no alarm	R	
	T	Temperat ure	V indicates temperature, Unit: ℃	R	
	TR	Tamper Alarm	v==1, indicates tampered v==0, indicates no tamper	R	
	V	Battery	V is battery percentage, range(0-100) unit(%)	R	

6.11.3 Defed Keyfob

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_DF_BB	eB1	Button	v==1, indicates click	R	
	eB2	Button	v==1, indicates click	R	
	eB3	Button	v==1, indicates click	R	
	eB4	Button	v==1, indicates click	R	
	V	Battery	V is battery percentage, range(0-100) unit(%)	R	

6.11.4 Defed Indoor Siren

Devtype/Cls	IO idx	IO Name	Read Attribute Value Description	RW	Control Command Description
SL_DF_SR	P1	Siren control	Send command to set the siren go off	RW	Set play sound, issue: type=0xff, required val=int type, Parameters: dura(duration) 0-30 s vol(volume) 0-255 id(Sound id) 0, 1(warning sound), 2(alarm sound) nval = ((dura * 10) << 8) | vol val = (nval << 8) | id
	SR	Alarm	v==1, indicates alarm v==0, indicates normal	R	
	T	Temperature	V indicates temperature, Unit: ℃	R	

	TR	Tamper Alarm	v==1, indicates tampered v==0, indicates no tamper	R	
	V	Battery	V is battery percentage, range(0-100) unit(%)	R	

7. Appendix

7.1 Smart Devices

Devtype/Cls	Name
Sockets	
SL_OL_3C	Smart socket
SL_OL_DE	Socket complying with German standards
SL_OL_UK	Socket complying with British standards
SL_OL_UL	Socket complying with American standards
OD_WE_OT1	Wi-Fi socket
SL_OL_W	In-wall socket
SL_OE_3C	Metering socket
SL_OE_DE	Metering socket with German standards
Switch	
SL_SW_IF1	BLEND light switch - one key
SL_SW_IF2	BLEND light switch - two keys
SL_SW_IF3	BLEND light switch - three keys
SL_SF_IF1	BLEND light switch with live line - one key
SL_SF_IF2	BLEND light switch with live line - two keys
SL_SF_IF3	BLEND light switch with live line - three keys
SL_SW_CP1	Orange BLEND light switch - one key
SL_SW_CP2	Orange BLEND light switch - two keys
SL_SW_CP3	Orange BLEND light switch - three keys
SL_SW_FE1	Senna/Gezhi switch - one key
SL_SW_FE2	Senna/Gezhi switch - two keys
SL_SW_RC	Three-way touchable switch

SL_SF_RC	Three-way one-live-line touchable switch
SL_SW_RC1	120 Smart light switch - one key
SL_SW_RC2	120 Smart light switch - two keys
SL_SW_RC3	120 Smart light switch - three keys
SL_SW_ND1	Stellar switch - one key
SL_SW_ND2	Stellar switch - two keys
SL_SW_ND3	Stellar switch - three keys
SL_MC_ND1	Stellar switch partner - one key
SL_MC_ND2	Stellar switch partner - two keys
SL_MC_ND3	Stellar switch partner - three keys
SL_SW_BS3	Polar Switch (LN) - three keys
SL_SW_BS2	Polar Switch (LN) - two keys
SL_SW_BS1	Polar Switch (LN)- one key
SL_SW_NS3	Moonstone Switch- three keys
SL_SW_NS2	Moonstone Switch- two keys
SL_SW_NS1	Moonstone Switch- one key
SL_SC_BB	CUBE Clicker
SL_SC_BB_V2	Free button
SL_SW_MJ1	CUBE switch module - one key
SL_SW_MJ2	CUBE switch module - two keys
SL_NATURE	Nature Mini/Nature Mini S/Nature Mini L/Nature Mini Pro
SL_R_B	Smart Remote Controller
Curtain controllers	
SL_CN_IF	BLEND curtain controller
SL_CN_FE	Gezhi/Senna three-key curtain controller
SL_SW_WIN	Curtain controller
SL_DOOYA	Curtain (DuYa)
SL_P_V2	MINS curtain motor controller
Lighting	
SL_LI_RGBW	Capsule bulb
SL_CT_RGBW	BLEND light strip
SL_SC_RGB	BLEND light strip (without white light)
SPOT	
MSL_IRCTL	SPOT (basic edition, Bluetooth edition)
OD_WE_IRCTL	SPOT (quick connection)
SL_SPOT	SPOT (CoSS)
SL_P_IR	922 RF version of the SPOT (mini)

Sensors	
SL_SC_G	Door sensor
SL_SC_BG	CUBE door sensor
SL_SC_MHW	Dynamic sensor
SL_SC_CM	Dynamic sensor (AAA battery)
SL_SC_BM	CUBE dynamic sensor
SL_SC_THL	Environmental sensor
SL_SC_BE	CUBE environmental sensor
SL_SC_CQ	Environmental sensor (CO2+TVOC)
SL_SC_WA	Water leak sensor
SL_SC_CH	Gas sensor (formaldehyde)
SL_SC_CP	Gas sensor (gas)
SL_P_A	Smoke sensor
SL_SC_CA	Environmental sensor (CO2)
Defed Series	
SL_DF_MM	Defed PIR Sensor
SL_DF_GG	Defed Door/window sensor
SL_DF_BB	Defed Keyfob
SL_DF_SR	Defed Indoor Siren
Temperature controller	
SL_TR_XX	HVAC controller
V_AIR_P	Control panel of HVAC controller
SL_CP_DN	Underfloor thermostat
SL_CP_AIR	Fan coil thermostat
SL_UACCB	Air conditioner control panel
SL_NATURE	Nature Mini Pro(Thermostat)
SL_FCU	Nature Thermostat
SL_CP_VL	Thermostatic Radiator Valve
V_FRESH_P	HVAC Smart Controller- ventilation
Door locks	
SL_LK_LS	Smart door lock
SL_LK_GTM	Smart door lock (Yale door lock)
SL_LK_AG	Smart door lock (Schlage lock module)
SL_LK_SG	Singea smart door lock
SL_LK_YL	Yale/Gateman door lock module
Others	
SL_P	General controller

V_485_P	485 controller
V_DLT_645 _P	DLT Smart Plug
LSSSMINIV1	Multi-function alarm
V_IND_S	Status Indicator
ELIQ_EM	Eliq Electricity meter

7.2 Dynamic Color (DYN) Definition

Effect	Value of val
Grass	0x8218cc80
Sea wave	0x8318cc80
Dark blue mountains	0x8418cc80
Flirtatious purple	0x8518cc80
Raspberry	0x8618cc80
Orange	0x8718cc80
Autumn fruit	0x8818cc80
Ice cream	0x8918cc80
Plateau	0x8020cc80
Pizza	0x8120cc80
Fruit juice	0x8a20cc80
Warm cottage	0x8b30cc80
Magic red	0x9318cc80
Light spot	0x9518cc80
Blue	0x9718cc80
First rays of the morning sun	0x9618cc80
Hibiscus	0x9818cc80
Colorful era	0x9918cc80
Heaven	0xa318cc80
Charm blue	0xa718cc80
Bright red	0xa918cc80