



## Certified Capability List

This Capability List is based on a certification session performed by the *TALQ Certification Tool (v2.2.0-update.15)* on *2020-10-02 17:38:18.625 +0200*.

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

The tool has successfully performed *29 tests*.

### Product details

**Product Name** Mayflower CMS

**Company** Mayflower Complete Lighting Control

**Type** GATEWAY

**Notes** r3.4

**Generated on** 2020-10-02 17:38:18.625 +0200

**Supported profiles** • LIGHTING

**Certification performed by app version:** 2.2.0-update.15

### 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
✓	displayName	Display name of the asset.
✓	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.
✓	location	Latitude, Longitude and Altitude.
✓	deviceReset	The physical device containing the logical device was reset.
✓	softwareUpdating	Indicates software updating is in progress.
✓	hardwareUpdated	Indicates that hardware associated with this logical device has been updated.
✓	locationUpdated	Indicates the location of a device has changed, but detecting the change is outside the scope of the TALQ Specification.
✓	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].
✓	currentTime	Current time of the device defined as local time with time zone designator.

### Events

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

✓	softwareUpdating	Indicates software updating is in progress
✓	hardwareUpdated	Indicates that hardware associated with this logical device has been updated
✓	locationUpdated	Indicates the location of a device has changed

## 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
✓	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.
✓	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.
✓ 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
✓	lampTypeId	TALQ Address of an existing lampType.
✓	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.
✓	lightStateChange	Light state has changed.

### 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.
✓	temperature	Temperature of the device implementing this function.
✓	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.
✓	powerFactor	Active power/Apparent power.
✓	activeEnergy	Cumulative active energy (since installation or counter reset).
✓	lampPowerTooHigh	Lamp power is greater than expected lamp power + lampPowerTolerance is $2e32 - 1$ .
✓	lampPowerTooLow	Lamp power is smaller than expected lamp power - lampPowerTolerance
✓	lampVoltageTooHigh	Level of lamp voltage (not supply voltage) is greater than highLampVoltageThreshold.
✓	lampVoltageTooLow	Level of lamp voltage (not supply voltage) is smaller than lowLampVoltageThreshold.
✓	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.
✓	currentTooHigh	Supply current is above the highCurrentThreshold defined in the lamp type.
✓	currentTooLow	Supply current is below the lowCurrentThreshold defined in the lamp type.
✓	powerFactorTooLow	The power factor is below powerFactorThreshold.
✓	lampUnexpectedOn	Indicates lamp is unexpectedly on.

### Events

#	Event type	Description
✓	lampPowerTooHigh	Lamp power is greater than expected lamp power + lampPowerTolerance

✓	lampPowerTooLow	Lamp power is smaller than expected lamp power - lampPowerTolerance
✓	lampVoltageTooHigh	Level of lamp voltage (not supply voltage) is greater than highLampVoltageThreshold.
✓	lampVoltageTooLow	Level of lamp voltage (not supply voltage) is smaller than lowLampVoltageThreshold.
✓	currentTooHigh	Supply current is above the highCurrentThreshold defined in the lamp type
✓	currentTooLow	Supply current is below the lowCurrentThreshold defined in the lamp type
✓	powerFactorTooLow	The power factor is below powerFactorThreshold
✓	lampFailure	The lamp is not operating as it is supposed to
✓	lampUnexpectedOn	Indicates lamp is unexpectedly on

## 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
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✓ supportedTypes	<ul style="list-style-type: none"> <li>• AbsoluteActivePeriod</li> <li>• AstroClockActivePeriod*</li> <li>• ccDate*</li> <li>• ccDay*</li> </ul>	Control Program and calendar options supported are defined by announcing support for the given modes
✓ maxSwitchPointsPerProgram		Maximum number of switching points per control program
✓ maxActivePeriodsPerProgram		Maximum number of active periods per control program
✓ dayOffset	• 0	Offset of start of day
✓ ccDateSupport		Indicates the ccDate options supported
✓ ccDaySupport		Indicates the ccDay options supported
✓ programSecondsSupported*		Indicates whether the field of seconds is supported in programs.

## 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>• VendorRecordingMode*</li> <li>• ImmediateReportingMode</li> <li>• ScheduledReportingMode</li> </ul>	Recording and Reporting modes supported

### Events

#	Event Type	Description
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✓ 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

### Test Service

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

## Objects

### Lamp type

#### Properties

#	Property	Description
✓	name	Descriptive name of the lamp type
✓	address	TALQ Address of the lamp type
✓	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

### Event log data

#### Properties

#	Property	Description
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✓	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
✓	startEndFlag	If the event denotes either the start or end of a 'special' period, this flag shall be included

## Command

### 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 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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