Certified Capability List

This Capability List is based on a certification session performed by the *TALQ Certification Tool (v2.1.0) on 2019-07-13 10:08:14.978 +0200.*

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

The tool has succesfully performed *53 tests*.

Product details

Product Name	CityLinx
Company	BeeZeeLinx
Type	CMS
URL	http://localhost:8080/reports/api/talq
Notes	
Generated on	2019-07-13 10:08:14.978 +0200
Certification performed by app version:	2.1.0

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.
✔	hwVersion	Hardware revision of the device.
✔	swType	Software type of device. This attribute may be useful if the same hardware supports multiple firmware versions with different functions.
✔	swVersion	Software version installed on the device.
✔	installationDate	The installation date of Physical Device.
✔	location	Latitude, Longitude and Altitude.
✔	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],en d[/time]]] as defined by the Open Group for posix systems [POSIX].
✔	ntpServers	List of NTP servers to use for time synchronization (Hostname or IP address).
✔	ntpSynchPeriod	Number of hours between two time synchronization updates.
✔	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
✔	batteryMode	Device operating in battery mode
✔	installationMode	Device is being installed
✔	maintenanceMode	Device is undergoing maintenance
✔	cabinetDoorOpen	Cabinet door is open
✔	batteryShutdown	Indicates the device has shut down due to battery discharge
✔	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
✔	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, ...).
✔	altLogicalAddress	Additional logical address used for communication within the ODN, for instance, group communication address (not a TALQ group 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.
✔	timeToLive	Number of times a packet can be forwarded within the ODN.
✔	repeatingEnabled	Describes whether repeating functionality is enabled at the device.
✔	transmitPower	Transmit power used by the device within the ODN.
✔	numberOfHops	Number of hops between the gateway and the ODN device represented by the device including this function.
✔	communicationQuality	Indicator of the quality of the communication with the device. 100% means good quality.

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.
✔	pkgUrl	URL pointing at location packages can be downloaded. This is used in the data package service.
✔	currentReleaseId	Release ID of currently deployed release. This is used in the data package service.

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.
✔	outputPort	Identifier of the output port that is controlled by the lamp actuator.
✔	standbyMode	Defines the behavior of the lamp actuator when output level is set to zero. If OFF, light output level is zero with no power to the lamp control gear. If ON, light output level is zero but power is delivered to the lamp control gear (standby mode).
✔	cloEnabled	Determines whether a Constant Light Output (CLO) correction factor is used. CLO is used to compensate for lumen output degradation over the life time of the lamp. If CLO is enabled, lamps are dimmed part of the 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.
✔	maintenanceFactorEnabled	Indicates whether maintenance compensation is enabled. A maintenance factor can be added in addition to the CLO correction factor to account effects of maintenance (e.g. cleaning) of the luminaire on the lumen output.
✔	maintenancePeriod	Period (Hours) after which maintenance factor is 100%. The assumption is that the maintenance correction factor vs. time curve is linear.
✔	maintenanceFactor	Initial correction factor applied when the luminaire is cleaned.
✔	lastMaintenanceDate	Date when the luminaire was last cleaned (used to reset the maintenance factor).
✔	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
✔	invalidCalendar	The lamp actuator function has been allocated a calendar that it cannot implement
✔	invalidProgram	The lamp actuator function has been allocated a control program that it cannot implement
✔	targetLightCommandChange	The targetLightCommand operational attribute has changed
✔	programChange	The control program applicable to the lamp actuator has changed
✔	calendarChange	The calendar applicable to the lamp actuator 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
✔	lampTypeId	TALQ Address of an existing lamp type. If not set to a valid value, this shall be the lamp type used in the lamp actuator. If this attribute is not supported in the implementation, the lamp monitor shall use the lamp type specified in the corresponding lamp actuator.
✔	monitoringReference	Name of the entity (or physical device) being monitored by this function.
✔	numberOfLamps	Number of lamps being monitored by the lamp monitor function.
✔	switchOnCounter	Cumulative number of ON/OFF cycles since installation of the lamp. The wrap around value is 2e32 - 1.
✔	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.
✔	reactivePower	Reactive power.
✔	apparentPower	Apparent Power.
✔	powerFactor	Active power/Apparent power.
✔	powerFactorSense	Phase sense of power factor.
✔	activeEnergy	Cumulative active energy (since installation or counter reset).
✔	supplyLossCount	Incrementing count of supply losses. The wrap around value is 2e32 - 1.

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
✓	highTemperature	Indicates temperature is above the high threshold
✓	relayFailure	Set in case of internal relay is failing
✓	absoluteLampPowerTooHigh	Indicates the power is above the lampPowerHighThreshold in the lamp type
✓	absoluteLampPowerTooLow	Indicates the power is below the lampPowerLowThreshold in the lamp type
✓	controlGearCommFailure	Indicates failure of the control gear
✓	cyclingFailure	Indicates the lamp is constantly switching ON and OFF in an unexpected manner
✓	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

Electrical Meter

The electrical meter function supports electrical metering capabilities including measurements of voltage, current, power, energy, and power factor. This function may be associated with Luminaire Controllers, Cabinet Controllers or electrical meters installed in switch boxes. ODNs may implement both single phase and three phase meters. Typically meters within a control device will be single phase and stand-alone meters. A street side cabinet may have single phase or three phase meters.

Attributes

#	Attribute	Description
✓	totalPowerHighThreshold	Power above which the totalPowerTooHigh event is triggered.
✓	totalPowerLowThreshold	Power below which the totalPowerTooLow event is triggered.
✓	powerfactorThreshold	Power factor below which the powerfactorTooLow event is triggered.
✓	phase1PowerfactorLowThreshold	Phase 1 power factor below which the phase1PowerfactorTooLow event is triggered.
✓	phase2PowerfactorLowThreshold	Phase 2 power factor below which the phase2PowerfactorTooLow event is triggered.
✓	phase3PowerfactorLowThreshold	Phase 3 power factor below which the phase3PowerfactorTooLow event is triggered.
✓	supplyVoltageHighThreshold	Supply voltage above which the supplyVoltageTooHigh event is triggered.

✔	supplyVoltageLowThreshold	Supply voltage below which the supplyVoltageTooLow event is triggered.
✔	phase1VoltageHighThreshold	RMS voltage above which the phase1VoltageTooHigh event is triggered.
✔	phase1VoltageLowThreshold	RMS voltage below which the phase1VoltageTooLow event is triggered.
✔	phase2VoltageHighThreshold	RMS voltage above which the phase2VoltageTooHigh event is triggered.
✔	phase2VoltageLowThreshold	RMS voltage below which the phase2VoltageTooLow event is triggered.
✔	phase3VoltageHighThreshold	RMS voltage above which the phase3VoltageTooHigh event is triggered.
✔	phase3VoltageLowThreshold	RMS voltage below which the phase3VoltageTooLow event is triggered.
✔	totalCurrentHighThreshold	RMS current above which the currentTooHigh event is triggered.
✔	totalCurrentLowThreshold	RMS current below which the currentTooLow event is triggered.
✔	neutralCurrentHighThreshold	RMS current above which the neutralCurrentTooHigh event is triggered.
✔	phase1CurrentHighThreshold	RMS current above which the phase1CurrentTooHigh event is triggered.
✔	phase1CurrentLowThreshold	RMS current below which the phase1CurrentTooLow event is triggered.
✔	phase2CurrentHighThreshold	RMS current above which the phase2CurrentTooHigh event is triggered.
✔	phase2CurrentLowThreshold	RMS current below which the phase2CurrentTooLow event is triggered.
✔	phase3CurrentHighThreshold	RMS current above which the phase3CurrentTooHigh event is triggered.
✔	phase3CurrentLowThreshold	RMS current below which the phase3CurrentTooLow event is triggered.
✔	phase1ActivePowerHighThreshold	Power above which the phase1ActivePowerTooHigh event is triggered.
✔	phase1ActivePowerLowThreshold	Power below which the phase1ActivePowerTooLow event is triggered.
✔	phase2ActivePowerHighThreshold	Power above which the phase2ActivePowerTooHigh event is triggered.
✔	phase2ActivePowerLowThreshold	Power below which the phase2ActivePowerTooLow event is triggered.

✔	phase3ActivePowerHighThreshold	Power above which the phase3ActivePowerTooHigh event is triggered.
✔	phase3ActivePowerLowThreshold	Power below which the phase3ActivePowerTooLow event is triggered.
✔	totalPower	Sum of the active power consumed on phase 1, 2 and 3, or just the power for a single phase meter.
✔	totalVA	Sum of the apparent power consumed on phase 1, 2 and 3, or just the apparent power for a single phase meter.
✔	totalVAR	Sum of the reactive power consumed on phase 1, 2 and 3, or just the reactive power for a single phase meter.
✔	maxDemandPower	Maximum peak power consumption.
✔	totalActiveEnergy	Total cumulative kWh measured by the meter since installation date (or counter reset).
✔	totalReactiveEnergy	Total cumulative kWh measured by the meter since installation date (or counter reset).
✔	totalApparentEnergy	Total cumulative kWh measured by the meter since installation date (or counter reset).
✔	frequency	Frequency on the line.
✔	totalPowerFactor	Total active power divided by total apparent power.
✔	totalPowerFactorSense	Sense of power factor (lead or lag).
✔	phase1PowerFactor	Power factor on phase 1.
✔	phase1PowerFactorSense	Sense of power factor (lead or lag).
✔	phase2PowerFactor	Power factor on phase 2.
✔	phase2PowerFactorSense	Sense of power factor (lead or lag).
✔	phase3PowerFactor	Power factor on phase 3.
✔	phase3PowerFactorSense	Sense of power factor (lead or lag).
✔	supplyVoltage	Average between Phase1 RMS Voltage, Phase2 RMS Voltage and Phase3 RMS Voltage, or in the case of a single phase meter just the RMS supply voltage.
✔	phase1Voltage	RMS Voltage between phase 1 and neutral.
✔	phase2Voltage	RMS Voltage between phase 2 and neutral.
✔	phase3Voltage	RMS Voltage between phase 3 and neutral.
✔	voltagePhase1Phase2	RMS Voltage between phase 1 and phase 2.
✔	voltagePhase2Phase3	RMS Voltage between phase 2 and phase 3.
✔	voltagePhase3Phase1	RMS Voltage between phase 3 and phase 1.
✔	totalCurrent	Sum of the RMS currents on phase 1, 2 and 3.
✔	averageCurrent	Average RMS current on phase 1, 2 and 3.

✔	neutralCurrent	RMS current on neutral.
✔	phase1Current	RMS current on phase 1.
✔	phase2Current	RMS current on phase 2.
✔	phase3Current	RMS current on phase 3.
✔	phase1ActivePower	Active Power on phase 1.
✔	phase2ActivePower	Active Power on phase 2.
✔	phase3ActivePower	Active Power on phase 3.
✔	phase1ApparentPower	Apparent Power on phase 1.
✔	phase2ApparentPower	Apparent Power on phase 2.
✔	phase3ApparentPower	Apparent Power on phase 3.
✔	phase1ReactivePower	Reactive Power on phase 1.
✔	phase2ReactivePower	Reactive Power on phase 2.
✔	phase3ReactivePower	Reactive Power on phase 3.
✔	phase1ActiveEnergy	Cumulative active energy on phase 1.
✔	phase2ActiveEnergy	Cumulative active energy on phase 2.
✔	phase3ActiveEnergy	Cumulative active energy on phase 3.
✔	worstCurrentTHD	Worst value for Total Harmonic Distortion on current (all 3 phases).
✔	phase1CurrentTHD	Total Harmonic Distortion on current for phase 1.
✔	phase2CurrentTHD	Total Harmonic Distortion on current for phase 2.
✔	phase3CurrentTHD	Total Harmonic Distortion on current for phase 3.
✔	worstVoltageTHD	Worst Total Harmonic Distortion on voltage (all 3 phases).
✔	averageVoltageTHD	Average value of Total Harmonic Distortion on voltage.
✔	phase1VoltageTHD	Total Harmonic Distortion on voltage for phase 1.
✔	phase2VoltageTHD	Total Harmonic Distortion on voltage for phase 2.
✔	phase3VoltageTHD	Total Harmonic Distortion on voltage for phase 3.
✔	phase1_2VoltageTHD	Total Harmonic Distortion on voltage between phase 1 and phase 2.
✔	phase2_3VoltageTHD	Total Harmonic Distortion on voltage between phase 2 and phase 3.
✔	phase3_1VoltageTHD	Total Harmonic Distortion on voltage between phase 3 and phase 1.
✔	supplyLossCount	Incrementing count of supply losses. In the case of 3 phases the count of losses on all three phases together. The wrap around value is 2e32 - 1.

✓	phase1SupplyLossCount	Incrementing count of supply losses on Phase 1. The wrap around value is 2e32 - 1.
✓	phase2SupplyLossCount	Incrementing count of supply losses on Phase 2. The wrap around value is 2e32 - 1.
✓	phase3SupplyLossCount	Incrementing count of supply losses on Phase 3. The wrap around value is 2e32 - 1.

Events

#	Event type	Description
✓	totalPowerTooHigh	Indicates total power is above the totalPowerHighThreshold
✓	totalPowerTooLow	Indicates total power is below the totalPowerLowThreshold
✓	powerFactorTooLow	talq.feature.event.ElectricalMeterFunction.powerFactorTooLow.desc
✓	supplyVoltageTooHigh	Indicates supply voltage is above the supplyVoltageHighThreshold
✓	supplyVoltageTooLow	Indicates supply voltage is below the supplyVoltageLowThreshold
✓	totalCurrentTooHigh	Indicates the current is above the totalCurrentHighThreshold
✓	totalCurrentTooLow	Indicates the current is below the totalCurrentLowThreshold
✓	neutralCurrentTooHigh	Indicates the neutral current is above the neutralCurrentHighThreshold
✓	phase1PowerfactorTooLow	Indicates the phase 1 power factor is below the phase1PowerfactorLowThreshold
✓	phase1VoltageTooHigh	Indicates phase 1 supply voltage is above the phase1SupplyVoltageHighThreshold
✓	phase1VoltageTooLow	Indicates phase 1 supply voltage is below the phase1SupplyVoltageLowThreshold
✓	phase1CurrentTooHigh	Indicates the phase 1 current is above the phase1CurrentHighThreshold
✓	phase1CurrentTooLow	Indicates the phase 1 current is below the phase1CurrentLowThreshold
✓	phase1ActivePowerTooHigh	Indicates the phase 1 active power is above the phase1ActivePowerHighThreshold
✓	phase1ActivePowerTooLow	Indicates the phase 1 active power is below the phase1ActivePowerLowThreshold
✓	phase2PowerfactorTooLow	Indicates the phase 2 power factor is below the phase2PowerfactorLowThreshold
✓	phase2VoltageTooHigh	Indicates phase 2 supply voltage is above the phase2SupplyVoltageHighThreshold
✓	phase2VoltageTooLow	Indicates phase 2 supply voltage is below the phase2SupplyVoltageLowThreshold
✓	phase2CurrentTooHigh	Indicates the phase 2 current is above the phase2CurrentHighThreshold

✓	phase2CurrentTooLow	Indicates the phase 2 current is below the phase2CurrentLowThreshold
✓	phase2ActivePowerTooHigh	Indicates the phase 2 active power is above the phase2ActivePowerHighThreshold
✓	phase2ActivePowerTooLow	Indicates the phase 2 active power is below the phase2ActivePowerLowThreshold
✓	phase3PowerfactorTooLow	Indicates the phase 3 power factor is below the phase3PowerfactorLowThreshold
✓	phase3VoltageTooHigh	Indicates phase 3 supply voltage is above the phase3SupplyVoltageHighThreshold
✓	phase3VoltageTooLow	Indicates phase 3 supply voltage is below the phase3SupplyVoltageLowThreshold
✓	phase3CurrentTooHigh	Indicates the phase 3 current is above the phase3CurrentHighThreshold
✓	phase3CurrentTooLow	Indicates the phase 3 current is below the phase3CurrentLowThreshold
✓	phase3ActivePowerTooHigh	Indicates the phase 3 active power is above the phase3ActivePowerHighThreshold
✓	phase3ActivePowerTooLow	Indicates the phase 1 active power is below the phase2ActivePowerLowThreshold

Photocell

A Photocell function models the capabilities of a photocell that can be used for lighting control. This function shall be supported by the CMS and optionally by the ODNs (Gateway).

Attributes

#	Attribute	Description
✓	onLevel	Illuminance level at which the photocell switches to on state.
✓	offLevel	Illuminance level at which the photocell switches to off state.
✓	photocellOutput	Output state of the photocell. Possible values are ON (means the illuminance level has fallen below the onLevel) and OFF (means the illuminance level has risen above the offLevel).

Events

#	Event type	Description
✓	photocellOutputOn	The photocell output has changed to ON

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
✔	levelHighThreshold	Light level above which a levelTooHigh event is triggered.
✔	levelLowThreshold	Light level below which a levelTooLow event is triggered.
✔	lightLevel	Illuminance level.

Events

#	Event type	Description
✔	levelTooHigh	Indicates the light level is above the levelHighThreshold
✔	levelTooLow	Indicates the light level is below the levelLowThreshold

Binary Sensor

A Binary Sensor function can be used to model any sensor that provides a digital, binary output. This function is optional for both CMS and Gateway, but when supported the requirements in this section shall apply.

Attributes

#	Attribute	Description
✔	level	Sensor Output level.

Events

#	Event type	Description
✔	sensorOutputOn	Indicates the sensor output changed to ON

Generic Sensor

A Generic Sensor function can be used to model any sensor that provides an analog or multilevel output. This function is optional for both CMS and Gateway, but when supported the requirements in this section shall apply.

Attributes

#	Attribute	Description
✔	levelHighThreshold	Threshold above which a levelTooHigh event is triggered.
✔	levelLowThreshold	Threshold below which a levelTooLow event is triggered.
✔	level	Sensor Output level.

Events

#	Event type	Description

✓ levelTooHigh   Indicates the sensor output level is above the levelHighThreshold

✓ levelTooLow   Indicates the sensor output level is below the levelLowThreshold

Generic Actuator

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

Attributes

#	Attribute	Description
✓	defaultState	Sets the default state output for the generic actuator. This shall be applicable if no other command is active.
✓	actualState	This attribute should reflect the physical state of the source as much as possible. It may be calculated or measured, depending on the specific ODN implementation, which is outside the scope of this specification.
✓	targetCommand	Latest command for the generic actuator.
✓	feedbackCommand	This attribute reflects the command in effect and it might deviate from the actualState due to propagation time or due to internal ODN specific mechanisms to handle the priority of the requests.
✓	calendarID	TALQ Address of the calendar controlling this generic 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
✓	stateChange	The state has changed.
✓	invalidCalendar	This event is generated when a calendar has been allocated and can not be implemented it.
✓	invalidProgram	This event is generated when a control program has been allocated and can not be implemented it.
✓	programChange	This event is generated when the control program applicable to the actuator has changed.
✓	calendarChange	This event is generated when the calendar applicable to the actuator has changed.
✓	targetCommandChange	This event is generated when the targetCommand has changed.

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
✔	temperatureHighThreshold	Threshold above which a temperatureTooHigh event is triggered.
✔	temperatureLowThreshold	Threshold below which a temperatureTooLow event is triggered.
✔	fireDetectionThreshold	Threshold above which a fireDetected event is triggered.
✔	temperature	Output temperature.

Events

#	Event type	Description
✔	temperatureTooHigh	Indicates the output temperature is above the temperatureHighThreshold.
✔	temperatureTooLow	Indicates the output temperature is below the temperatureLowThreshold.
✔	fireDetected	Indicates the output temperature is above the fireDetectionThreshold.

Humidity Sensor

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

Attributes

#	Attribute	Description
✔	humidityLowThreshold	talq.feature.attribute.HumiditySensorFunction.humidityLowThreshold.desc
✔	humidityHighThreshold	Threshold above which a humidityTooHigh event is triggered.
✔	humidity	Output humidity.

Events

#	Event type	Description
✔	humidityTooHigh	Indicates the output humidity is above the humidityHighThreshold.

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

✔	pm1HighThreshold	Threshold above which a pm1TooHigh event is triggered.
✔	pm2-5HighThreshold	Threshold above which a pm2-5TooHigh event is triggered.
✔	pm10HighThreshold	Threshold above which a pm10TooHigh event is triggered.
✔	pm1	Output pm1.
✔	pm2-5	Output pm2-5.
✔	pm10	Output pm10.

Events

#	Event type	Description
✔	pm1TooHigh	Indicates the output pm1 is above the pm1HighThreshold.
✔	pm2-5TooHigh	Indicates the output pm2-5 is above the pm2-5HighThreshold.
✔	pm10TooHigh	Indicates the output pm10 is above the pm10HighThreshold.

Presence Sensor

The Presence Sensor function allows a CMS to detect presence. This function may be used in Parking Place detectors as well as in dynamic outdoor lighting scenario.

Attributes

#	Attribute	Description
✔	presenceStatus	Presence status.

Events

#	Event type	Description
✔	presenceStatusChanged	Indicates the presence status changed.

Movement Sensor

The Movement Sensor function allows a CMS to detect movement. This function may be used in a Waste Container sensor to detect that container gets emptied or is not in the proper position, as well as in asset tracking applications.[DEPRECATED: This function has been deprecated and it will be removed in the next MAJOR release. Please use the new LocationSensorFunction instead.]

Attributes

#	Attribute	Description
✔	movementThreshold	Threshold above which a movementDetected event is triggered.
✔	movementDetected	Indicates the movement is above the movementThreshold.

Events

#	Event type	Description
✔	movementDetected	Indicates the movement is above the movementThreshold.
✔	notInProperPosition	Indicates the sensor is not in proper position.

Battery Level Sensor

The Battery Level Sensor function allows to measure the charge of the battery, monitor the battery and send events in case the value is above/below configurable thresholds.

Attributes

#	Attribute	Description
✔	powerSource	The power source of battery.
✔	batteryLevelLowThreshold	Threshold below which a batteryLevelTooLow event is triggered.
✔	batteryLevel	Battery level.

Events

#	Event type	Description
✔	batteryLevelTooLow	talq.feature.event.BatteryLevelSensorFunction.batteryLevelTooLow.desc

Filling Level Sensor

The Filling Level Sensor function allows to measure how full a container is and send events in case the value is above/below configurable thresholds.

Attributes

#	Attribute	Description
✔	levelHighThreshold	Threshold (m) above which a fillingHeight event is triggered.
✔	containerHeight	Container height (m).
✔	containerVolume	Container volume (m^3).
✔	fillingHeight	Filling container height (m).
✔	fillingPercentage	Filling percentage.
✔	contentsType	Indicates de type of contents in the container. Some technologies, such as ultrasonic sensors, need this information in order to measeure accuratelly. Possible values are: mixed waste, organic, paper, plastics, glass, liquid, clothing, electronics, metal or other. If other is selected, then contentsOtherType shall be used.
✔	contentsOtherType	Type of contents if it is not included in the Enum list of contents for contentsType.

Events

#	Event type	Description
✔	containerFull	Indicates the container filling height is above levelHighThreshold.

Services

Configuration Service

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

Options

#	Option	Value	Description

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	- AbsoluteActivePeriod - AstroClockActivePeriod* - SensorActivePeriod* - AstroAndSensorActivePeriod* - ExternalControlEffect* - FixedControlEffect* - ccDate* - ccDay*	Control Program and calendar options supported are defined by announcing support for the given modes
✔	dayOffset	1 2	Offset of start of day
✔	ccDateSupport		Indicates the ccDate options supported
✔	ccDaySupport		Indicates the ccDay options supported
✔	effectOperationsSupport	- set - min - max - add - sub - mul	Indicates the dynamic control effect operations 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 - PeriodicRecordingMode - VendorRecordingMode* - ImmediateReportingMode - ScheduledReportingMode	Recording and Reporting modes supported
✓	samplingPeriodSupported		Indicates whether the ODN supports periodic sampling for a data logger in periodic 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

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

Lamp type

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
✔	controlVoltMax	DC voltage that gives the maximum light output in a 1-10V control type
✔	controlVoltMin	DC voltage that gives the minimum light output in a 1-10V control type
✔	minLightOutput	Sets the minimum light output under which the lamp actuator will not perform the command

✓	virtualLightOutput	Sets the light output that the lamp actuator shall consider to be equal to 100%
✓	daliLedLinear	If set to true indicates the dimming curve is linear for DALI control type
✓	warmUpTime	talq.feature.property.LampType.warmUpTime.desc
✓	coolDownTime	Sets the delay after a switch OFF command during which the lamp actuator shall not perform any switch ON command
✓	lowCurrentThreshold	Level of the luminaire RMS supply current under which the ODN shall detect a currentTooLow event
✓	highCurrentThreshold	Level of the luminaire RMS supply current above which the ODN shall detect a currentTooHigh event
✓	lowLampVoltageThreshold	Level of lamp voltage (not supply voltage) under which the ODN shall detect a voltageTooLow event. [WARNING: Don't use this attribute as a low supply voltage threshold, use the new LampMonitor.lowSupplyVoltageThreshold introduced by TALQ 2.3.0.]
✓	highLampVoltageThreshold	Level of lamp voltage (not supply voltage) under which the ODN shall detect a voltageTooLow event. [WARNING: Don't use this attribute as a high supply voltage threshold, use the new LampMonitor.highSupplyVoltageThreshold introduced by TALQ 2.3.0.]
✓	highTemperatureThreshold	Temperature above which the temperatureTooHigh event is triggered
✓	maxOperatingHours	Maximum number of operating hours that the lamp is supposed to live with a given specification
✓	powerLightGradient	The ratio of change of light level divided by change in power level
✓	lampPowerTolerance	The number of watts by which the actual lamp power can be in error from the expected lamp power
✓	lampPowerHighThreshold	The absolute number of watts above which the absolutLampPowerTooHigh event is triggered
✓	lampPowerLowThreshold	The absolute number of watts below which the absolutLampPowerTooLow event is triggered
✓	powerFactorThreshold	The threshold below which powerFactorTooLow event is triggered
✓	lumenDepreciationCurve	Set of entries (operating hours, correction factor in %) that form a piece wise linear approximation of the lumen depreciation correction factor curve
✓	cloType	Determines where CLO is implemented in the lamp control gear or in the ODN (e.g. control device)

Event log data

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
✔	startEndFlag	If the event denotes either the start or end of a 'special' period, this flag shall be included
✔	info	a string providing more information on the event
✔	attributes	A sequence of attribute values logged together with the event

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
✔	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.

Group

Properties

#	Property	Description
✔	address	Group address
✔	members	TALQ Addresses of members of the group
✔	purpose	Main purpose 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 (*).

This Capability List is based on a certification session performed by the TALQ Certification Tool (v2.1.0) on 2019-07-13 10:08:14.978 +0200.

Ⓒ TALQ Consortium