Certified Capability List

This Capability List is based on a certification session performed by the *TALQ Certification Tool (v2.6.3-online.1) on 2025-08-14 15:51:51.357 +0800.*

The Capability List is a consolidated list of TALQ features which are implemented in a product.

The tool has succesfully performed *60 tests*.

Product details

Product Name	LiLAMP
Company	Nanjing LiCON IoT Technology Co.,Ltd
Type	GATEWAY
Notes	
Generated on	2025-08-14 15:51:51.357 +0800
Supported profiles	• Lighting
API version certified:	2.6.3
Certification performed by app version:	2.6.3-online.1

Functional tests

The Functional Tests help customers understand the capabilities of a TALQ-certified product. All functional test cases are presented to provide comprehensive context, and successful completion of each test is indicated with a tick mark. Each Functional Test is related to a set of required TALQ technical test cases.

Configuring

5 of 11

Support light point control features ✔

The Gateway successfully connects to a CMS and transmits its capabilities for light point control features and services. **CFG-1**

Support cabinet control lighting features

The Gateway successfully connects to a CMS and transmits its capabilities for cabinet control lighting features and services. **CFG-2**

Support sensor-based light point control features

The Gateway successfully connects to a CMS and transmits its capabilities for sensor-based light point control features and services. **CFG-3**

Discovery of the network of devices ✔

The Gateway transmits all its devices to the CMS together with their configuration and asset information. **CFG-4**

Initialize light point electrical alarm thresholds ✔

The Gateway is able to receive the light point electrical alarm thresholds from the CMS, including Lamp Voltage Too High/Low, Lamp Current Too High/Low, Active Power Too High/Low and Power Factor Too Low **CFG-5**

Initialize and change the cabinet control alarm thresholds

The Gateway is able to receive the cabinet control electrical alarm thresholds from the CMS, including < to be defined > **CFG-6**

Initialize and change the light point parameters

The Gateway is able to receive the light point parameters from the CMS. **CFG-7**

Initialize and change a group of luminaires ✔

The Gateway is able to handle a command from the CMS to set or change a group of light points to assign them a control program. **CFG-8**

Change the sampling frequency for measurements

The Gateway is able to change the sampling of measurements and properly reflected in the next data log sent to the CMS. **CFG-9**

Change the reporting frequency for measurements

The Gateway is able to change the reporting frequency (how often it sends data logs to the CSM) for measurements. **CFG-10**

Update the firmware of the hardware devices ✔

The Gateway supports data package service and accepts a data package to update firmware on a physical device. **CFG-11**

Monitoring 1 of 11

Measure and report basic electrical values (Current/Voltage/Active Power/Power Factor)

The Gateways sends "valid values" for electrical values including mains voltage, current, active power and power factor to the CMS using one of the data logging service. **MTG-1**

Measure and report cumulating energy counter

The Gateways sends "valid growing values" for energy counter to the CMS using one of the data logging service. **MTG-2**

Report lamps' number of operating hours

The Gateways sends "valid growing values" for lamp operating hours counter to the CMS using one of the data logging service. **MTG-3**

Report lamps' number of switch-on counter

The Gateways sends "valid growing values" for lamp switch-on counter to the CMS using one of the data logging service. **MTG-4**

Report lamps' number of supply loss counter

The Gateways sends "valid growing values" for supply loss count to the CMS using one of the data logging service. **MTG-5**

Monitor the lamp level feedback when a manual override command is sent ✔

The Gateway receives a manual override command, sends it to the device and can report, using on-demand read as well as a data logger service, that the lamp level feedback is getting close to the command. **MTG-6**

Report temperature

The Gateways sends temperature values to the CMS using one of the data logging service. **MTG-8**

Report presence detection

The Gateways sends presence detection values to the CMS using one of the data logging service. **MTG-9**

Report noise level

The Gateways sends noise level values to the CMS using one of the data logging service. **MTG-10**

Report light level

The Gateways sends light level values to the CMS using one of the data logging service. **MTG-11**

Report firmware updating process

The Gateway is able to report the firmware update events **MTG-12**

Controlling

3 of 7

Manual control over a light point ✔

The Gateway properly receives and handles a manual override command sent by the CMS for one single light point **CTR-1**

Manual control over a group of light points ✔

The Gateway properly receives and handles a manual override command sent by the CMS for a group of light points **CTR-2**

Manual control with a delay

The Gateway properly receives and handles a manual override command that includes a delay, sent by the CMS for one single light point. **CTR-3**

Manual control with a ramp

The Gateway properly receives and handles a manual override command that includes a rampup, sent by the CMS for one single light point. **CTR-4**

Automatic switch light on/off based on photocell value

The Gateway can properly execute a control program that switches the light ON and OFF based on a local photocell value on a single light point. **CTR-5**

Automatic change of light level when presence detected

The Gateway can properly execute a control program that changes the light dimming level based on a local presence sensor on a single light point. **CTR-6**

Automatic change of light level when noise detected ✔

The Gateway can properly execute a control program that changes the light dimming level based on a local noise sensor on a single light point. **CTR-7**

Alarming

2 of 5

Report lighting alarms to the CMS ✔

The Gateway can produce lighting alarms and send them to the CMS using one of the data logger services. **ALR-1**

Report electrical alarms to the CMS

The Gateway can produce electrical alarms and send them to the CMS using one of the data logger services. **ALR-2**

Report invalid program and calendar

The Gateway can produce invalid calendar and control program alarms and send them to the CMS using one of the data logger services. **ALR-3**

Report activity for sensor based lighting

The Gateway can send an event in case of activity detected and send them to the CMS using one of the data logger services. **ALR-4**

Request the status of the alarm ✔

The Gateway can report the status of the alarms as a response to a request from the CMS **ALR-5**

Programming

2 of 9

Fix time switching+dimming control program that applies to all days in the year

The Gateway can receive and execute a control program that switches and dims a light point at fix time all days in the year. **PRG-1**

Astro-clock switching + fix time dimming control program that applies to all days in the year

The Gateway can receive and execute a control program that switches a light point at sunrise/sunset +/- few minutes and dim it during an astro-clock active period, all days in the year. **PRG-2**

Photocell switching + fix time dimming control program that applies to all days in the year

The Gateway can receive and execute a control program that switches a light point when photocell indicates darkness and dim it during the photocell active period, all days in the year. **PRG-3**

Photocell and astro-clock switching + fix time dimming control program that applies to all days in the year

The Gateway can receive and execute a control program that switches a light point when photocell indicates darkness or at sunrise/sunset +:- few minutes (the earlier for switch ON/OFF) and dim it during the photocell active period, all days in the year. **PRG-4**

Part night switching program

The Gateway can receive and execute a control program that switches a light point OFF at fixed time in the middle of the night. **PRG-5**

Support exceptional periods (e.g., Sept 10th to Oct 16th) ✔

The Gateway can receive and execute a calendar that has a default rule for all days in the year and another higher priority calendar that applies from DAY 1 to DAY 2. **PRG-6**

Support exceptional week days (e.g., every Saturday and Sunday)

The Gateway can receive and execute a calendar that has a default rule for all days in the year and another higher priority calendar that applies every Saturday night and Sunday night, every day in the year. **PRG-7**

Support exceptional week days (e.g., every Saturday and Sunday) and exceptional periods (e.g., Sept 10th to Oct 16th) ✔

PRG-8

The Gateway can receive and execute a calendar that has a default rule for all days in the year, another higher priority calendar that applies every Saturday night and Sunday night, every day in the year and another higher priority calendar that applies to every saturday between DAY 1 and DAY 2.

Support dynamic lighting program based on sensor detection

The Gateway can receive and execute a control program that has rule based on presence sensor. **PRG-9**

Capability list

Security

Enabled ✔

Functions

Basic

The Basic function describes the properties related to the physical asset to which the logical device is associated, such as identification (assetId) and location information.

Attributes

#	Attribute	Description
✔	serial	Serial number of the device.
✔	hwVersion	Hardware revision of the device.
✔	swVersion	Software version installed on the device.

✔	currentTime	Current time of the device defined as local time with time zone designator. [DEPRECATED: This attribute has been deprecated and it will be removed in the next MAJOR release. Please use the new TimeFunction.currentTime instead.]
✔	commandConfirmation	Allows the CMS to reboot, factory reset or configuration reset of the device. Before rebooting or resetting the device this attribute has to be true. Default value = false
✔	reboot	Reboot the device. This operational attribute requires the commandConfirmation attribute value to be set to true.
✔	configurationReset	Reset the device configuration settings. This operational attribute requires the commandConfirmation attribute value to be set to true.
✔	operatingHours	Number of operating hours of the device.

Events

#	Event type	Description
✔	deviceReset	The physical device containing the logical device was reset
✔	softwareUpdating	Indicates software updating is in progress

Communication

The Communication Function contains attributes related to the communication within the ODN, and between ODN devices and Gateways. Although communication within the ODN is outside the scope of the TALQ Smart City Protocol, this Function enables access to a minimum set of configuration and state information of the ODN communication interface in order to facilitate system management from the CMS.

Attributes

#	Attribute	Description
✔	communicationType	Type of communication technology implemented by the ODN (e.g. power line, wireless).
✔	logicalAddress	Logical address for communication within the ODN scope (IP address, Short Address, ...).
✔	physicalAddress	Physical address of the device. For example, IEEE MAC address. This attribute can be used to map between logical and physical devices. The format is specific to the ODN implementation.

✔	parentAddress	TALQ Address of the parent device, e.g. gateway. It shall point to a specific communication function.
✔	communicationQuality	Indicator of the quality of the communication with the device. 100% means good quality.
✔	communicationFailure	This attribute is updated by the ODN when the communication function is not operating as expected.

Events

#	Event type	Description
✔	communicationFailure	This event is generated by the ODN when the communication function is not operating as expected

Gateway

The Gateway function includes the necessary attributes to enable the communication between the CMS and the Gateway according to the TALQ Specification.

Attributes

#	Attribute	Description
✔	cmsUri	Base URI for TALQ communication that allows the Gateway to access the CMS. Must be an absolute URI. Other URI's for accessing CMS can be relative to this base.
✔	cmsAddress	CMS UUID address
✔	gatewayUri	Base URI for TALQ communication that allows the CMS to access the Gateway. Must be an absolute URI. Other URI's for accessing Gateway can be relative to this base.
✔	gatewayAddress	Gateway UUID address
✔	retryPeriod	Time duration before the Gateway retransmits a message for which expected response has not been received. [DEPRECATED: This attribute has been deprecated and it will be removed in the next MAJOR release. Please use the new GatewayFunction.gatewayRetryPeriod instead.]
✔	crlUrn	URI where the Gateway can obtain the Certification Revocation List (CRL).
✔	vendor	Vendor identification.

Lamp Actuator

The Lamp Actuator function includes attributes related to lighting control and it represents the smallest unit for control purposes. In practice, however, a Lamp Actuator function can control combinations of several lamps and control gear but all in the same way, as if they are all one individual unit.

Attributes

#	Attribute	Description
✔	defaultLightState	Sets the default light output for the lamp actuator. This shall be applicable if no other command is active. This attribute shall be set to 100% as default value.
✔	targetLightCommand	Latest command for the lamp actuator.
✔	feedbackLightCommand	This attribute reflects the command in effect and it might deviate from the actualLightState due to propagation time or due to internal ODN specific mechanisms to handle the priority of the requests.
✔	actualLightState	This attribute should reflect the physical state of the light source as much as possible, including factors such as CLO. It may be calculated or measured, depending on the specific ODN implementation, which is outside the scope of this specification.
✔	calendarID	TALQ Address of the calendar controlling this lamp actuator. If this attribute is empty, the behavior shall be determined by the ODN. If the attribute is invalid, the ODN shall trigger a generic invalid address event and the behavior shall be determined by the ODN.

Events

#	Event type	Description
✔	lightStateChange	Light state has changed

Lamp Monitor

The Lamp Monitor function enables monitoring of lamp parameters. A Lamp Monitor function should be associated with a specific lamp/control gear combination. Multiple lamp monitor functions may be implemented by a single device.

Attributes

#	Attribute	Description

✔	supplyType	Supply type of the lamp. Accepted values are: AC, DC.
✔	actuatorReference	Function ID of the actuator, located in the same device, whose effect is being monitored by this function. e.g.: fLampActuatorId_1 or fGenericActuatorId_2
✔	numberOfLamps	Number of lamps being monitored by the lamp monitor function.
✔	operatingHours	Number of hours the lamp is on. This is the value used in CLO and may be set by the CMS.
✔	supplyVoltage	RMS supply volts when supplyType is AC, supply voltage (V) when supplyType is DC.
✔	supplyCurrent	RMS supply current (A) when supplyType is AC, supply current (A) when supplyType is DC.
✔	activePower	Active power.
✔	reactivePower	Reactive power.
✔	powerFactor	Active power/Apparent power.
✔	activeEnergy	Cumulative active energy (since installation or counter reset).

Events

#	Event type	Description
✔	lampFailure	The lamp is not operating as it is supposed to (e.g. the lamp is broken). This event shall be used to detect a situation where the lamp (or LED module(s)) should be lit, but produce no light. This could be detected by the current flowing or power consumed.
✔	controlGearCommFailure	Indicates failure of the control gear
✔	supplyLoss	Indicates loss of mains power
✔	contactorError	Indicates error in contactor
✔	lampUnexpectedOn	Indicates lamp is unexpectedly on
✔	leakageDetected	Indicates that an earth leakage fault has been detected

Light Sensor

A Light Sensor function models the output of light sensor. This function is optional for both CMS and Gateway, but when supported the requirements in this section shall apply.

Attributes

#	Attribute	Description

✔	lightLevel	Illuminance level.

Events

#	Event type	Description

Temperature Sensor

The Temperature Sensor function allows a CMS to monitor the temperature in a device and send events in case the value is above/below configurable thresholds.

Attributes

#	Attribute	Description
✔	temperature	Output temperature.

Events

#	Event type	Description

Particulate Matter Sensor

The Particulate Matter Sensor function allows a CMS to monitor the PM10, PM2.5 and PM1 in a device and send events in case the value is above/below configurable thresholds.

Attributes

#	Attribute	Description
✔	pm2-5	Level of pm2-5 measured by the sensor. (micrograms/m3)
✔	pm10	Level of pm10 measured by the sensor. (micrograms/m3)

Events

#	Event type	Description

Location Sensor*

The Location Sensor Function is used to indicate that an object has changed position attributes configurable by the CMS or based on internal setup of the vendor. For example, a specific location (latitude, longitude) of a device could be defined by the vendor. If the device is equipped with a GPS, it could send a specific event indicating that its position is different to the one defined by the CMS. We might also want to let the configuration to the vendor itself and simply define events notifying the CMS that the default configuration has changed. For example, a garbage bin could

have its location defined based on a sensor placed on the floor. If the bin is not above this sensor, the vendor will trigger an event. In this last case, the CMS does not need to configure anything.

Attributes

#	Attribute	Description
✔	location	Location of the device

Events

#	Event type	Description
✔	locationChanged	Triggered when the difference between location and expectedLocation is above locationChangedThreshold

Fluid Level Sensor*

The Fluid Level Sensor function allows to collect data and events about fluid levels. It could be used to measure fluid levels in channels, lakes, containers, etc.

Attributes

#	Attribute	Description
✔	fluidLevel	Fluid level in meters

Events

#	Event type	Description

Gas Sensor*

The Gas Sensor function allows to measure the gas concentration and sends events if the level is above the configured thresholds.

Attributes

#	Attribute	Description
✔	gasConcentration	Gas concentration (ppm)
✔	gasName	Type of gas: CO, CO2, O2, O3, NO, NO2, SO2, NH3, CH4, H2, H2S, HCl, HCN, PH3, ETO, Other. If Other is selected, then gasOtherName shall be used.

Events

#	Event type	Description

Time*

The Time function includes attributes related to generic control and it represents the smallest unit for control purposes.

Attributes

#	Attribute	Description
✔	currentTime	Current time of the device defined as local time with time zone designator.

Events

#	Event type	Description

Noise Monitoring Sensor*

This sensor function enables monitoring basic noise data.

Attributes

#	Attribute	Description
✔	noise	Output noise. (dB)

Events

#	Event type	Description

Atmospheric Sensor*

This sensor function enables monitoring basic atmospheric data such as barometric pressure, humidity, and temperature. This function complies with WMO standards as reported in the 'Guide to Instruments and Methods of Observation (WMO-No. 8) / Volume I - Measurement of Meteorological Variables'

Attributes

#	Attribute	Description
✔	airTemperature	Temperature (°C)
✔	relativeHumidity	Relative humidity (%)
✔	dewPoint	Temperature of dew point (°C)
✔	atmosphericPressure	Atmospheric pressure normalized to sea level (hPa)

Wind Sensor*

This sensor function enables monitoring wind speed and direction. This function complies with WMO standards as reported in the 'Guide to Instruments and Methods of Observation (WMO-No. 8) / Volume I - Measurement of Meteorological Variables'

Attributes

#	Attribute	Description
✔	windSpeed	Wind speed (m/s)
✔	windDirection	Wind direction in degrees (Relative to True north)

Precipitation Sensor*

This sensor function enables monitoring precipitation, defined as the liquid or solid products of the condensation of water vapour falling from clouds, in the form of rain, drizzle, snow, snow grains, snow pellets, hail and ice pellets; or falling from clear air in the form of diamond dust. This function complies with WMO standards as reported in the 'Guide to Instruments and Methods of Observation (WMO-No. 8) / Volume I –Measurement of Meteorological Variables'

Attributes

#	Attribute	Description
✔	precipitationRate	Intensity of precipitation (mm/h)

Sky Sensor*

This sensor function enables monitoring of other atmospheric phenomena. This function complies with WMO standards as reported in the 'Guide to Instruments and Methods of Observation (WMO-No. 8) / Volume I - Measurement of Meteorological Variables'

Attributes

#	Attribute	Description
✔	solarDirectRadiation	Total solar irradiance (W/m2)

Services

Configuration Service

The TALQ Configuration Service enables discovery and configuration of devices and services

Options

#	Option	Value	Description
✔	commissioningSupported*		This ODN can support commissioning from the CMS side.
✔	devicesPaginationSupported*		This ODN can support pagination of devices.

Control Service

The Control service describes the mechanisms to operate the actuator functions in order to enable schedule based and override control

Options

#	Option	Value	Description
✔	supportedTypes	• ccDate*	Control Program and calendar options supported are defined by announcing support for the given modes
✔	ccDateSupport	• f • u • l • l	Indicates the ccDate options supported
✔	ccDaySupport	• f • u • l • l	Indicates the ccDay options supported

Events

#	Event Type	Description
✔	invalidCalendar	An invalid calendar has been provided by the CMS to the ODN
✔	invalidProgram	A control program has been provided by the CMS, which cannot be implemented by the ODN

Data Collection Service

The TALQ Data Collection Service is a provision to configure how ODN measurements, status information and events are logged, and when or under what conditions the logged data is transferred to the CMS

Options

#	Option	Value	Description
✔	supportedModes	• EventRecordingMode • VendorRecordingMode • ImmediateReportingMode	Recording and Reporting modes supported

Events

#	Event Type	Description
✔	invalidLoggerConfig	The CMS has provided a data logger configuration that cannot be implemented by the ODN

On Demand Data Request Service

This service provides the mechanism to access attributes in the logical devices by requesting attribute values from the ODN

Group Management Service

This service provides the mechanisms to define and manage groups

Options

#	Option	Value	Description

Data Package Transfer Service*

This service provides a mechanism to transfer data packages containing ODN vendor specific information to the Gateway via the CMS

Events

#	Event Type	Description
✔	releaseMismatch	The release indicated as expected does not match the actual release of the Gateway.

✔	changeReleaseFailure	Change release failed. Operation is rolled back.
✔	packageChangeFailure	A Package change operation failed. Operation is rolled back.
✔	changingRelease	Indicates the Gateway is in the process of changing release.
✔	packageDownloaded	Indicate the Gateway has downloaded a package.

Test Service

This service provides a mechanism to reduce the human intervention during the certification tests, enabling the certification tests to maximise automation

Objects

Event log data

Event log data contains a single event, with eventType and value, in each single log entry. It also includes information about whether the log denotes the start or end of the event. Furthermore additional information can be added with the info attribute.

Properties

#	Property	Description
✔	eventType	Identifier of event reported
✔	srcAddress	Address of Logical device or function within a logical device which is the source of the event or to which this event applies

Command

A command defines a type of control action that can be applied to a function. Commands can be generated by a manual override action or by a control program.

Properties

#	Property	Description
✔	state	Light state to be applied to the lamp actuator
✔	reason	Indicates the command was triggered by override, sensor or control program

✔	cmsRefId	CMS reference, which can be used for data logging. The cmsRefId in a Command is a free text to be used by the CMS for any purpose, e.g: to differentiate contexts. It is a token that allows the CMS to match client requests to the original notification.

Group

A group is set of entities that can be addressed by the same group address. Devices and functions within devices can be assigned to a group. A group may also include other groups as members.

Properties

#	Property	Description
✔	address	Group address
✔	members	TALQ Addresses of members of the group

*: The Certification Test Tool is designed to provide a high level of confidence that complementary systems can communicate successfully. As both the protocol and the test tool evolve, all mandatory and other core tests are confirmed by comparison with real-life scenarios (plug-fest or similar). Some tests of optional and more peripheral features may not yet have been confirmed in this way; such features are identified with an asterisk (*).

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