



## Certified Capability List

This Capability List is based on a certification session performed by the *TALQ Certification Tool (v2.3.0-update.22)* on 2022-06-27 17:40:07.337 +0100.

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

The tool has successfully performed 42 tests.

## Product details

**Product Name** SM2

**Company** Mayflower

**Type** GATEWAY

**Notes**

**Generated on** 2022-06-27 17:40:07.337 +0100

**Supported profiles** • Lighting

**API version certified:** 2.3.0

**Certification performed by app version:** 2.3.0-update.22

## 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
✓	assetId	Customer identifier of the asset. If multiple devices have the same assetId it means they belong to the same asset.
✓	serial	Serial number of the device.
✓	hwType	Hardware type of the device.
✓	swVersion	Software version installed on the device.
✓	deviceReset	The physical device containing the logical device was reset.
✓	timeZone	Time zone of the device. Time zone may be expressed in two formats. <timezone> where <timezone> is a time zone as defined in the zone.tab of the IANA timezone database [IANA]; and stdoffset[dst[offset][,start[/time],end[/time]]] as defined by the Open Group for posix systems [POSIX]. [DEPRECATED: This attribute has been deprecated and it will be removed in the next MAJOR release. Please use the new TimeFunction.timeZone instead.]
✓	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.]

### Events

#	Event type	Description
✓	deviceReset	The physical device containing the logical device was reset

## 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
✓	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.
✓	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
✓	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.
✓	activePower	Active power.
✓	activeEnergy	Cumulative active energy (since installation or counter reset).
✓	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.

### 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.

## 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
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## Services

### Configuration Service

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

#### Options

#	Option	Value	Description
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### 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	<ul style="list-style-type: none"> <li>• AbsoluteActivePeriod</li> <li>• DynamicControl*</li> <li>• SensorActivePeriod*</li> <li>• FixedControlEffect*</li> <li>• ccDate*</li> <li>• ccDay*</li> </ul>	Control Program and calendar options supported are defined by announcing support for the given modes

#### 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	<ul style="list-style-type: none"> <li>EventRecordingMode</li> <li>PeriodicRecordingMode</li> <li>ImmediateReportingMode</li> <li>ScheduledReportingMode</li> <li>VendorRecordingMode</li> </ul>	Recording and Reporting modes supported
✓	loggableAttributes	<ul style="list-style-type: none"> <li>cls:Gateway/LampActuatorFunction/actualLightState</li> </ul>	List of descriptions of the attributes within device classes that can be logged using periodic recording
✓	samplingPeriodSupported		Indicates whether the ODN supports periodic sampling for a data logger in periodic recording mode
✓	attributeScopeSupported		Indicates whether the ODN supports filtering attributes by scope (attributeScope); for a data logger in periodic or vendor recording mode.

## 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
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## 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.

## Objects

### Lamp type

The lamp type consists of a set of attributes that together characterize a given lamp and control gear combination. When modelling a Lighting ODN with many luminaires, there are attributes' values that are the same for many lamps, e.g.: the expected consumed power of the lamp and control gear (wattage) would be the same for many lamp monitors. The concept of LampType is created to avoid including the same attributes' values in every lamp monitor and actuator of the same type, for this reason a reference to a lamp type is included in the lamp actuator and lamp monitor functions, as these attributes are required for proper operation of these functions. Thus, the definition of lamp types enables the CMS to efficiently set attributes in many lamp actuators/monitors by just setting the address of the 'lampType' attribute in each function. Lamp types can be created by both CMS and TALQ Gateway as separate entities. The TALQ Gateway shall announce any lamp type it has to the CMS as part of the initial configuration. In addition to the initial configuration, the TALQ Gateway shall also announce the lamp type whenever it changes. The CMS may also send lamp types to the TALQ Gateway.

### Properties

#	Property	Description
✓	name	Descriptive name of the lamp type
✓	address	TALQ Address of the lamp type
✓	wattage	Expected consumed power of the lamp and control gear

- ✓ **controlType** Type of control/dimming interface between the lamp actuator function and the control gear or within the control gear in case lamp actuator is embedded in the control gear
- ✓ **lumenDepreciationCurve** Set of entries (operating hours, correction factor in %) that form a piece wise linear approximation of the lumen depreciation correction factor curve

### 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.
✓	refAddress	Reference to the source of the command, e.g. sensor or control program
✓	start	Time when the control action resulting from command shall start. This attribute is used only with override commands to set a time to start an override action. If not specified, the override command starts immediately.
✓	expiration	Time when the control action resulting from command shall be terminated. This attribute is used only with override commands to set a time to stop an override action. After the expiration of an override command, the system should go back to the state defined by the active control program. If not specified, there is no expiration for the override command.



- ✓ **rampToLevelTime\*** The time (in seconds) taken for the value to ramp to the specified level. The change will be finished rampToLevelTime seconds after: the scheduled time if the change comes from a control program; the reception of the request, or the command.start time attribute, if the change comes from an override command, or; the sensor event is raised if the control is sensor-based. If actions related to one command remain to be completed when a subsequent command is received, the subsequent command shall take precedence.
- ✓ **rampFromLevelTime\*** The time (in seconds) taken for the value to ramp to the specified level. The change will be finished rampFromLevelTime seconds after: the scheduled time if the change comes from a control program; the reception of the request if the change comes from an override command; expiry of the related command, or; the sensor event is lowered and the hold time subsequently expires if the control is sensor-based. If actions related to one command remain to be completed when a subsequent command is received, the subsequent command shall take precedence.

\*: 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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